ANNUAL REPORT 2020

MOTOL UNIVERSITY HOSPITAL

FN MOTOL

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INTRODUCTION

Dear Friends,
Last year was a personal milestone for me, because in May I completed 20 years as Director of the University Hospital in Motol. However, instead of sitting back and assessing the successes and failures of all my colleagues and me, this event was clearly overshadowed by a new situation - the SARS-Cov-2 virus. Although, in the wake of SARS, MERS or the very deadly Ebola, a pandemic was not entirely unexpected. What was unexpected was the reality of just how rapid its global spread was and, unfortunately, the fact that, despite a lower mortality rate compared to other diseases, such a huge number of people died during the Covid-19 pandemic.
In the spring of 2020, we were ready for anything, medically, but from an organisational point of view it was a situation we had never experienced before. It was real crisis management in practice. In line with the Ministry's emergency measures, we first set aside 66 beds for Covid patients, halted elective care and rotated medical staff in weekly periods. We got to the point where we were almost afraid in the hospital corridors because there were no patients.
Once the situation eased, we suddenly had a critical autumn and an even worse winter with a huge increase in hospitalised Covid patients, testing and preparation for vaccination. The number of stations caring solely for Covid patients was enlarged and extra Covid patients were lying in virtually all of the inpatient stations of the adult section, and there were even a number of patients in the paediatric section. At the most critical time, we had up to 220 patients hospitalised with Covid-19, including almost 80 severe cases, i.e., those who had to be connected to ventilators, ECMO or HFNO (high-flow nasal oxygen therapy). This situation was further complicated by the high number of staff in isolation or quarantine, which didn't improve until a large part of the hospital staff could be vaccinated.
The spring and the subsequent autumn crises in 2020 had a negative impact reflected in a decline in the hospital's performance and the postponement of elective procedures. In order to make up for the shortfall in performance from the spring, the hospital management announced the maximisation of the provisioning of care starting in the last week of August, so that we could use the Compensation Decree issued for 2020 to obtain any possible reimbursement from overproduction. However, reality had other plans and we were hit by the second wave of the COVID-19 pandemic, which, as was already mentioned, was stronger than the previous one. The economic situation has been hit not only by a reduction in outputs, but, above all, by an incredible increase in costs. Just the non-investment costs, which include personnel costs, medical supplies and medicines, that we spent on Covid-19 came to CZK 314 million.

In closing, I would like to express my hope that 2021, the first quarter of which has already passed, will be the year when the healthcare system will return to its normal state and the Motol University Hospital will get back to its full performance and continue being the flagship of the Czech healthcare system that it is in so many fields.

Miloslav Ludvík, LLD, MBA
Director of Motol UH

MANAGEMENT OF MOTOL UNIVERSITY HOSPITAL

HOSPITAL DIRECTOR

Miloslav Ludvík, LLD, MBA

DEPUTY DIRECTOR FOR OPERATIONS AND TECHNICAL MATTERS

Pavel Budinský, MD, Ph.D., MBA

DEPUTY DIRECTOR FOR MEDICAL PREVENTIVE CARE

Martin Holcát, MD, MB**A**

DEPUTY DIRECTOR FOR NURSING CARE

Jana Nováková, MBA

DEPUTY DIRECTOR FOR ECONOMY

Jiří Čihař

DEPUTY DIRECTOR FOR HUMAN RESOURCES

Jindřiška Feldmanová

DEPUTY DIRECTOR FOR SCIENCE AND RESEARCH

prof. Anna Šedivá, MD, DSc.

DEPUTY BUSINESS DIRECTOR

Jana Bašeová

THE HOSPITAL'S SCIENTIFIC BOARD

Prof. MUDr. Anna Šedivá, DSc.
Chairwoman of the Scientific Council of the Motol UH

Prof. MUDr. Marek Babjuk,
Department of Urology, 2nd Faculty of Medicine, Charles University and MUH

Prof. MUDr. Ondřej Cinek, Ph.D.
Department of Paediatrics, 2nd Faculty of Medicine, Charles University and MUH

Prof. MUDr. Dagmar Dotřelová
Department of Ophthalmology for Children and Adults, 2nd Faculty of Medicine, Charles University and MUH

Prof. MUDr. Pavel Dřevínek, Ph.D.
Department of Medical Microbiology, 2nd Faculty of Medicine, Charles University and MUH

Prof. MUDr. Tomáš Eckschlager
Clinic of Paediatric Haematology and Oncology, 2nd Faculty of Medicine, Charles University and MUH

Senior Doctor MUDr. Markéta Havlovicová
Institute of Biology and Medical Genetics, 2nd Faculty of Medicine, Charles University and MUH

MUDR. Martin Holcát, MBA
Deputy for Preventive Therapeutic Care at Motol University Hospital

Prof. MUDr. Jakub Hort, Ph.D.
Department of Neurology, 2nd Faculty of Medicine, Charles University and MUH

Prof. MUDr. David Jahoda
1st Department of Orthopaedics, 1st Faculty of Medicine, Charles University and MUH

Doc. MUDr. Tomáš Kalina, Ph.D.
Department of Paediatric Haematology and Oncology, 2nd Faculty of Medicine, Charles University and MUH

Prof. MUDr. Radan Keil, Ph.D.
Department of Internal Medicine, 2nd Faculty of Medicine, Charles University and MUH

MUDr. Adam Klocperk, Ph.D.
Department of Immunology, 2nd Faculty of Medicine, Charles University and MUH

Prof. MUDr. Pavel Kršek, Ph.D.
Department of Paediatric Neurology, 2nd Faculty of Medicine, Charles University and MUH

Prof. MUDr. Jan Lebl
Department of Paediatrics, 2nd Faculty of Medicine, Charles University and MUH

Prof. MUDr. Robert Lischke, Ph.D.
3rd Department of Surgery, 1st Faculty of Medicine, Charles University and MUH

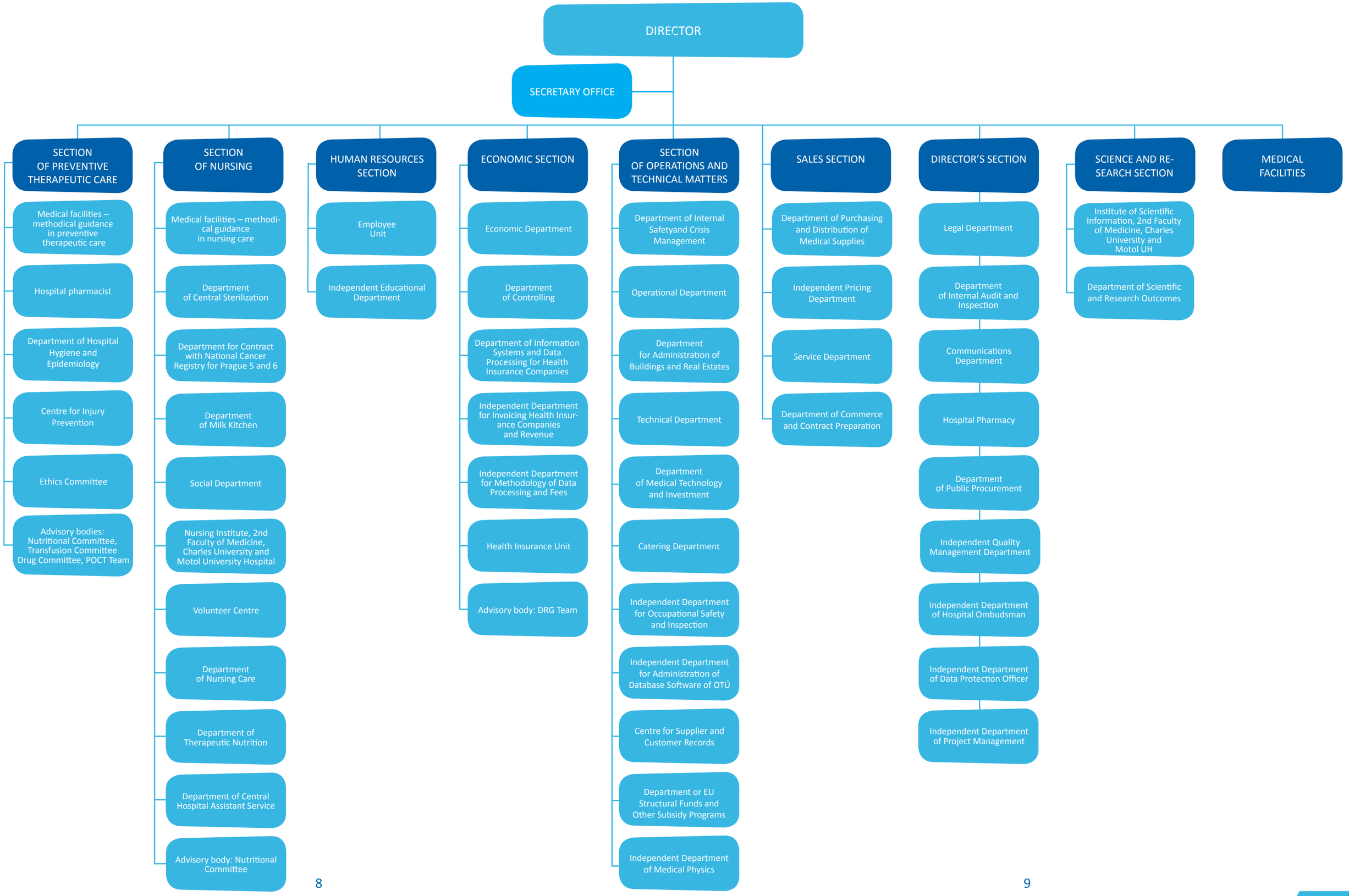
Doc. MUDr. Štěpánka Průhová, Ph.D.
Department of Paediatrics, 2nd Faculty of Medicine, Charles University and MUH

Doc. MUDr. Oleg Reich, Ph.D.
Children's Heart Centre, 2nd Faculty of Medicine, Charles University and MUH

Doc. MUDr. Tomáš Vymazal, Ph.D.
Department of Anaesthesiology, Resuscitation and Intensive Medicine, 2nd Faculty of Medicine, Charles University and MUH

Prof. MUDr. Josef Zámečník, Ph.D.
Department of Pathology and Molecular Medicine, 2nd Faculty of Medicine, Charles University and MUH

BASIC ORGANIZATIONAL STRUCTURE AS OF 31/12/2020



BASIC DETAILS AS AT 31/12/2020

Area of the premises (m^2)	348 000
Assets /in thous. (in thousand CZK)	11 496 406,98
Total turnover /in thous. (in thousand CZK)	11 765 066,61
Employees /natural persons/ (FO)	6 134
Employees /converted numbers/ (PP)	5 461
Beds	*2 231*

Beds

Of which:	Children	Adults	Total
acute standard	457	1017	1474
acute intensive	146	216	362
acute total	**603**	**1233**	**1836**
aftercare intensive	4	10	14
long-term	-	361	361
long-term intensive	-	20	20
beds total	**607**	**1624**	**2231**

Number of hospitalizations	70 441
Number of outpatient treatments	1 157 867
Number of treatment days / + AC-LSH /	521 727
Number of anesthesiology procedures	31 888
Number of births	2 814
Death rate / + AC-LSH /	1,93

LIST OF DEPARTMENTS

Paediatric Inpatient Part

Department of Paediatrics, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - prof. MUDr. Jan Lebl, CSc.

Children's Heart Centre, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - prof. MUDr. Jan Janoušek, Ph.D.

Department of Paediatric Psychiatry, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - prof. MUDr. Michal Hrdlička, CSc.

Department of Pediatric Hematology and Oncology, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - prof. MUDr. Jan Starý, DrSc.
Bone Marrow Transplantation Unit
Chief physician - Prof. MUDr. Petr Sedláček CSc.

Department of Paediatric Surgery, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - prof. MUDr. Michal Rygl, Ph.D.

Department of Paediatric Neurology, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - prof. MUDr. Pavel Kršek, Ph.D.

Department of ENT, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - MUDr. Jiří Skřivan, CSc
Department of Phoniatrics
Head - MUDr. Petr Myška

Common Inpatient Sites of Paediatric and Adult Parts

Department of Anesthesiology, Resuscitation and Intensive Medicine, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - doc. MUDr. Tomáš Vymazal, Ph.D.
Department of Subsequent Intensive and Long-term Intensive Nursing
Senior Doctor - MUDr. Kateřina Čadová

Department of Rehabilitation and Sports Medicine, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - prof. PaedDr. Pavel Kolář, Ph.D.
Department of Rehabilitation
Senior Doctor - MUDr. Martina Kovári
Spinal Unit
Senior Doctor - MUDr. Jiří Kříž
Department of Pain Research and Treatment
Senior Doctor - MUDr. Jiří Kozák, Ph.D.
Department of Sports Medicine
Senior Doctor - 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 Paediatric and Adult Orthopaedics and Traumatology, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - prof. MUDr. Tomáš Trč, CSc., MBA

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

Adult Inpatient Part

Department of Obstetrics and Gynaecology, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - MUDr. Roman Chmel, Ph.D.
Department of Neonatology
Chief Physician - doc. MUDr. Jan Janota, Ph.D.

Department of Internal Medicine, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - doc. MUDr. Radan Keil, Ph.D
Department of Surgery, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - doc. MUDr. Alan Stolz, Ph.D., MBA

3rd Department of Surgery, 1st Faculty of Medicine, Charles University and Motol University Hospital
Head - prof. MUDr. Robert Lischke, Ph.D.

Department of Cardiology, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - prof. MUDr. Josef Veselka, CSc.

Department of Cardiovascular Surgery, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - doc. MUDr. Vilém Rohn, CSc.

Department of Nuclear Medicine and Endocrinology, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - prof. MUDr. Petr Vlček, CSc.

Department of Otorhinolaryngology and Head and Neck Surgery, 1st Faculty of Medicine, Charles University and Motol University Hospital
Head - prof. MUDr. Jan Plzák, Ph.D.

Department of Spinal Surgery, 1st Faculty of Medicine, Charles University and Motol University Hospital
Head - prof. MUDr. Jan Štulík, CSc.

Department of Long-term Treatment - Aftercare Centre
Senior Doctor - MUDr. Martina Nováková

Department of Neurology, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - prof. MUDr. Petr Marusič, Ph.D.

1st Department of Orthopaedics, 1st Faculty of Medicine, Charles University and Motol University Hospital
Head - prof. MUDr. Ivan Landor, CSc.
Traumatology
Senior Doctor - MUDr. Jarloslav Kalvach

Department of Oncology, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - doc. MUDr. Jana Prausová, Ph.D., MBA

Department of Pneumology, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - MUDr. Libor Fila, Ph.D.

Department of Urology, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - Prof. MUDr. Marek Babjuk, CSc.

Common Examination and Therapeutic Units

Department of Radiology, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - prof. MUDr. Miloslav Roček, CSc.

Institute of Biology and Medical Genetics, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - prof. MUDr. Milan Macek, DrSc.

Department of Medical Chemistry and Clinical Biochemistry, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - prof. MUDr. Richard Průša, CSc.

Department of Immunology, 2nd LF (Faculty of Medicine) and FN Motol (University Hospital Motol)
Head - prof. MUDr. Jiřina Bartůňková, DrSc., MBA

Department of Medical Microbiology, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - prof. MUDr. Pavel Dřevínek, Ph.D.

Department of Pathology and Molecular Medicine, 2nd Faculty of Medicine, Charles University and Motol University Hospital
Head - prof. MUDr. Roman Kodet, CSc.

Department of Clinical Hematology
Senior Doctor - MUDr. Jitka Segethová

Department of Clinical Psychology
Head - Mgr. Zuzana Kocábová

Blood Bank Department
Senior Doctor - MUDr. Eva Linhartová

Department of Rheumatology for Children and Adults
Senior Doctor - MUDr. Rudolf Horváth, Ph.D.

Department of Central Operating Theatres for Children
Ward Nurse - Bc. Alice Podařilová

Department of Central Operating Theatres for Adults
Senior Doctor - MUDr. Zbyněk Jech

Department of Transplantations and Tissue Bank
Chief Physician - MUDr.Jan Burkert, Ph.D.

Outpatient sector

Emergency Department and Medical First Aid Service for Children
Senior Doctor - MUDr. Jitka Dissou

Department of Dermatovenerology for Adults
Senior Doctor - MUDr. Alena Machovcová, Ph.D.,MBA

Department of Dermatology for Children
Senior Doctor - MUDr. Štěpánka Čapková

Primary Care Department
Senior Doctor - MUDr. Jaroslava Kulhánková

Emergency Department and Medical First Aid Service for Adults
Senior Doctor - MUDr. Lenka Kozlíková

Department of Hospital Hygiene and Epidemiology
Senior Doctor - MUDr. Vilma Benešová

Hospital Pharmacy
Senior Pharmacist - PharmDr. Petr Horák

MEDICAL PREVENTIVE CARE

Paediatric Inpatient Part

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

Head - prof. MUDr. Jan Lebl, CSc.
Senior Doctor MUDr. Jana Tejnická, MBA
Head nurse Mgr. Jana Boháčová

Basic description:

The Department of Paediatrics provides diagnostics, treatment and follow-up care for paediatric patients from various places in the Czech Republic in almost all internal medicine specializations. **A total of 4,439 patients were hospitalized and 23,822 outpatient examinations were carried out at the department during 2020. 6 patients successfully underwent a kidney transplantation, 10 children were prepared for liver transplantation at the IKEM.**

Specialized outpatient units:

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

New methods and procedures:

- The Nephrology Work Group provided comprehensive care for children with kidney failure. It cares for 11 patients on home peritoneal dialysis (the only facility in the CR that treats infant children in this way), it provides hemodialysis, plasmapheresis, immunoabsorption, etc. A new drug, ravalizumab, has been added to the treatment of patients with atypical HUS.
- The team at the pneumonology facility successfully focused (as the only site in the CR) or diagnostics and treatment of patients with primary ciliary dyskinesia. The team cares for 37 children on home non-invasive pulmonary ventilation - including 19 children with severe neurological issues. It provides an endoscopy programme for children and the youngest age groups. It provides very demanding care for 177 patients with cystic fibrosis and modernizes their treatment.
- The gastroenterological team successfully continues in its intensive endoscopic programme, including the introduction of percutaneous endoscopic gastrostomy in combination with a jejunal tube (PEG-J), it is developing a programme of endoscopic balloon dilatation for oesophageal strictures. The team further monitors and treats 9 patients using home parenteral nutrition. It is the only institution in the CR to have launched a new method of treating paediatric patients with short bowel syndrome using Revestive.
- In 2020, the diabetes and endocrinology team successfully continued the development and clinical application of the AndroidAPS hybrid artificial pancreas software. In collaboration with the Laboratory of Molecular Genetics, it is managing to elucidate the aetiology of growth disorders. This working group has been very successful in addressing the issue of bone metabolism disorders in children.

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 Paediatric Clinic is the only paediatric department in the CR equipped with a simulator for endoscopic operations in the field of gastroenterology and pneumology. The pneumology team has started using an add-on module to the Ecomedics D device to measure SF6 washout in infants and the Simeox device to improve airway clearance in patients with chronic respiratory disease.
- The nephrology team started using Claria with their patients. This is an automated PD device that enables PD management to be monitored online.
- The Diabetes Team has started testing software to link data from a continuous blood sugar level monitor and an insulin pump that can automatically dose insulin without patient involvement - the Pancreas4ALL project.

Major events in 2020:

- During 2020, the Paediatric Clinic's multidisciplinary intensive care unit was fully up and running. This department is able to give comprehensive care to patients with renal failure, liver failure, heart failure, pulmonary failure, severe septic conditions, meningitis, etc. Non-invasive pulmonary ventilation was newly introduced in the unit. The team provided care for patients with COVID-19, a unique set of 20 patients with a new diagnosis of PIMS-TS passed through the department.
- 2020 marks the 40th anniversary since opening the Paediatric Clinic's dialysis centre.
- During 2020, almost all the working groups joined the network of EU-ERN centres, thus continuing the intensive international scientific collaboration in multicentre projects. The clinic's staff have published a number of original works in both the international and Czech literature. The clinic's young doctors have received a number of important awards for their research and publication activities. The members of all working groups are involved in resolving grant projects.

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

Head - prof. MUDr. Jan Janoušek, Ph.D.
Senior Doctor of the Department of Cardiology - Doc. MUDr. Peter Kubuš, Ph.D.
Senior Doctor of Cardiovascular Surgery - MUDr. Roman Gebauer
Head Nurse - Jana Matušíková

Basic description:

Children's Heart Centre, 2nd Faculty of Medicine, Charles University and the Motol University Hospital (Children's Heart Centre) is the only comprehensive cardiovascular centre for children in the Czech Republic caring for children nationwide. The centre focuses mainly on diagnostics and treatment of congenital heart defects in children and cooperates with other facilities in treating adult patients with congenital heart defects. The preference of non-invasive diagnostic procedures (ECHO, MRI, CT) and primary correction of defects at an early age is typical for this site. **In 2020, 447 surgeries (of which 4 heart transplantations) were performed, 16 ligation procedures for patent ductus arteriosus for newborns with low birth weight were performed at different sites, 343 catheterizations were performed (of which 261 were intervention proce-**

dures), 870 patients were hospitalized (+730 accompanying persons) and 3916 patients were treated in the outpatient service. These numbers signify only a slight drop in the number of procedures and hospital admissions, despite the complicated epidemiological situation related to the Covid-19 pandemic and the restrictions to planned care and ongoing staff shortages, especially in the segment of non-medical health workers.

The department takes part in a unique international quality control system for paediatric cardiac surgery within the European Congenital Heart Surgeons Association (ECHSA) database, which collects data on hundreds of thousands of operations from around the world and monitors early mortality as related to the complexity of the surgery. In this comparison, the Children's Cardiac Centre had an excellent early mortality rate of just 0.8% for the period 2012-2018.

Unfortunately, due to the Covid-19 pandemic, no foreign humanitarian and development mission could be organized in 2020. The agreement on cooperation in the surgical and cardiological treatment of paediatric patients with heart disease, concluded in 2017 with the University Hospital in Ljubljana, was also fulfilled in the form of regular trips by cardiac surgeons from the Children's Heart Centre (CHC) to Slovenia and by the surgical and catheterization treatment of more complex cases at the CHC at MUH. 45 patients were operated on by our cardiac surgeons during 11 trips to Slovenia in 2020.

Specialized outpatient units:

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

New methods and procedures:

- The programme of long-term implantable mechanical heart support continues - since 2014 it has been used in 6 patients with terminal heart failure, all of whom were successfully transplanted.
- Heart transplantation in children - a total of 21 paediatric patients have had transplants since the programme was introduced in 2014 (4 patients in 2020). So far, the 5-year survival rate after transplantation is 95%;
- The programme for tracheoplasty for congenital trachea malformations in cooperation with the tracheal team of the MUH (since 2016).
- The programme for the molecular and genetic examination of families with hereditary arrhythmias and cardiomyopathies using the new generation sequencing method (NGS) in cooperation with Department of Biology and Medical Genetics, 2nd Faculty of Medicine, Charles University and MUH
- The programme of minimally invasive cardiac surgery was expanded in 2020 to include surgery of ventricular septal defects using a minimally invasive approach;
- The foetal intervention programme for congenital heart disease in collaboration with the Department of Pediatric Cardiology at the Kepler University Hospital in Linz. So far, 10 patients with congenital critical aortic stenosis have been treated with a 90% survival rate (1 foetal death during a foetal intervention).

Unique equipment:

- Rotaflow centrifugal pump for ECMO and short-term mechanical cardiac support
- The GE Vivid E95 ultrasound machine

Major events in 2020:

- Continuing participation of the Children's Heart Centre as a member of the European Reference Network GuardHeart focusing on hereditary arrhythmias and cardiomyopathies;
- IGA grant no. 15-28029A defended: Resynchronization of failing subpulmonary right ventricle in congenital heart defects, 2015-2019, principal researcher prof. Jan Janoušek, MD. Grade A, shortlisted for the Minister of Health Award.
- 9 articles in international journals with an impact factor:
  - 1. Kovanda J, Ložek M, Ono S, Kubuš P, Tomek V, Janoušek J. Left ventricular apical pacing in children: feasibility and long-term effect on ventricular function. Europace. 2020 Feb 1;22(2):306-313. doi: 10.1093/europace/euz325. PMID: 31808515. IF 4.0
  - 2. Escudero CA, Ceresnak SR, Collins KK, Pass RH, Aziz PF, Blaufox AD, Ortega MC, Cannon BC, Cohen MI, Dechert BE, Dubin AM, Motonaga KS, Epstein MR, Erickson CC, Fishberger SB, Gates GJ, Capone CA, Nappo L, Kertesz NJ, Kim JJ, Valdes SO, Kubuš P, Law IH, Maldonado J, Moore JP, Perry JC, Sanatani S, Seslar SP, Shetty I, Zimmerman FJ, Skinner JR, Marcondes L, Stephenson EA, Asakai H, Tanel RE, Uzun O, Etheridge SP, Janson CM. Loss of ventricular preexcitation during noninvasive testing does not exclude high-risk accessory pathways: A multicenter study of WPW in children. Heart Rhythm. 2020 Oct;17(10):1729-1737. doi:10.1016/j.hrthm.2020.05.035. Epub 2020 Jun 1. PMID: 32497761. IF 5.7.
  - 3. Riedlbauchová L, Adla T, Suchánek V, Ložek M, Tomis J, Hozman J, Tomek V, Veselka J, Janoušek J. Is left bundle branch block pattern on the ECG caused by variable ventricular activation sequence? Pacing Clin Electrophysiol. 2020 May;43(5):486-494. doi: 10.1111/pace.13914. Epub 2020 Apr 28. PMID: 32270513. IF 4.0
  - 4. David J, Rohanova M, Koubsky K, Gebauer R, Malcova H, Koukolska V, Stara V, Kollar M, Fencl F, Zieg J. Case report: Anti-neutrophil Cytoplasmic Antibody-Associated Vasculitis Involving the Aortic Valve in a Twelve-year-old Girl. Clin Paediatr. 2020 Jun 18. English. doi: 10.1055/a-1183-4785. Epub ahead of print. PMID: 32557504. IF 0.8.
  - 5. Krause U, Paul T, Bella PD, Gulletta S, Gebauer RA, Paech C, Kubus P, Janousek J, Ferrari P, De Filippo P. Pediatric catheter ablation at the beginning of the 21st century: results from the European Multicentre Paediatric Catheter Ablation Registry ‚EUROPA'. Europace. 2020 Nov 23:euaa325. doi:10.1093/europace/euaa325. Epub ahead of print. PMID: 33227133. IF 4.0
  - 6. Poruban R, Materna O, Gebauer R. Isolation of the right subclavian artery. mini--invasive repair. Rev Esp Cardiol (Engl Ed). 2020 Feb;73(2):169. English, Spanish. doi: 10.1016/j.rec.2018.11.007. Epub 2019 Apr 15. PMID: 31000469. IF 4.6.
  - 7. Marek J, Janoušek J, Tůma S. Eulogy: Professor Milan Šamánek, DrSc, FESC (*09.05.1931 †29.04.2020) - legend from the East. Cardiol Young. 2020 Sep;30(9):1374-1375. doi: 10.1017/S1047951120001547. Epub 2020 Jun 9. PMID: 32513330. IF 0.8.
  - 8. Fabian O, Gebauer R, Tomek V, Hornofova L, Havova M, Materna O, Janousek J. Spectrum of postmortem autopsy findings in native and surgically corrected hearts with congenital malformations: a 10-year single-centre experience. Cardiovasc Pathol. 2020 Nov 12;51:107309. doi: 10.1016/j.carpath.2020.107309. Epub ahead of print. PMID: 33189923. IF 1.75.
  - 9. Koubský K, Tláskal T, Chaloupecký V, Janoušek J. How many types of circulation can a boy have during his life? A case of aortic stenosis with a borderline left ventricle. ESC Heart Fail. 2020 Dec 9. doi: 10.1002/ehf2.13134. Epub ahead of print. PMID: 33295691. IF 4.0
- 7 papers in peer-reviewed journals

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

Head - prof. MUDr. Michal Hrdlička, CSc.
Senior Doctor 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 childhood autism, eating disorders, psychotic disorders, and suicidal behaviour in children and adolescents. The department also operates as a pre- and postgraduate educational institution. **A total of 5,714 inpatient procedures and 2,031 medical consultations were carried out and 487 patients were hospitalized at the inpatient section in 2020.** With regards to the epidemiological situation associated with the Covid-19 pandemic and its impact on the mental state of the population in the CR, the number of psychiatric examinations of children and adolescents in the MUH emergency room and the number of acute (unplanned) admissions increased significantly.

Specialized outpatient units and centres:

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

New methods and procedures:

- Use of the Autism Diagnostic Observation Schedule (ADOS) as the gold standard method for diagnosing autism spectrum disorders.
- Research on the importance of maternal autoantibodies in the development of autism spectrum disorders supported by grant AZV NV 18-04-00085 in collaboration with the Institute of Physiology of the CAS (co-researcher doc. MUDr. Iva Dudová, Ph.D).
- Research on early markers for bipolar affective disorder in high-risk offspring supported by grant AZV 17-32478A in collaboration with the National Institute of Mental Health (researcher MUDr. Michal Goetz, Ph.D.)
- Comprehensive therapy and research of eating disorders, the department's activities have national significance in this field.
- The significance of diagnostics and comprehensive therapy of psychotic conditions also exceeds the regional level.

Unique equipment:

- Thymatron DG device for electroconvulsive therapy

Major events in 2020:

- Grant AZV 16-31754A focused on the use of modern imaging methods when researching social and language deficits in neurodevelopmental disorders (researcher prof. MUDr. Michal Hrdlička, CSc.), it was rated "excellent project results with international significance".
- A book was published by prof. Michal Hrdlicka, MD CSc. "Myths and Facts about Autism", 1st ed., Prague, Portál 2020.

- Publications with IF:
  - Dudova, I., Horackova, K., Hrdlicka, M., Balastik, M.: Can maternal autoantibodies play an etiological role in ASD development? Neuropsychiatr. Dis. Treat., 16, 2020, s.1391 - 1398. /IF 2.157
  - Larsen, A., Lilja, M., Sturidsson, K., Blatny, M., Hrdlicka, M., Stickley, A., Ruchkin, V.: Bulimiasymptoms in Czech youth: Prevalence and associations with internalizing problems. Eat. Weight Disord.,25, 2020, No.6, pp. 1543 - 1552. IF 3.634.
  - Blatny, M., Vaclavikova, I., Selecka, L., Demuthova, S., Hrdlicka, M.: The predictive importance of selected protective factors against different types of antisocial behavior manifested by adolescent boys and girls. Studia Psychol., 62, 2020, No.2, pp.138 – 147. /IF 0.537

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

Head - prof. MUDr. Jan Starý, DrSc.
Senior Doctor MUDr. Vladimír Komrska
Senior Doctor MUDr. Vratislav Šmelhaus
Head Nurse - Bc. Jitka Wintnerová

Basic description:

The department focuses on diagnostics, treatment and research of tumorous diseases in children, benign blood disorders, such as anaemias, bleeding disorders and congenital coagulation disorders (haemophilia). Allogeneic and autologous transplantation of hemopoietic stem cells in the treatment of high-risk leukaemia, selected solid tumours, congenital immunity disorders and metabolic defects is carried out at the transplantation unit.
In 2020, there were 23,236 examinations and treatments made in outpatient clinics. A total of 3,014 cancer patients and 2,214 non-cancer patients were treated. 168 children with malign solid tumours, 33 children with leukaemia and myelodysplastic syndrome, 385 patients with benign tumours and 1,046 children with non-tumorous diseases were newly diagnosed. The total number of hospitalized patients was 2,741 with 1,850 accompanying persons.
30 allogeneic bone marrow transplantations were carried out, of which 26 patients received bone marrow from unrelated donors from registers, 4 from identical siblings, and 15 patients received autologous grafts.

Specialized outpatient units:

- oncology outpatient unit
- outpatient unit for late consequences
- outpatient unit for haemangiomas and lymphangiomas
- outpatient unit for CNS tumours
- outpatient unit for LCH
- haematologic outpatient unit
- haematologic day-care 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 staff at the Clinic‘s Laboratory Centre introduced a new genomic method, the SNP methylation array, into the routine testing scheme for brain tumours and sarcomas. Whole-exome sequencing and whole-transcriptome RNA sequencing methods were also newly introduced for primary prognostically unfavourable and relapsed solid tumours.
- The isolation of free circulating DNA (liquid biopsy) was introduced in patients with solid tumours.
- A cytometric diagnostic method for patients with severe combined immunodeficiency was developed and validated in the framework of the international EuroFlow consortium.
- A Cytek Aurora spectral cytometer was purchased to increase the number of parameters analysed from each cell and to serve mainly for research projects investigating haematopoietic disorders.

Major events in 2020:

- Professor Jan Zuna received the Minister of Health Award for Research.
- MUDr. Markéta Kubričanová Žaliová won the Czech Society of Haematology Award for the best publication.

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

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

Basic description:

The Department of Paediatric Surgery is a leading European site for paediatric surgery, providing comprehensive diagnostic and therapeutic care for children from immature newborns to adolescents. The department’s specializations (surgery for newborns, chest surgery, surgical oncology, proctology, urology, surgery of liver and bile ducts, congenital developmental defects and polytraumas in children) provide care for young patients from the entire CR and for patients from abroad through the process of medical consultation. The Department of Paediatric Surgery has the highest accreditation for specialisation training in the field of paediatric surgery in the CR and is the only department in the CR with European UEMS accreditation for specialisation training in paediatric surgery.
A total of 2,522 patients were hospitalized at the department, of which 211 newborns and infants were hospitalized at the surgical intensive care unit for newborns in 2020. Surgeries were performed on 1,816 children. In all 10,482 children were treated in specialised outpatient clinics and 4,080 children were treated in the paediatric surgical emergency room.

Specialized outpatient units:

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

New methods and procedures:

- A unique operation in a patient with pseudo-obstruction syndrome - continent flap vesicostomy from the MM wall with a new modification of VQZ plasty;
- A newly introduced modality of non-invasive ventilatory support using the high--flow cannula technique;
- programme for robotic pyeloplasty in children in cooperation with the Urology Clinic of the 2nd Faculty of Medicine, Charles University and MUH

- Extended spectrum of minimally invasive surgery:
  - laparoscopic pyloromyotomy
  - operations using the SINGLE PORT technique (appendectomies, cholecystectomies, IC resections)
  - surgery of inguinal hernia using the PIRS method
  - surgery of pilonidal sinus using the PEPSIT method
  - laparoscopically assisted ileocecal resection in children with Crohn's disease
  - laparoscopically assisted proctocolectomy with ileal pouch
  - laparoscopic assisted subtotal colectomy
- The Wound Healing treatment programme was launched in the hospital's paediatric section.

Unique equipment:

- a set of mini surgical instruments for thoracoscopic and laparoscopic operations on the smallest children (newborns, infants)
- equipment for minimally invasive surgery with 3D imaging (B. Braun)
- advanced electrocoagulation systems (Harmonic scalpel - HARHD36 new type, Ligasure, Voyant)
- Duet Encompass device – modern video equipment for urology and EMG of the pelvic floor with simultaneous interconnection to X-ray devices
- cystoscope with endoresector for the smallest children allowing minimally invasive surgery in small children (by Olympus/ Wolf)
- mobile pumps for children using home parenteral nutrition (by B Braun)
- mobile pumps for home enteral nutrition (by Nutricie)
- laparoscopic simulator for training and simulating minimally invasive operations

Major events in 2020:

- The Department of Paediatric Surgery held an international workshop on "Proximal Hypospadias" in January 2020, led by Prof Cuckow from Great Ormond Street Hospital UK.
- The Department of Paediatric Surgery launched the e-learning course „Clean Intermittent Catheterisation in Children" and „Balloon Enema in Children" - educational videos for children and parents (in cooperation with the company B.Braun, which finances the project, and the paediatric urology team of the VUH Urology Clinic).
- MUDr. V. Dotlačil obtained grant GA UK (512120): „Determining tissue levels of anti TNF alpha class biologics in the intestinal mucosa of children with Crohn's disease undergoing biological therapy".
- In 2020 B. Frýbová/Kučerová, MD Ph.D. received the award for the best article in the professional journal Rozhledy v chirurgii for 2019: "Extraperiotoneal Splenic Fixation is a Suitable Solution for Errant Spleen in Children and Adolescents".
- Specialization training: 3 young doctors continue in the residency programme „Paediatric Surgery", 4 nurses have successfully completed their specialization studies in the field: „Nursing Care in Paediatrics" and one nurse successfully completed her university studies in „General Nursing".
- Scientific activities and publications:
- 8 publications in a foreign magazine with IF
- 7 chapters in a professional medical book
- 1 publication in a Czech magazine
- 14 expert lectures

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

Head - prof. MUDr. Pavel Kršek, Ph.D.
Senior Doctor MUDr. Věra Sebroňová,
Head Nurse - Gabriela Pavlová

Basic description:

The Department of Paediatric Neurology (DPN) is a reference consultation site for all neurological diagnoses in children throughout the CR and provides care for patients from abroad in certain diagnostic and therapeutic programmes (such as surgical treatment of epilepsy). We have two fully reconstructed inpatient units with a total of 40 bed, including 6 beds for lower level of intensive care and 6 beds with video/EEG and polygraphic monitoring. The department includes a polyclinic with the following specialized outpatient clinics, a fully equipped Electrophysiology Laboratory and a Neurogenetics Laboratory offering molecular genetic diagnostics for some neurological diseases of childhood. The DPN is also a pregraduate and postgraduate educational institute and a scientific and research centre involved in many interdisciplinary and international projects. **In 2020, the department had a total of 1,076 hospitalized children with a total number of hospitalization accounts of 1,349. A total of 19,311 outpatient examinations were performed on 7,036 patients (unique personal ID numbers). The Electrophysiology Laboratory carried out 5,276 procedures, of which 3,243 were EEG, 470 EMGs, 1,196 EPs and 263 long-term video/EEGs and 104 polygraphs. 30 resection surgeries, 7 long-term intracranial video/EEG studies and 5 primo-implantations of a vagus nerve stimulator were performed under the epilepsy surgery programme.**

Specialized outpatient units:

- epileptological advisory centre
- outpatient unit for sleep disorders in children
- outpatient unit for high-risk newborns and infants
- advisory centre for neuromuscular diseases
- outpatient unit for botulinum toxin application
- advisory centre for neurocutaneous disorders
- advisory centre for inflammatory and demyelinating diseases
- neuro-oncology outpatient unit
- neuro-genetic outpatient unit
- outpatient unit for hereditary neurometabolic and neurodegenerative diseases
- psychological and neuropsychological advisory centre

Centres with international certification:

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

Centres recognized by the Ministry of Health CR/Czech Medical Association of J. E. Purkyně/other:

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

New methods and procedures:

- Introduction of gene therapy for spinal muscular atrophy (SMA). In the framework of a specific treatment programme, we were the first workplace in the CR to treat 2 patients with SMA with Zolgensma (onasemnogene abeparvovec). Once this drug was registered in Europe in May 2020, a standard SMA gene therapy programme was set up in our country.
- Introducing another innovative SMA therapy. As part of a specific treatment programme, we introduced therapy for children with spinal muscular atrophy using Evrysdi (risdiplam). It is a drug that modifies mRNA transcription, however, unlike the previously available treatment with nusinersen (Spinraza), it can be administered orally
- The introduction of somatic variant detection in epilepsy surgery patients with developmental disorders in the cerebral cortex. In collaboration with the Institute of Pathology and Molecular Medicine of the SFM CU and MUH, we introduced a method for deep sequencing brain tissue taken from epilepsy surgery patients with cortical malformations. It makes it possible to find the cause of the disease and better target these patients' treatment.

Major events in 2020:

- In 2020, the team, led by Dr. Laššuthová, received the Minister of Health Award for Medical Research and Development for working on grant AZV 16-30206 "Whole Genome and RNA Massively Parallel Sequencing as a Tool for Elucidating the Causes of Rare Types of Hereditary Neuropathies".
- Dr. Beňová received the Josef Hlávka Award, which is intended for talented students in bachelor's, master's or doctoral studies who have demonstrated exceptional ability and creative thinking in their field.
- MUDr. Vilém Novák (a Ph.D. student of prof. Krška) won the Jan Marek Marci Prize awarded by the Czech League Against Epilepsy for the best epileptological publication (Novák et al., Generalized quasiperiodic epileptiform activity in sleep is associated with cognitive impairment in children with drug-resistant focal lesional epilepsy. Epilepsia, 2019).
- In 2020, 3 PhD students at our department successfully completed their doctoral studies: MUDr. Vilém Novák, MUDr. Róbert Leško and Ing. David Staněk.
- In 2020, Dr. Petra Laššuthová's team started work on two new grant projects: NU20-04-00279 (Diagnosis and Discovery of New Causes in Previously Unresolved Patients Using a Combination of Omics Tools); 8F20002 (European Network on Inherited Sensory Neuropathies and Insensitivity to Pain).

- In 2020, the team led by Dr. Jana Haberlova took part in 4 clinical trials of experimental treatments for neuromuscular diseases (PTC STRIDE - DMD th Translarna; SRP - 4045, 4053 - DMD, th exon skipping; VBP15-004 - DMD, a new type of anti--inflammatory drug) and in two European grants (VISION DMD - Development of a New Type of Anti-inflammatory Drug for DMD; COST project CA 17103 - Delivery of Antisense RNA Therapeutics).

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

Head - MUDr. Jiří Skřivan, CSc.
Senior Doctor MUDr. Michal Jurovčík
Head Nurse - Adriana Laudátová

Basic description:

The facility focuses on diagnostics and conservative and surgical treatment of ENT diseases in paediatric patients from birth to 18 years of age. The department operates as a medical consultation facility, providing care for children with poorly diagnosable or treatable diseases from all over the CR. The Centre for Cochlear Implants for Children (CCIC) operates within the phoniatric part of the department. The department arranges surgeries on newborns with facial cleft with interdisciplinary cooperation as one of the two facilities of this kind in the CR. The facility is part of the laryngotracheal centre at MUH and holds the title of Implantation Centre 2 at MUH.
In 2020, there was a reduction in the number of procedures and hospital admissions due to the coronavirus crisis. A total of 1,695 operations were performed and 1,733 patients were admitted.
The Department of Phoniatrics and the Centre for Cochlear Implants in Children is part of the ENT department. It is headed by MUDr. Petr Myška. At the department, we not only perform diagnostics, but also provide aftercare and rehabilitation. The department focuses mainly on nationwide care for patients with severe hearing impairment. The CCIC arranges examination of children, prosthetic care (prior to implantation) with the subsequent rehabilitation (even after implantation). Besides physicians and clinical speech therapists, clinical psychologists are also involved in the work of the CCIC (they are organized under the Department of Clinical Psychologists of the MUH, where they report their activities) and clinical engineers (contracts for work).
In 2020, a total of 2,070 examinations were performed in the outpatient clinics of phoniatrists and 2,310 examinations were performed in the outpatient clinics of clinical speech therapists.
We use the Interacoustics Eclipse device to investigate auditory evoked potentials. This allows us to investigate the auditory threshold using the SSEP/ASSR method as well as to perform a BERA examination. These examinations are made under sedation or general anaesthesia.
The clinic's oncology team, led by MUDr.Rami Katra, together with the Oncology Clinic and the Imaging Methods Clinic, specializes in the comprehensive treatment of childhood cancers, both benign and malignant (lymphangiomas, rhabdomyosarcomas, juvenile angiofibromas)

Specialized outpatient units:

- otosurgical outpatient unit
- audiology outpatient unit
- outpatient unit assessing candidates for cochlear implants and rehabilitation centre after cochlear implantation and after bone conduction implantation (BCI)
- outpatient unit for addressing developmental defects in the neck and head
- outpatient unit for monitoring nodular swelling
- phoniatrics outpatient unit

- thyroidology outpatient unit
- outpatient unit for treating lymphangiomas and hemangiomas of the head and neck
- outpatient unit for GERD diagnostics
- somnology outpatient unit
- outpatient unit of plastic surgery

New methods and procedures:

- Addressing choana atresia using a BD stent;
- Application of a BD stent in the upper respiratory tract in children;
- Laryngotracheal reconstruction, Monnier, Montgomery stents
- Application of the Baha Attract /Connect and BoneBridge implants in clinical practice;
- Sleep monitoring in people with apnoea (PSG);
- New hearing diagnostic method based on DPOAE – CochleaScann and using bone (BC) module in the SSEP measuring technology;
- Programme for early surgery of cleft defects in newborns, timely detection and study of the demonstrations of secretory otitis in patient with a cleft;
- Introduction of a wireless device for automatic perioperative measurement of impedance and NRT in Nucleus cochlear implants;
- Setting up a multidisciplinary working group for complex surgical and conservative treatment for lymphangiomas and haemangiomas of the head and neck; its members include an otolaryngologist, oncologist, radiologist, possibly also a neurologist, ophthalmologist and stoma surgeon.
- Introduction of balloon dilations of tracheal stenosis;
- Introduction of plasma coblation as an alternative solution to traditional procedures (ToT AT) and others
- Detection and monitoring of patients with vertigo related to cochlear implantation.

Unique equipment:

- plasma generator – plasma coblation
- Aeris balloon catheter – used for gentler dilation of stenosis of the respiratory tract in children
- 24 h pH impedance meter
- micro instruments for laryngeal surgery in children
- micro instruments for FESS in children
- 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 – gently tissue preparation, UZ principle, low temperatures
- EndoCameleon – optics with variable angle
- shaver – microdebrider, technique suitable in laryngeal microsurgery and rhinology
- three-channel perioperative monitor of peripheral nerves NeuroStim 3
- VEMP module

Major events in 2020:

- Successful defence of the ongoing project Institutional Support for Research Organizations, MUH 6024 for the year 2020: „Improving accurate diagnosis and comprehensive rehabilitation for children with severe congenital and acquired hearing loss“ (MUDr. Jurovčík); Implantation Training Academy at the Tashkent Paediatric Medical Institute, Uzbekistan (Prof. Shavkat Yergashevich Amonov); repeated visits, hands on ear surgery and cochlear implantation;
- Publications:
  - Jurovčík M.: The Issue of ENT and the Premature Infant, chapter in monograph Marková D., Chvílová Weberová M.: Prematurely born baby, follow-up care - when it starts and when it ends, Grada 2020, pp. 281-293, ISBN 978-80-271-1745-1;
  - Jurovčík M.: Phytotherapy (not only) in paediatrics, Pediatr.praxi 2020; (Suppl B):6-9;
  - Jurovčík M., Gernertová L., Dytrych P., Bodláková M., Katra R., Skřivan J.: Foreign bodies in the swallowing tract in children, Čes.slov Pediat. 2020; 75(2), 52-57;
  - Jurovčík M., Borský J., Dytrych P., Černý M., Velemínská J., Jaklová L., Kotaška K., Hanousková L., Skřivan J.: First signs of secretory otitis in newborns operated for cleft defect - detection in a 10-year cohort. Otolaryngol Foniatr, 69, 2020, No.2. pp.55-60;
  - Murgašová L., Jurovčík M., Ješina P., Malinová V., Bloomfield M., Zeman J., Magner M.: Otorhinolaryngological manifestations in 61 patients with mucopolysaccharidosis, International Journal of Pediatric Otolaryngology 135 (2020) 110137;
  - Jaklová L., Borský J., Jurovčík M., Hoffmannová E., Černý M., Dupej J., Velemínská J.: Three-dimensional development of the palate in bilateral orofacial cleft newborns 1 year after early neonatal cheiloplasty: classic and geometric morphometric evaluation; Journal of Cranio-Maxillofacial Surgery 2020, Apr;48(4):383-390.doi: 10.1016/j.jcms.2020.02.019 IF 2.030.

Common Inpatient Sites of Paediatric and Adult Parts

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

Head - doc. MUDr. Tomáš Vymazal, Ph.D.
Senior Doctor for the adult section MUDr. Radka Klozová
Senior Doctor for the children's section MUDr. Jana Pavlíčková
Head Nurse for the adult section Taťána Maňasová
Head Nurse for the children's section Mgr. Ing. Lenka Malíková

Basic description:

The department provides anaesthesiology and resuscitation care in the paediatric and adult parts of the hospital in accordance with the needs and requirements of the MUH. As regards the number of physicians and other employees, as well as the extent of medical activities provided, our department is the largest facility of its kind in the CR. The department ensures specialized care for medical facilities of a lower level throughout the CR upon request. It is the managing and coordinating facility for postgraduate education of physicians and nurses and ensures tuition for anaesthesiologists and physicians with other specializations. The facility has been repeatedly granted type II accreditation. The head was re-elected to the position of chair of the Accreditation Commission at the Ministry of Health of the Czech Republic. KARIM provides tuition to students of medicine and students in bachelor's programmes at the SFM CU in the range of more than 1100 hours/year and in the framework of international educational and research projects **In 2020, there were 1,308 patients hospitalized in the clinic's acute beds, of whom 819 were adults and 489 were children. at the beginning of the year the FIC/LINC station was converted to 20-bed COVID unit with the necessary organ support. 139 patients were hospitalized in 2020.** With regards to the epidemiological situation, the medical and economic demands of these patients have increased dramatically. **In 2020, anaesthesia was administered to 31,888 patients, of which 10,311 were children.** All procedures and hospital admissions were managed with the current number of staff.

New methods and procedures:

- In 2020, the MUH ECMO centre for adult and paediatric patients expanded significantly; KARIM is the coordinating facility. This support was provided to 54 patients.
- Thanks to the unique PFA instrument for functional thrombocyte analysis - part of the robust research implanted at the clinic - we provide this service to all MUH departments.
- Routine technology HighFlow Oxygen Therapy in the care for patients under resuscitation care with failing respiration has become the basic procedure when caring for covid patients;
- Expanding the activities of the Simulation Medicine Laboratory - we train doctors and nurses at MUH and organize elective courses for undergraduate students;
- In 2020, 103 long-term paediatric peripheral catheters - PICCs - were introduced, which is practically double that of 2019;
- In cooperation with the Department of Surgery of the Second Faculty of Medicine, Charles University and MUH, it set up the consistent application of ERAS procedures in large abdominal procedures with a clear impact on the quality of hospital admissions including publication of the results in the form of papers and workshops;
- In 2020, 33 lung transplant patients were admitted, the greater half with ECMO organ support.

- Routine use of sonography in US guided vascular punctures and regional nerve block techniques in adults and children;
- Wide use of electrocardiography in patients undergoing cardio-surgery and other procedures, including lung transplantation.
- Routine use of the Target Temperature Management technology - targeted cooling in patients after circulation failure;
- Routine bedside coagulation examination – TEG, ROTEM for early diagnosis of coagulopathy, changes in the management of bleeding disorders with significant savings of blood derivatives; financial savings in hundreds of thousands CZK per year, procedures also implemented in the internal rules of the MUH;
- Ongoing modernization of the equipment in anaesthesiology theatres, including the use of the latest anaesthetics;
- Use of sonography for early diagnosis of bleeding into cavities in traumatized patients;
- Use of the latest video laryngoscopic techniques in the case of difficult intubation, including disposable intubation aids and instruments;
- Use of combined neuroaxial blocks in large joint replacements (hip, knee), including training for staff at specialized facilities;
- Use of peripheral blocks in US navigated paediatric and adult patients;
- Routine use of the available reliable reversal of the neuromuscular block following 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 2020:

- KARIM has 2 ongoing grants (TAČR and MUH), 2 local academic studies (both approved by the Ethics Committee of MUH) and 3 multicentre international studies organized by the ESA (European Society of Anaesthesiology).
- Defending the dissertation of 1 colleague and obtaining a Ph.D;
- Organizing pre-attestation and the core course including relevant examinations;
- 3 books with chapters written by the clinic's doctors were published.
- Extension of the technology for electronic documentation at paediatric resuscitation beds
- A total of 9 studies were published in peer-reviewed and impact magazines and in book chapters
- Edited and published scripts for medics.

The clinic includes:

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

Senior Doctor MUDr. Kateřina Čadová
Head nurse Mgr. Soňa Hájková
This department was used as a CoVID unit in 2020.

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 - Kateřina Míková

The department includes the Department of Rehabilitation, Spinal Unit, Department of Sports Medicine and Department of Pain Research and Treatment.

1st Department of Rehabilitation

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

Basic description:

The Department of rehabilitation provides physiotherapy and therapeutic rehabilitation to adults and children throughout the entire spectrum of medical specializations. 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 department also has a section for acute inpatient rehabilitation care. **During 2020, a total of 567 patients were hospitalized in the adult inpatient section of the clinic, 209 patients were hospitalized in the children's inpatient section, a total of 8,526 patients were treated in the outpatient section, and we provided rehabilitation care to 12,798 patients from other departments.**

Specifics of the facility:

Respiratory physiotherapy is one of the department's dominating activities. We are now gaining experience from respiratory physiotherapy for patients with COVID-19 and we are accepting patients with post-covid syndrome for rehabilitation in our adult inpatient unit. Additional specific procedures include the treatment of spasticity, including the application of botulinum toxin, therapy of pelvic floor defects, therapy of vestibular defects, visceral rehabilitation, therapy and diagnosis of swallowing disorders, lymphological programme, etc.
Other specialized programmes are also implemented at the department. Serious forms of cerebral palsy are assessed at interdisciplinary seminars with a consultation character (for patients up to 18 and separately for adults from the entire CR).
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 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.
2 years ago, a specialised outpatient clinic was established for adult and paediatric patients following surgery for congenital heart disease, and this programme has successfully got going. A new children's inpatient acute rehabilitation ward with a capacity of 16 beds was also opened, and a doctoral programme in Kinesiology and Rehabilitation has been running successfully for the second year in the framework of the educational section.

New methods and procedures:

- Forming cooperation with the Neurological Clinic of the SFM CU and MUH in testing adult patients with SMA - for the application of Spinraza and in caring for patients with ALS - targeted respiratory physiotherapy;
- Functional electric stimulation for patients with central paresis using a neurostimulator of the peroneal nerve. Last year we also acquired a device for functional electrical stimulation of the upper limb.
- Examination and therapy of standing and walking disorders on a dynamic path with integrated pressure sensors and virtual feedback;
- Use of instruments with biofeedback in patients with stool incontinence - now biofeedback is also offered for use in home therapy. A similar programme for children with pelvic floor disorders.
- Running e-learning training in rehabilitation nursing, a spinal pain prevention programme and ergonomic patient handling.
- A coherent rehabilitation programme for children suffering from haematological diseases and a system of caring for premature babies is being developed.
- Standardized testing of children with walk tests (time up and go test, 6-minute walk test);
- Standardized gross motor testing for DMO patients using the GMFM (Gross Motor Function Measure) questionnaire has recently been introduced.
- Snoezelen - a therapeutic multisensory room;
- Educational leaflets were created for paediatric cancer patients: for patients with posterior fossa tumours, osteosarcomas and for the transplant unit.
- Developing the issue of pulmonary rehabilitation in COVID-19 patients;
- Significant effort has been devoted to the transition to hybrid teaching as a result of COVID.

Unique equipment:

- OMNIHi5 - functional electrical stimulation of the upper limb
- Simeox for the children's section - used for decongesting the airways
- functional electrical stimulation to stimulate the n. peroneus in patients with „drop foot"
- dynamic path with integrated pressure sensors and virtual reality
- training machine for training hand function
- Balance Master device for therapy of stability disorders and vertigo conditions
- "X box" device and "Wii" system for training stability and coordination skills in children
- myofeedback and biofeedback for electrical stimulation of the pelvic floor muscles
- a new sonographic device for navigating botulinum toxin application in the therapy of spastic patients with a high-frequency head and a shear-wave elastography probe
- Dolosys pain tester.

Major events in 2020:

- Important publications by some workers in foreign impacted journals dealing with respiratory physiotherapy, spinal issues, the treatment of neurological diseases (e.g. in Journal of Neurology, Spinal Cord);
- Creating on-line seminars in the Czech Republic or abroad (e.g. seminar on vestibular rehabilitation, and Dynamic Neuromuscular Stabilization);
- The academic staff take an active part in professional conferences in the Czech Republic and abroad (on-line or in person).

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

Head - prof. PaedDr. Pavel Kolář, Ph.D.
Senior Doctor doc. MUDr. Jiří Kříž, Ph.D.
Head Nurse - Hana Jirků

Basic description:

The spinal unit ensures therapeutic and rehabilitation care for patients in post-acute stage after spinal injuries and for patients in the chronic stage after spinal injuries, who are experiencing serious health complications.
In 2020, 70 patients with acute spinal lesion and 28 spinal patients at the chronic stage with acute complications were hospitalized, approx. 250 patients were treated in the outpatient unit as part of follow-up or due to newly developed health problems.

New methods and procedures:

- Continued work on the project "Options of clinical use of restoration of reflexes and mobility during the period of spinal shock" for the period 2015-2017;
- Continued work on the European project "European Multicentre Study about Spinal Cord Inury (EMSCI)". IFP 2001/P 66;
- Continued work on the European grant project "Antibodies against Nogo-A to enhance regeneration and functional recovery after acute spinal cord injury, a multicentre European clinical proof of concept trial". H2020, PHC 15-2015;
- In cooperation with the Paraple Centre, launch of the project „Managing Sleep Apnoea in People with Spinal Cord Injury, Treatment Options with Oral Correctors";
- In cooperation with FBMI CTU, launching the project "Designing and Developing a Method to Prevent Autonomic Dysreflexia in Individuals Following Spinal Cord Injury".

Unique equipment:

- CoughAssist device for supporting cough in patients with neck spinal lesion (gift from the "Nadace Pohyb bez pomoci" foundation)
- Pony FX device for spirometry examination of lesions (gift from the "Nadace Pohyb bez pomoci" foundation)
- Misonic SonicOne device for removing necrotic material and devitalized tissue from skin defects (gift from the "Nadace Pohyb bez pomoci" foundation)
- Finapres NOVA device for assessing defects of the autonomous nervous system (subsidy from the Ministry of Health, CR)
- ABPM device – pressure Holter monitor (gift from the "Nadace Pohyb bez pomoci" foundation)
- Conformat for a seated pressure map examination in individuals with spinal cord injury (donated by the "Pohyb bez pomoci" foundation)

Major events in 2020:

- The Spinal Unit contributed to organization of a seminar at the Paraple Centre on the occasion of the Day for Spinal Injuries held worldwide on the 5th September.
- The organization of a course in examining spinal patients, courses of physiotherapy for patients with spinal lesion, a course on intermittent catheterization, a wound healing course, were cancelled due to the coronavirus pandemic
- Major publications in Czech and foreign impact magazines:
  - Blasetti G, Pavese C, Maier DD, Weidner N, Rupp R, Abel R, Yorck BK, Kriz J, Curt A, Molinari M, Schubert M, Scivoletto G. Comparison of outcomes between people with and without central cord syndrome. Spinal Cord. 2020; 58(12): 1263-1273. IF 1.89.
  - Scivoletto G, Torre M, Mammone A, Maier D, Weidner N, Schubert M, Rupp R, Abel R, Kalke Y, Kriz J, Curt A, Molinari M. Acute traumatic and ischemic spinal cord injuries have a comparable course of recovery. Neurorehab Neural R. 2020; 34(8): 723-732. (IF 3.98)
  - Brouwers EMJR, Meent HV, Curt A, Maier DD, Abel RF, Weidner N, Rupp R, Kriz J, de Haan AFJ, Kramer JK, Hosman AJF, Bartels RHMA; EMSCI participants and investigators. Recovery after traumatic thoracic- and lumbar spinal cord injury: the neurological level of injury matters. Spinal Cord. 2020; 58(9): 980-987. IF 1.89.
  - Richtr P, Hoch J, Svobodová K, Jech Z, Kříž J, Hyšperská V, Štulík J, Marek B, Přikryl P. Hemicorporectomy - the ultimate solution of terminal pelvic sepsis. Acta Chir Belg. 2020 Feb 4:1-5;22(2):306-313. doi: 10.1080/00015458.2020.1722930. (IF 1.87)
  - Štulík J, Hoch J, Richtr P, Kříž J, Přikryl P, Kryl J. Hemicorporectomy as the highest level of en bloc resection of the sacrum. Acta Chir Orthop Traumatol Cech. 2020; 87(1): 52-57. (IF 0.456)

3. Department of Pain Research and Treatment

Senior Doctor MUDr. Jiří Kozák, Ph.D.
Head nurse Soňa Bašová

Basic description:

The Department for Pain Research and Treatment (DPRT) has a multidisciplinary character in the care for chronic painful conditions. It is one of the 8 neuromodulation centres in the CR, a pre-graduate and postgraduate teaching institution in pain management and neuromodulation techniques for IPVZ in pre-attestation courses, for teaching in the Master's programme of the Clinic of RHB and TVL 2. Faculty of Medicine, Charles University for the sixth time. The DPRT provides outpatient and inpatient care. The DPRT is a consultation facility for departments treating pain in the CR.**The number of outpatient treatments was 5,763, the number of patients admitted with chronic pain 99, the number of consultations 249 the number of single and continuous neuroaxial blockades 504 (epidural, caudal) Number of neuromodulation procedures: 16 direct implantations, replacing generators in the system, electrode modifications - revision of the neurostimulation system, explantation of the entire system.**

New methods and procedures:

- Multi-contact radiofrequency electrodes - catheters (Pasha type) with the option of continual introduction of an electrode for radiofrequency and with a catheter for drug administration have been introduced since 2015.
- Extension of radiofrequency methods and indications for RF (facet syndrome, nerve blocks , large joint areas)
- Nerve blocks guided by USG and neurostimulator;
- Pain testing using the Dolosys Pain Tracker;
- The neuromodulation programme continues: Peripheral nerve stimulation and spinal stimulation.
- The use of cannabis to treat pain
- Broadening the Capsaicin patch (Qutenza) application programme in neuropathic pain

Unique equipment:

- Pain Tracker - a testing device for assessing the RIII reflex
- 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 and monitoring neuromodulation methods

Major events in 2020:

- Postgraduate student in CLB, preparation of a publication with IF;
- Preparing the reprint of the book "Opioids" for 2021 (main author doc. Kozák);
- Creating CHOPIN, a registry of neuromodulation methods - coordination of NM centres;
- Publication in professional journals and publications in the CR;
- Taking part in e-learning - pain management chapters in EUNI;
- Active preparation of 3 scientific conferences in the CR in pain management - H. Králové, Ústí n/L., Brno postponed due to the epidemiological situation).

4. Department of Sports Medicine

Senior Doctor - doc. MUDr. Jiří Radvanský, CSc.

Basic description:

The Department of Sports Medicine is one of the department's outpatient units. It focuses mainly on functional diagnostics with at the regional level (in the case of congenital heart defects at the national level) and the subsequent mobility recommendations for patients from preschool children to seniors, targeted for example on patients with developed lifestyle diseases involving the metabolic syndrome or chronic respiratory diseases. The department conducts functional stress diagnostics of the circulatory system even in patients in wheelchairs using winch ergometry and spiroergometry, functional stress diagnostics as part of preoperative examinations before major elective and surgical procedures. The facility is the largest training centre for functional diagnostics under stress for the purposes of sports medicine and paediatric cardiac surgery in the country.
In 2020, a year significantly affected by the Covid-19 pandemic, an investigation was conducted in approximately 1,800 athletes during preventive sports check-ups and 1,900 patients with exertional problems, including patients returning to sport after having had Covid-19. 112 patients underwent controlled movement therapy and nutritional intervention was performed in 46 patients, individual online exercise in 14 patients.

New methods and procedures:

- Since 2018, we have further gradually introduced a determination of the speed of blood flow in the aorta under stress in patients with coarctation of the aorta and stress changes in circulation parameters detectable by echocardiograph in other patients after surgical correction of congenital heart defects.
- In cooperation with the Children's Cardiac Centre, the Cardiac Surgery Clinic for Adults and the Rehabilitation Clinic, we have introduced specialized physiotherapy in connection with modifying the exercise regime in patients with congenital heart defects after surgical correction in early childhood, rehabilitation in older children, adolescents and young adults.
- The department took part in developing and publishing the Recommended Procedure for a Return to Sport after Covid-19, which was approved by the professional society (Czech Society of Sports Medicine)
- An examination procedure and consultation for athletes after having had Covid-19 was started as part of the treatment and prevention activities.

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

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

Basic description:

The Department of Ophthalmology for Children and Adults provides comprehensive preventive diagnostics and therapeutic care to patients from birth to advanced age. In the field of paediatric ophthalmology, the clinic acts as a super-consultation centre in the region of the CR, providing consultation care to children and adults admitted to the MUH. The inpatient section is equipped with 25 beds. Part of the complement are operating theatres, organizationally falling under the Department of Central Operating Theatres, the outpatient clinics have operating theatres for minor surgical procedures and intravitreal injections. In 2020, the Covid 19 pandemic measures had a large impact on operations. The eye clinic provided inpatient shift nurses for several months, and quarantine and other related measures impacted on the clinic's running and performance.
In 2020, the clinic carried out 920 surgeries and 431 minor procedures in the operating theatre. Cataract surgery was the most frequent procedure (271) and surgery of strabismus (111) and examination under total anaesthesia (243). A total of 7,235 examinations were performed in the paediatric outpatient clinic, 9,630 in the adult outpatient clinic and 2,782 in the framework of emergencies. 1,603 examinations were made at the orthoptic clinics. The clinic performed a total of 2,506 consultation examinations within the MUH.

Specialized outpatient units and counselling centres:

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

New methods and procedures:

- Retinal treatment by laser photocoagulation in premature infants.
- Intravitreal treatment (application to the vitreous body) in paediatric patients with retinal cancer (retinoblastoma) in collaboration with the Clinic of Imaging Methods and the Department of Paediatric Haematology and Oncology.
- Intravitreal biological therapy in children and adults.
- Introducing modern implants (Esnoper Clip, ExPress) into the spectrum of anti-glaucoma surgery for children.
- Implanting toric intraocular lenses to correct astigmatism and introducing extended focus lenses during cataract surgery.

Unique equipment:

- An Iridex laser designed to treat the retina of premature babies
- corneal confocal microscope (HRT3 with corneal module) - observing specific corneal changes

Major events in 2020:

- As of 1 January 2020, MUDr. Martin Hložánek, Ph.D. was appointed as the new head of the clinic.
- MUDr. Gabriela Mahelková, Ph.D. defended her habilitation thesis on the use of confocal microscopy of the cornea for research and clinical practice.
- Czech translation of the 7th edition of the Wills Eye Manual (editors N. Bagheri-ová, B.N.Wajdová), published by Triton, ISBN 978-80-7553-808-6, translated by MUDr. Mahelková, MUDr. Kodetová and MUDr. Zelenayová (Ondrová) from the Eye Clinic of MUH.
- MUDr. Kožner and the Eye Clinic team published a paper in a journal with IF dealing with posterior segment eye surgery in abused children after head trauma.
- MUDr. Cendelín, MUDr. Hložánek, MUDr. Mahelková and doc. MUDr. Pochop were the authors and co-authors of papers in journals with a total IF of over 8.0.
- MUDr. Jiří Cendelín,CSc. and MUDr. Nina Zelenayová came first place at the European Congress of Cataract and Refractive Surgery (ESCRS) in the category of educational videos.
- MUDr. Odehnal is an expert guarantor of a research project of the Faculty of Physical Culture of the University of Olomouc on the effects of focusing attention on gait in children with visual impairment.
- Doc. MUDr. Pochop et al. successfully continue intravitreal chemotherapy in children with retinoblastoma, working on developing a hydrogel implant for the local depot effect of chemotherapy.
- MUDr. Hložánek is part of the EuScreen team engaged in optimizing the screening for visual and hearing disorders in children within the EU.

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

Head - prof. MUDr. Tomáš Trč, CSc., MBA
Senior Doctor - MUDr. Daniel Rybka
Head Nurse - Helena Hlásková

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.
In 2020, 1,152 children and 1,838 adult patients were hospitalized, which is 2,990 patients in all. 975 surgeries were performed on children and 1,876 on adult patients, which is 2,851 surgeries in total. (The number of adult surgeries is greater than the number of admissions - some were operated on twice, the main difference is in the patients between 18-19 - some were admitted to the children's ward and operated on in the adult theatre.)
In the children's outpatient unit, 20,344 children were treated and 15,088 adults were treated in the outpatient unit for adults, i.e. 35,432 patients in total. In addition, the number of consultations in the children's section was 375, in the adult section 746, i.e. a total of 1,121 consultations. The decrease in operations compared to previous years is due to the reduction in operative and inpatient capacity in connection with the covid pandemic.

Specialized outpatient units:

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

New methods and procedures:

- X-ray assisted minimally invasive surgery of leg deformities;
- Treatment of cartilage defects with an artificial implant based on collagen;
- First experience with magnesium implants. They were biodegradable screws suitable for traumatology and orthopaedics;
- Meniscus transplantation will allograft;
- Replacement surgery of the anterior cruciate ligament in children with an open growth gap using a technique without disturbing the growth plate.
- Use of the NuVasive nail in the prolongation of long bones;
- A lengthening self-distraction nail on the basis of a magnetic motor;
- Complete treatment of hip dysplasia incl. Ask approaches;
- Applying collagen to arthritic joints;
- Joint replacement with a resurfacing system.

Unique equipment:

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

Major events in 2020:

- Author project FV1065 in cooperation with Grade Medical “Highly functional nanofibre bandage material with barrier function and active drug release”. Clinical testing has been ongoing since 2020.
- The „Spring Orthopaedic Symposium“ and the „Traditional Teplice Orthopaedic Symposium“ organized by the clinic were transferred to an online format due to the COVID-19 pandemic, which we will continue with due to the persistent unfavourable epidemiological situation.

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 Doctor doc MUDr. Jiří Preis
Head Nurse - Bc. Lucie Plocová DiS

Basic description:

The department focuses on specialized acute and planned neurosurgery care for children and adults and provides medical consultation in the field’s entire scope. It also provides pre- and postgraduate tuition and carries out research activities. Apart from patients from the clearly defined catchment area of Prague and its surroundings, it accepts patients from all over the CR and, in the case of some specialised operations, also from abroad. **Due to the COVID-19 pandemic and the related restrictions on operations, the statistics for 2020 are lower than in 2019, i.e. approximately 1,250 inpatients, 1,100 operations and 5,000 outpatients.**
Together with the Department of Paediatric Neurology and the Neurology Clinic for Adults, the department is part of the Centre for Highly Specialized Care for Pharmacoresistant Epilepsies and the Epilepsy Research Centre Prague (EpiReC) -a consortium of the 2nd Faculty of Medicine, the Motol University Hospital, the Czech Academy of Sciences and the Czech Technical University In collaboration with the Neurology Clinic, it is part of the Centre for Highly Specialized Cerebrovascular Care.

Specialized outpatient units:

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

New methods and procedures:

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

- Exoscope - digital microscope - by Aesculap, allowing 3D surgery combining the advantages of a microscope and an endoscope
- electromagnetic neuro-guidance Medtronic without the need to immobilize the head at new operating theatres for children (including frameless stereotactic procedures)

- brain neuro-guidance Brain Lab integrated with the Pentero microscope by Zeiss.
- Perioperative ultrasound machine
- M-Turbo Ultrasound System by Sonosite
- InVent endoscope (Aesculap) including instruments, endoscopic instrumentation with a wide working channel

Major events in 2020:

- In 2020 there was a change in the departmental head and the long-time head, doc. MUDr. Tichý, was replaced by 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
Senior Doctor Milan Hubáček, MD
Head Nurse - 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 defect and joint centre for endoprosthesis of the jaw joint. Diagnostics and treatment of congenital and acquired defects of splanchno-neurocranium is carried out as is developing microscopic craniomaxillofacial surgery in cooperation with other departments and institutes (such as neurosurgery, ENT, ophthalmology, oncology, plastic surgery, biology and genetics).
In 2020, despite various restrictions due to Covid-19, 28,060 outpatient treatments and 562 one-day treatments were performed (308 tooth rehabilitation under total anaesthesia and 254 surgical procedures). 662 patients were admitted at the inpatient department and 673 surgeries were performed, of which 228 were tooth rehabilitation for handicapped patients under total anaesthesia.

Specialized outpatient units:

- maxillofacial surgery (with specification of congenital developmental defects)
- defects of the jaw joint in children and adolescents
- oncology
- diseases of the salivary glands in children
- prosthetics
- implantology
- periodontology
- orthodontics
- orthodontic surgery focusing on the treatment of jaw anomalies
- for children with special needs / disabilities

New methods and procedures:

- Care for patients with a cleft - (comprehensive stomatological care);
- orthognathic surgical procedures including specialized advisory centre and 3D modelling, planning and reconstruction;

- dental implantology and controlled bone regeneration focusing on young handicapped patients;
- care for the teeth of handicapped children under total anaesthesia or analgosedation;
- surgery of the jaw joint, including subtotal endoprosthesis;
- distraction of the facial skeleton in congenital developmental defects in children;
- digital stomatology using intraoral and facial scanner
- monitoring the swallowing act during phonation using special obturation plates in cooperation with ENT;
- In collaboration with the Department of Biology and Medical Genetics, monitoring therapy in children and adolescents with rare diseases using an intraoral and facial scanner and comparison with young healthy subjects.
- In clinical practice, we generate 3D models of the dental arch and jaw relationships for orthodontic, surgical and prosthetic treatment.

Unique equipment:

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

Major events in 2020:

- Participation in grant studies:
  - Use of Dental Imaging Technologies in Forensic Anthropology
  - Reconstruction of Hard and Soft Tissues in the Orofacial Area (Institutional support from the MUH)
  - Plastic and Maxillofacial Surgery in the Context of Forensic Portrait Identification of Persons VIIVS/281
- In the framework of European cooperation, participation in the following studies:
  - Rare Congenital and Developmental Diseases of the Orofacial System ERN CRANIO
  - Congenital and Developmental Defects of the Orofacial System (Centre for the CR within the EU)
- Publications:
  - Eliasova, H; Dostalova, T; Jelinek, M.; et al. Surface Morphology of Three-Dimensionally Printed Replicas of Upper Dental Arches APPLIED SCIENCES-BASEL Volume: 10 Issue: 16 Article Number: 5708 Published: AUG 2020 IF: 2.474
  - Eliasova, H., Dostalova, T., Prochazka, A., et al. Comparison of 2D OPG image versus orthopantomogram from 3D CBCT from the forensic point of view. Legal Medicine, 2020, Article Number: 101802, Published: in print 2021 IF: 1.195
  - Dostalova, T.; Jelinkova, H.; Kratochvil, J.; et al. Diode-laser activated home bleaching techniques with stereolithographic models and trays
  - Conference: Symposium on Lasers in Dentistry XXVI held at SPIE BiOS Conference Location: San Francisco, CA Date: FEB 02, 2020
  - LASERS IN DENTISTRY XXVI Book Series: Proceedings of SPIE Volume: 11217 Article Number: 1121704 Published: 2020

- Machacek, S.; Nocar, A.; Duskova, M.; et al. Sanitation of dental foci before valve surgery COR ET VASA Volume: 62 Issue: 1 Pages: 56-59 Published: FEB-MAR 2020
- Kříž, P., Dostalova, T.; Smutny, V.; et al. Histo-morphometric analysis of maxillary sinus lift elevation using the synthetic hydroxyapatite and β-tricalcium phosphate grafting materials CERAMICS- SILIKATY Volume: 65 Issue: 1 - Published: in print - JAN - FEB 2021, IF: 0.820
- Completed postgraduate education - MDDr. Kateřina Poukarová – specialization Orthodontics and MDDr. Lumír Kudrna – specialization Oral and maxillofacial surgery

■ Scientific research cooperation with:
- The Institute of Criminalistics on the theoretical basis for a 3D reconstruction of the facial skeleton and 3D printing + creating virtual models of skulls and faces from a medical point of view;
- The Department of Mathematics of the Faculty of Applied Sciences on mathematical models for facial skeleton reconstruction;
- The Department of Computer and Control Engineering of the Faculty of Chemical Engineering on the analysis of 2D and 3D image stacking, X-ray and working models when creating virtual treatment planning including printing the individual components;
- The Nuclear Sciences and Physical Engineering of the CTU on the evaluation of laser and ultrasound-based micropreparation techniques.

Adult Inpatient Part

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

Head - doc. MUDr. Roman Chmel, Ph.D.
Senior Doctor MUDr. Marek Pluta, MD, Ph.D.
Head Nurse - Iveta Oravcová

Basic description:

The Department of Obstetrics and Gynaecology provides nationwide care in the entire spectrum of gynaecology and obstetrics, including specialized diagnostic examinations and surgical procedures in gynaecological oncology and gynaecological urology, treatment of sexual dysfunctions and treatment of sterility using assisted reproduction techniques. The clinic is a Perinatology Centre of the highest category, including comprehensive care for delivering extremely premature newborns and delivering foetuses with congenital developmental defects. **In 2020, 6,421 patients were hospitalized at the department and a total of 3,882 surgeries and 70,717 outpatient treatments were carried out. A total of 2,814 births took place at the clinic, including 42 twin births.**

Specialized outpatient units:

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

New methods and procedures:

- Since 2015, the clinic's staff has been taking part in a study to validate a previously unintroduced method of treating infertility in women with absolute uterine factor infertility, i.e. a missing uterus in women with Mayer-Rokitansky-Küster-Hauser syndrome, using experimental uterine transplantation. The first two recipients of uterine transplants gave birth to healthy newborns by caesarean section, in one case the pregnancy was from a deceased woman's uterus and in one case from a living donor's uterus.
- Since 2019, there have been 40 robotic surgeries for gynaecological malignant tumours.

Unique equipment:

- the clinic's staff take part in operations using a robotic surgical micromanipulator

Major events in 2020:

- The clinic's doctors were authors and co-authors of a total of 16 publications in journals with an IF.
- The 3 most important published scientific papers with first authorship:
  - Novackova M, Pastor Z, Chmel Jr R, Brtnicky T, Chmel R. Urinary tract morbidity after nerve-sparing radical hysterectomy in women with cervical cancer. Int Urogynecol J 2020;31(5):981-987. (IF 2.071)
  - Chmel R, Cekal M, Pastor Z, Chmel Jr R, Paulasova P, Havlovicova M, Macek Jr M, Novackova M. Assisted reproductive techniques and pregnancy results in women with Mayer-Rokitansky-Küster-Hauser syndrome undergoing uterus transplantation: the Czech experience. J Pediatr Adolesc Gynecol 2020;33(4):410-414. (IF 1.753)

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

The Department of Neonatology with Intensive and Resuscitation Care Unit

Chief Physician - doc. MUDr. Jan Janota, Ph.D.
Head Nurse Bc. Renata Jungmannová

Basic description:

The Neonatal Unit with an ICU is an integral part of the Type III Perinatology Centre - Perinatology Intensive Care Centre - with a supra-regional scope. The facility provides standard, intermediate and intensive resuscitation care to the full extent, including controlled whole-body hypothermia, nitric oxide administration and all modules of conventional and unconventional artificial pulmonary ventilation. In collaboration with other paediatric fields, it provides comprehensive care for newborns with congenital developmental defects and metabolic disorders. The department provides specialized intensive and resuscitation care for premature babies, in particular to extremely premature babies and all critically ill newborns regardless of their gestational age. Care for physiological newborns, especially under the rooming-in regime, is standard.
In 2020, there were 2,840 live births at the centre, of which 50 babies with a birth weight of less than 1,500 g. Intensive, resuscitation or intermediate care was provided to a total of 350 newborns, of which 20% were born outside MUH and transported after birth. The institutional early neonatal mortality rate without congenital developmental defects was 2.48 per mille.

Specialized outpatient units:

Part of the department is a specialized outpatient clinic for perinatally endangered children. In 2020, almost 400 examinations were conducted in cooperation with a paediatric neurologist, a physiotherapist, an audiologist, an ophthalmologist and a clinical psychologist.

New methods and procedures:

- The introduction of a comprehensive hygiene and epidemiological regime in the box system of the new intensive and resuscitation care unit, including regular surveillance for infectious diseases.
- In cooperation with the Ear, Nose and Throat Department of the 2nd Faculty of Medicine, Charles University and MUH, the programme for early correction of a cleft lip in newborns is ongoing.

Unique equipment:

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

Major events in 2020:

- The opening of a new intensive and resuscitation care unit with a capacity of 20 beds making it possible for mothers with extremely premature newborns to stay in the rooming-in system.
- Jan Janota was the principal investigator of the AZV grant: Biomarkers of endothelial damage: diagnostic significance of endothelial microvesicles, biomarkers and microRNAs in neonatal sepsis, NU20-07-00109.
- Publications:
  - Molloy EJ, Wynn JL, Bliss J, Koenig JM, Keij FM, McGovern M, Kuester H, Turner MA, Giannoni E, Mazela J, Degtyareva M, Strunk T, Simons SHP, Janota J, et al. Neonatal sepsis: need for consensus definition, collaboration and core outcomes. Pediatr Res. 2020 Jul;88(1):2-4. doi: 10.1038/s41390-020-0850-5
  - Stocker M, van Herk W, El Helou S, Dutta S, Schuerman FABA, van den Tooren-de Groot RK, Wieringa JW, Janota J, et al. C-Reactive Protein, Procalcitonin, and White Blood Count to Rule Out Neonatal Early-onset Sepsis Within 36 Hours: A Secondary Analysis of the Neonatal Procalcitonin Intervention Study. Clin Infect Dis. 2020 Sep 3:ciaa876. doi: 10.1093/cid/ciaa876.
  - Burianova I, Cerny M, Borsky J, Zilinska K, Dornakova J, Martin A, Janota J. Duration of Surgery, Ventilation, and Length of Hospital Stay Do Not Affect Breastfeeding in Newborns After Early Cleft Lip Repair. Cleft Palate Craniofac J. 2020 Aug 17:1055665620949114. doi: 10.1177/1055665620949114.
  - Miletin J, Semberova J, Martin AM, Janota J, Stranak Z. Low cardiac output measured by bioreactance and adverse outcome in preterm infants with birth weight less than 1250 g. Early Hum Dev. 2020 Oct;149:105153. doi: 10.1016/j.earlhumdev.2020.105153.
  - Sibikova M, Vitkova V, Jamrichova L, Haluzik M, Zivny J, Janota J. Spontaneous delivery is associated with increased endothelial activity in cord blood compared to elective cesarean section. Eur J Obstet Gynecol Reprod Biol. 2020 Aug;251:229-234. doi: 10.1016/j.ejogrb .2020.05. 059.

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

Head - doc. MUDr. Radan Keil, Ph.D.
Senior Doctor Vladimír Srnský, MD
Head Nurse - Kateřina Lisová

Basic description:

The Department of Internal Medicine provides comprehensive diagnostics and therapeutic care in the entire range of internal medicine to hospitalized patients and outpatients from the region and medical consultation services to patients from the entire CR. The department provides pregraduate tuition for Czech and foreign students in grades 3 - 6 at the 2nd Faculty of Medicine, Charles University, and postgraduate tuition in its specialization.
The department is a training centre for physicians prior to postgraduate certification in internal medicine, gastroenterology, diabetology/endokrinology, nephrology, intensive metabolic care and parenteral and enteral nutrition. The department is a training site for courses in abdominal sonography organized by IPVZ, including granting licenses, guaranteed by the Czech Medical Chamber. **In 2020, 51,555 patients were treated in the outpatient section and 4,103 patients were admitted. IK carries out over 6,000 endoscopic procedures per year.** In the field of ERCP, our facility has the highest number of procedures among adult and paediatric patients in the entire CR.

Specialized outpatient units:

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

New methods and procedures:

- In 2020, the IK Endoscopy Centre introduced a new method of spiral motorized enteroscopy. This concerns an endoscopic technique that allows a large part, sometimes even the entire small intestine to be examined and treated endoscopically.
- The endoscopy centre now also carries out enteroscopic capsule examinations with radially mounted cameras and with no need to use a Capsovision recorder. Both technologies complement the existing methods and the clinic is now able to offer comprehensive state-of-the-art endoscopic diagnosis and therapy for small bowel diseases.
- Spyglass cholangioscopy is still used in the diagnosis and therapy of diseases of the biliary tract and pancreatic system.

- The centre for treating chronic hepatitis and other liver diseases has recently introduced obeticholic acid (Ocaliva) therapy. This financially demanding centric therapy offers a new treatment option for patients with primary biliary cirrhosis.
- JAK inhibitor therapy (Xeljanz) was introduced to treat non-specific intestinal inflammation. This expands the options for ulcerative colitis patients with no other options for therapy.
- An interdisciplinary specific sonographic investigation of carotid artery compliance in patients with diabetes mellitus and renal damage is being developed at the clinic.
- The measurement of body structure in patients with diabetes (especially type 1 diabetes) using the bio-impedance method in cooperation with the Czech Technical University under a joint grant project is continuing.
- The recently introduced, unique specialised comprehensive treatment (including haemodialysis) of high-risk patients (as concerns vascular diseases) with severe congenital dyslipidaemia continues using a combination of LDL/Lp(a) apheresis and treatment with PCSK9 inhibitors.
- The department participates in the study of AUS and T2 systems intended for fast detection of pathogens in blood in cooperation with the Department of Microbiology.
- Faecal bacteriotherapy (FBT) is still routinely used to treat indications with recurring clostridium colitis. Its efficacy is around 80-90%.
- The department for vascular access continues to introduce elective vascular insertions in inpatients and outpatients (a total of 2,223 in 2020). There have ben no major complications, as all insertions are made using US navigation. The largest number of PICC catheters (940) was in transplant patients, and then in patients with Covid-19 since the autumn.
- Bronchoscopic diagnosis and treatment of ALV patients is now carried out at the MICU, and bed-side ECHO examinations of patients in intensive care continue.
- Sonographic investigation of the A-V shunts continues.
- The internal clinic has introduced laptops at each station, which are used to carry out rounds and take notes, at the same time they allow the results of laboratory and auxiliary examinations, incl. X-ray findings, to be viewed directly at the patient's bedside. This replaces rounds using paper documentation.
- The Internal Clinic has newly set up a communication device („Oskar"), which allows hospitalized patients to talk to with their loved ones in situations where personal contact at the bedside is not possible for various reasons (project devised by MUDr. Hloch).
- Regular sectional multidisciplinary seminars have been introduced in association with the MUH's Department of Radiology and the Institute of Pathology.

Unique equipment:

- AIRVO 2 nasal High flow – the version offering non-invasive ventilation support for extubation in patients with respiratory insufficiency.
- an echocardiography/sonography device from Vivid, aimed at a better examination of the heart and peripheral vascular system

Major events in 2020:

- In the middle of the year Prof. MUDr. Milan Kvapil ended his long-term, highly successful post as departmental head and was replaced by Prof. MUDr. Radan Keil, Ph.D.
- For most of the year, the Internal Clinic was fundamentally affected by the epidemic of the new SARS-CoV-2 coronavirus - both by the increased morbidity for all categories of staff caused by this virus, and with the allocation of one entire inpatient ward for patients with Covid-19, as well as additional expectoration beds at other stations of the clinic.
- Doc. Keil successfully defended his appointment as professor in front of the Scientific Council of Charles University and was appointed Professor of Internal Medicine at the end of the year.
- Prof. Keil was appointed President of the GOD.
- Prof. Keil organized a pre-attestation course in Gastroenterology.
- Prof. Keil was the main organizer of the following events:
  - Case reports in gastroenterology
  - A meeting for Biological Therapy Centres in April and June, and authored the call - Monitoring the Efficacy and Adverse Effects of Biological Therapy
  - Prague Autumn 2020 - Working Days of Gastroenterology - He was also the author of the call Idiopathic Intestinal Inflammation in the Era of Biological Therapy
  - The webinar Covid-19 and compensation 2020
  - Participation in the Reimbursement Decree for 2021
  - Webinar Meeting for Biological Treatment Centres - Therapy 2021
- Prof. Kvapil authored the monograph: Diabetology 2020, published by Triton, Prague.
- Prof. Kvapil was the main organizer of 2 congresses: "Myths, Mistakes and Truths in Diabetology" - a two-day attendance meeting in Staré Splavy, and "Congress of Practical Diabetology"- a three-day distance congress from the series News for 2020 Poděbrady.
- At the congress of the Society for Clinical Nutrition and Intensive Metabolic Care, Prof. Charvát gave a Kruf lecture on „Optimal Vascular Access".
- As. MUDr. Janíčková Žďárská successfully defended her habilitation procedure.
- MUDr. Martin Souček continues to participate in the study of the T2 system in cooperation with the Institute of Microbiology, the Department of Emergency Admission and the workplace in Vienna, concerning the device for rapid pathogen detection in blood, with the aim of purchasing it for MUH.
- MUDr. Jan Masopust was proposed for the position of head of the nutrition team for the adult section of MUH.
- The Diabetes Centre has started regular re-education courses for patients. The first focused on patients treated with an insulin pump. The patients showed a great deal of interest in the in-person courses, but they had to be temporarily suspended due to the epidemiological situation. The response to this was to prepare special educational materials enabling patients to distance (re)learn.
- In December 2020, the first patient at the Internal Medicine Clinic was successfully put on "hybrid closed-loop" therapy. Here the insulin pump independently doses the basal insulin dose according to the glucose concentration measured by a glucose sensor inserted in the interstitium.

- Mgr. Jana Labiková under the guidance of Prof. Štechová successfully completed her PGS in Immunology. Her work focused on the immunopathological processes leading to type 1 diabetes.
- Prof. Štechová is also a supervisor for MUDr. Tabery from the Neonatology Department of the Obstetrics and Gynaecology Clinic. His postgraduate studies focus on the use of glucose sensors in the children of diabetic mothers or premature newborns with unstable glucose homeostasis. Prof. Štechová received international recognition with the invitation to prepare a commentary on the use of continuous glucose monitoring in neonatal intensive care published in Lancet Child Adolesc Health.
- The collaboration between the Diabetology Centre and the CTU continued, resulting in several publications in international journals on predicting glycaemia in patients using mathematical models (Saiti K et al: Comput Methods programmes Biomed 2020, Nov. A Macaš M et al., Stud Health Technol Inform. 2020 Sep.).
- Publications
  - Zachová K, Kostyu P, Zadražil P, Matoušovic K, Vondrák K, Hubáček P, Julian BA, Moldoveanu Z, Novak Z, Kostovčíková K, Raška M, Mestecky J: Role of Epstein-Barr Virus in Pathogenesis and Racial Distribution of IgA Nepropathy Front Immunol 2020;11:267. 15 pages. public 6. ISSN 1664-3224. PMID 32184780. IF 4.716.
  - Disharmonic Inflammatory Signatures in COVID-19: Augmented Neutrophils' but Impaired Monocytes' and Dendritic Cells' Responsiveness. Parackova Z, Zentsova I, Bloomfield M, Vrabcova P, Smetanova J, Klocperk A, Mesežnikov G, Casas Mendez LF, Vymazal T, Sediva A.Cells. 2020 Sep 29;9(10):2206. doi: 10.3390/cells9102206.PMID: 33003471. IF 4.366.
  - Brož J, Malinovská J, Nunes MA, Kučera K, Rožeková K, Žejglicová K, Urbanová J, Jenšovský M, Brabec M, Lustigová M: Prevalence of diabetes and prediabetes and its risk factors in adults aged 25-64 in the Czech Republic: A cross-sectional study Diabetes Res Clin Pract 2020;170:108470. public 40. PMID 32998019. ISSN 0168-8227. IF 4.234.
  - Paračková Z, Vrabcová P, Zentsova I, Kayserova J, Richtrova L, Sojka L, Štechova K, Šumník Z, Šedivá A: Enhanced STAT3 phosphorylation and PD-L1 expression in myeloid dendritic cells indicate impaired IL-27Ralpha signaling in type 1 diabetes Scientific Reports 2020;10(1):493. no. of pages 8. public 8. ISSN 2045-2322. PMID 31949260. Grants: AZV 16-32838A, GAUK 460218 na UK. IF 4.011.
  - Saiti K, Macaš M, Lhotská L, Štechová K, Piťhová P: Ensemble methods in combination with compartment models for blood glucose level prediction in type 1 diabetes mellitus. Computer Methods and programmes in Biomedicine 2020;196:105628. public 24. PMID: 32640369. ISSN 0169-2607. IF 3.632.
  - Klocperk A, Bloomfield M, Parackova Z, Zentsova I, Vrabcova P, Balko J, Meseznikov G, Casas Mendez LF, Grandcourtova A, Sipek J, Tulach M, Zamecnik J, Vymazal T, Sediva A.J: Complex Immunometabolic Profiling Reveals the Activation of Cellular Immunity and Biliary Lesions in Patients with Severe COVID-19.Clin Med. 2020 Sep 17;9(9):3000. doi: 10.3390/jcm9093000.PMID: 32957548 IF 3.303.
  - Massmann R, Zavadilová J, Drozenová J, Fiksa D, Smíšková D.Braz: Septicemia in an immunocompetent adult in the Czech Republic caused by Corynebacterium diphtheriae nontoxigenic strain biotype mitis: emergence of invasive cases in Western Europe. J Infect Dis. 2020 Jan-Feb;24(1):89-91. doi: 10.1016/j.bjid.2019.12.003. Epub 2020 Jan 9.PMID: 31926899 IF 3.303
  - Koot Bart GP, Kelly DA, Hadzic N, Gonzales E, Hierro L, Davenport M, Keil R, Fockens P, Baumann U: Endoscopic Retrograde Cholangiopancreatography in Infants: Availability Under Threat: A Survey on Availability, Need and Clinical Practice in Europe and Israel. J Pediatr Gastroenterol Nutr 2020;71(2):e54-e58. e publication. public 21. ISSN 0277-2116. PMID: 32304552. IF 2.937.
  - Changes in circulating stem cells and endothelial progenitor cells over a 12-month period after implantation of a continuous-flow left ventricular assist device.Ivak P, Netuka I, Kralova-Lesna I, Wohlfahrt P, Pitha J.Arch Med Sci. 2020 Nov 2;16(6):1440-1443. doi: 10.5114/aoms.2020.100306. eCollection 2020.PMID: 33224344 : IF 2.807
  - Brož J, Salih FMA: Diabetes mellitus as a Risk Factor of Interval Colon Cancer. Dig Dis 2020;38(1):31. public 1. PMID: 31336373. ISSN 0257-2753 foreign grant. . IF 2.908
  - Urbanová J, Brunerová J, Nunes M, Brož J: Identification of MODY among patients screened for gestational diabetes: a clinician's guide. Arch Gynecol Obstet 2020; 302(2):305-314. ISSN 0932-0067. public 16. PMID: 32495018. IF 2.283
  - Ürgerová A, Javorský M, Klimčáková L, Židzik J, Šalagovič J, Hubáček JA, Doubravová P, Gotthardová I, Kvapil M, Pelikánová T, Tkáč I, Stančáková Yaluri A: Genetic variants associated with glycemic response to treatment with dipeptidylpeptidase 4 inhibitors. Pharmacogenomics 2020;21(5):317-323. public 9. PMID 32308134. ISSN 1462-2416. IF 2.265
  - Brož J, Malinovská J: Hypoglycemia and Mortality in Critically Ill patients with Type 2 Diabetes. Med princ Pract 2020;29(1):99. public 3. ISSN 1011-7571. PMID 31581154. IF 2.1213
  - Hylmarová S, Štechová K, Pavlínková G, Pěknicová J, Macek M, Kvapil M: The impact of type 1 diabetes mellitus on male sexual functions and sex hormone levels. Endocr J 2020;67(1):59-71. public 2. ISSN 0918-8959. PMID 31619592. grant 15-30880 A. IF 1,940.
  - The first human case of babesiosis mimicking Reiter's syndrome. Strizova Z, Havlova K, Patek O, Smrz D, Bartunkova J.Folia Parasitol (Praha). 2020 Oct 30;67:2020.031. doi: 10.14411/fp.2020.031.PMID: 33173020. IF 1.648.
  - Tabery K, Černý M, Urbaniec K, Vaniš M, Zoban P, Štechová K: Continuous glucose monitoring as a screening tool for neonatal hypoglycemia in infants of diabetic mothers J Matern Fetal Neonatal Med 2020;33(11):1889-1894. public 5. ISSN 1476-7058. PMID: 30570366. IF 1.569
  - Kubátová H, Poledne R, Piťha J: Immune cells in carotid artery plaques: what can we learn from endarterectomy specimens? Int Angiol 2020;39(1):37-49. public 15. ISSN 0392-9590. PMID: 31782285.IF: 1.279.
  - Gottfriedová H, Lánská V, Jabor A, Čáslavská M, Špičák J, Horáčková M, Schück O: Spironolactone-furosemide combination therapy and acid-base disorders in liver cirrhosis patients. Int J Clin Pharmacol Ther 2020;58(5):261-267. public 28. ISSN 0946-1965. PMID 32213284.IF 1.040.
  - Brož J, Malá Š, Brožová K: Letter to editor. J Foot Ankle Surg 2020;59(2):445. PMID: 29685780. ISSN 1067-2516. public 4. IF: 1.014.
  - Zachová K, Kostyu P, Zadražil J, Matoušovic K, Vondrák K, Hubáček P, Kostovčíková K, Tláskalová Hogenová H, Městecký J, Raška M: Multiparametric flow cytometry analysis of peripheral blood B cell trafficking differences among Epstein-Barr virus infected and uninfected subpopulations. Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub 2020;164(3):247-254. public 23. PMID: 31723302. ISSN 1213-8118. IF: 1.0.
  - Chmatal P, Keil R: Inguinal tumorous mass – an uncommon late manifestation of chronic organized hematoma after laparoscopic transabdominal preperitoneal inguinal hernia repair: Two cases report. INt J Surg Case Rep 2020;66:215-217. public 7. ISSN 2210-2612. PMID: 31874378. IF: 0.62.

The department includes the 6th Unit - Infection

Chief Physician: MUDr. Martin Tulach

Basic description:

The Infection Department provides outpatient and inpatient care to patients suffering from infectious diseases or patients with suspicion of these diseases. The department diagnoses and treats febrile conditions, infections of the respiratory tract, bloodstream, soft tissues, infections of the nerves, acute infections of the gastrointestinal tract, including acute and chronic infectious inflammations of the liver, imported infections, etc. The department provides care for adults and children from three years of age. The department has 23 beds, including one isolation box, and 3 beds for intermediary care. **In 2020, 4190 patients were treated in the outpatient section and 595 patients were admitted (of which 47 addicts).** Procedures - lumbar punctures: 11.

Specialized outpatient units:

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

New methods and procedures:

- The facility continues interferon-free treatment of chronic viral hepatitis C with direct-acting, new-generation virostatics. In the last year there are 3 new pangenotypic combine preparations (elbasvir + grazoprevir, sofosbuvir + velpatasvir, glecaprevir + pibrentasvir). In 2020, 27 patients were treated and cured, the success rate so far appears to be 100% (no patient has yet to complete follow up).

Unique equipment:

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

Major events in 2020:

- The 6th clinic-Infection was converted to a covid oxygenation unit.
- MUDr. Tulach and MUDr. Mesezhnikov participated together with MUDr. Klocperk from the Institute of Immunology, MUH in the study Complex Immunometabolic Profiling Reveals the Activation of Cellular Immunity and Biliary Lesions in Patients with Severe COVID-19.

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

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

Basic description:

The department provides comprehensive care in general and abdominal surgery. It provides a non-stop surgical emergency service for all urgent surgical diseases including thoracic and abdominal trauma. The clinic includes a Department of Plastic Surgery, which performs a wide range of operations in the field of plastic and reconstructive surgery on an outpatient basis, at the beds of the surgical clinic and, as part of interdisciplinary care, also at the workplaces of other surgical fields. Besides rectal tumours, the robotic system is now also used in the surgical treatment of tumours of the right half of the colon. The Surgical Clinic is the only centre in the CR and Slovakia providing complex surgical treatment including differential diagnosis of lymphatic drainage disorders. The department is involved in pregraduate and postgraduate tuition and is actively involved in research projects.
In 2020, 13,589 patients were treated within the outpatient section and 3,638 patients were treated in OUPD, 2,786 patients were hospitalized and surgeries were performed on 2,645 patients. The drop compared to 2019 was caused by the covid restrictions.

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, laparoscopy and TEO (transanal endoscopic surgery) is increasing.
- Robotic resection of the rectum for tumour;
- Robotic right-sided hemicolectomy for tumour;
- The technique of microscopically sutured lymph node anastomosis has been introduced, preparation for lymph node autotransplantation;
- The ERAS multimodal perioperative care protocol has been introduced to patient care in the colorectal programme, which, together with an increase in the number of minimally invasive procedures (already almost 50%), is behind the improvement in short-term treatment outcomes.

Unique equipment:

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

Major events in 2020:

- The department takes part in the international system of quality control for care in colorectal surgery in the framework of the European Society of Coloproctology (ESCP) audits.
- Co-organizer of the Working Day of the Coloproctology Section of the ČCHS ČLS JEP with foreign participation.
- Successful completion of a multicentre grant project focused on ctDNA research in colorectal cancer.
- The MUH project "Modern Technologies" - nanofibre technology continued
- Adopting a clinical protocol to reduce surgical site infection in for planned operations on the colon and rectum (IMOV protocol)
- Continued the ERAS project, with plans to build a training centre for colorectal surgery.
- Grant Erasmus+: 2020-1-ES01-KA203-082681: European perioperative medical networking, 2020-2022, main investigator as. MUDr. Petr Kocián, Ph.D.
- International project ESCP Safe-anastomosis Programme in Colorectal Surgery (EAGLE Study), a multicentre study aimed at reducing the incidence of intestinal anastomosis complications after right-sided resection operations, 2019-2020.
- Publishing activities:
  - Monography: Hoch J., Antoš F et al. Coloproctology, selected chapters IV, Mladá fronta, Praha, 2020, ISBN 978-80-204-5750-9.
  - 6 publications in a foreign journal with IF
  - 5 publications in a Czech peer-reviewed journal

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

Head - prof. MUDr. Robert Lischke, Ph.D.
Senior Doctor 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.**
The centre provides care in abdominal surgery in the entire spectrum of activities (surgery of gastroesophageal reflux, diaphragmatic hernia, oesophageal achalasia, surgery on the stomach and small intestine, liver, bile ducts and pancreas, surgery on the large intestine and rectum, hernia surgeries, minimally invasive laparoscopic techniques, traumatology of the chest and abdomen and endocrine surgery). The clinic centralizes patients with soft tissue sarcomas.
In 2020, 2,705 surgeries were carried out, 3,029 patients were hospitalized and 20,798 patients were treated in the outpatient section. There were 35 lung transplants (we are a high-volume centre, of which there are only 8 in Europe). The decline in operations was due to the restrictions on care during the COVID-19 pandemic.

Specialized centres:

- Centre for Lung Transplantation - national centre for the CR and SR
- Centre for the treatment of sarcomas of soft tissues

Specialized outpatient units:

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

New methods and procedures:

- Preparation and introduction of the Ex vivo pulmonary perfusion and reconditioning programme in the clinical practice, method leading to increased number of suitable grafts for lung transplantation;
- Preparation of the programme for lung transplantation from DCD donors (donors with circulation failure);
- Preparation and introduction of the Transplantation of the Lung and Heart Block programme into clinical practice in cooperation with IKEM;
- Introduction of endoscopic application of absorbable stents for diseases of oesophagus, stomach and airways.

Unique equipment:

- ECMO and ex vivoperfusion of the lung
- participation in a robotic device - robotic surgery of the colon and rectum, starting robotic lung surgery
- dissection and electrocoagulation techniques, including harmonic scalpel and LigaSure in conventional and laparoscopic surgery
- 3D instruments – for laparoscopic and video-assisted thoracoscopic surgery

Major events in 2020:

- In 2020, we continued with an international study led by a Canadian research centre (University of Alberta) that has developed a new diagnostic system, a Molecular Microscope, which can be used to interpret transbronchial biopsies after lung Tx based on molecular phenotype. Preliminary results will be presented next year at the Congress of the International Society for Heart and Lung Transplantation.
- In cooperation with the Department of Pathology and Molecular Medicine at MUH, 117 cryobiopsies were immunohistochemically investigated for the presence of the complement component C4d, which is associated with humoral rejection.
- Extracorporeal photochemotherapy - a therapeutic modality for chronic rejection - was introduced into clinical practice in cooperation with the Blood Bank

Department of MUH.

- In collaboration with the Institute of Immunology, Olomouc UH and the Institute of Pathology and Molecular Medicine, Olomouc UH, 143 biopsy samples were analysed for total cellularity and CD68+ macrophages. Initial data suggest that high lung cellularity predisposes patients to acute rejection.
- In collaboration with the Institute of Medical Microbiology, MUH, we have started a pilot study monitoring Torque Teno virus DNA in peripheral blood of patients after lung Tx, the level of which changes depending on the intensity of IS therapy and is considered to be a promising biomarker allowing IS therapy to be individualized.
- Werner von Siemens award – Robert Lischke, Dagmar Myšíková

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

Head - prof. MUDr. Josef Veselka, CSc.
Senior Doctor MUDr. Jiří Vejvoda
Head Nurse - Jana Kovalčíková

Basic description:

The facility provides comprehensive cardiologic care to hospitalized patients and outpatients. It is linked directly to the unit of heart surgery and angiosurgery. **In 2020, more than 17,500 patients were treated in the outpatient section and almost 5,000 patients were hospitalized. 5,000 patients in all. 2,581 selective coronarographies, 823 percutaneous coronary interventions, 433 catheterization examinations of peripheral arteries, 103 catheterization implantations of aortic valves, more than 7,000 echocardiographic examinations, 290 radiofrequency ablations of arrhythmia, 141 catheterization isolation of pulmonary veins, 221 implantations of permanent cardiac stimulators, 114 implantations of ICD and 2,369 duplex ultrasound examinations of peripheral veins were performed.** Through the entire team's exemplary commitment, diligence and dedication, we were able to provide care for our patients to the full extent even in the difficult time of the Covid-19 pandemic.

Specialized outpatient units:

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

New methods and procedures:

- Catheterization implantation of a biological valve into the aortic position without implanting a temporary pacemaker;
- The programme for mechanical circulation support (ECMO - extra-corporal membrane oxygenation) continued;
- Optic coherent tomography;
- Intravascular spectroscopy;
- Alcohol septal ablation - the largest set in the CR;
- Carotid stenting - the largest set in the CR;
- Use of the proximal protection system in stent implantation into the carotid system;

- Catheterization occlusion of ventricular septum defects and patent foramen ovale;
- Catheterization closure of the left ventricle;
- Catheterization occlusion of paravalvular leaks;
- Comprehensive solution of rhythm dysfunctions using 3D electroanatomic mapping;
- His bundle pacing whilst implanting a permanent pacemaker;
- Radiofrequency ablation using catheters with pressure measurement;
- Expanding the catheterization programme for atrial fibrillation
- Development of telemedicine, remote monitoring of patients with cardiac stimulators and defibrillators;
- Expanding the use of Fractional Flow Reserve assessment in patients
- with stable AP and borderline angiographic findings;
- A unique method for a genetic examination of patients with cardiomyopathy using new generation sequencing allowing the simultaneous examination of a large number of genes

Unique equipment:

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

Major events in 2020:

- We published 22 articles, 16 of them in journals with IF (18 times the 1st author
- from our clinic).
- Prof. Veselka, MUDr. Honěk, MUDr. Kala and MUDr. Roland presented their communications at the XXVIII Virtual Annual Congress of the Czech Society of Cardiology.
- Prof. Veselka was awarded 1st place in The Best of Czech Cardiology competition for an original paper published in Eur Heart J (IF 23).
- MUDr. Kala came 2nd place in the Young Cardiologists Competition.
- On 12.6.2020 we organized Prague Intervention XIV an annual interdisciplinary conference with the motto: "Cardiology in the covid and post-covid era".
- MUDr. Hnátová, MUDr. Polaková, MUDr. Prokopcová, MUDr. Butta, MUDr. Hnát and MUDr. Macháček successfully passed the cardiology attestation.
- The clinic held an open day for students interested in cardiology.

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

Head - doc. MUDr. Vilém Rohn, CSc.
Senior Doctor MUDr. Milan Horn
Head Nurse – Mgr. Barbora Kolářová

Basic description:

The department provides comprehensive care in cardiac surgery and vascular surgery. It provides non-stop surgical emergency service for all urgent diseases of the cardiovascular system, including traumas. The clinic includes an organ perfusion department that provides extracorporeal circulation including ECMO (extracorporeal membrane oxygenation) for the entire hospital in the adult section. **In 2020, from the start of the pandemic, the clinic was assigned to caring for patients with the most severe COVID-19. 41 patients with this condition were admitted to the ICU, of whom 30 were on artificial lung ventilation and 11 on HFNO. Seven of them needed ECMO support. Caring for these patients took up a large part of the inpatient and staff capacity. Nevertheless, 5,959 patients were treated as outpatients in cardiovascular surgery and a total of 777 major operations were carried out, including 331 heart operations (52 for adult congenital heart disease) and 446 vascular operations. In all, the team carried out 58 extracorporeal membrane oxygenations (ECMO).**

Specialized outpatient units:

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

New methods and procedures:

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

Unique equipment:

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

Major events in 2020:

- We published 7 papers in foreign magazines with an impact factor.

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

Head - prof. MUDr. Petr Vlček, CSc
Senior Doctor - MUDr. Kateřina Táborská
Head Nurse - Jana Richterová

Basic description:

The Department of Nuclear Medicine and Endocrinology is an interdisciplinary facility of nuclear medicine and endocrinology focusing on standard diagnostics using radioisotope methods, as well as diagnostics, treatment and follow-up of differentiated thyroid carcinoma, serious forms of thyroidal orbitopathy and on therapy of 131I-MIBG from the entire CR. The department is also an educational facility - it is accredited for endocrinology and diabetology and nuclear medicine. The department is a centre for the treatment of thyroidal autoimmune orbitopathy with growth hormone inhibitors, diagnostics and therapy of advanced forms of differentiated carcinoma of the thyroid using human recombinant TSH (Thyrogen) and for the treatment of neuroendocrine tumors using radiopharmaceutical 131I-MIBG (as the only centre in the Czech Republic).
Although we were limited by the covid pandemic in 2020, the department provided outpatient care to 21,980 patients, of whom 905 were admitted. Almost 7,500 procedures or outpatient or therapeutic applications of radiopharmaceuticals were performed at the outpatient unit for nuclear medicine.

Specialized outpatient units:

- endocrinology specializing in differentiated carcinoma of the thyroid, the unit is following up on more than 18,050 patients (one of the largest sets worldwide)
- advisory centre for micro-carcinomas of the thyroid (MDTC)
- advisory centre for medular thyroidal carcinoma (MTC)
- advisory centre for thyroidal autoimmune orbitopathy (TAO)
- outpatient unit for nuclear medicine

New methods and procedures:

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

Major events in 2020:

- Start on reconstructing and modernizing the inpatient ward's storage containers for radioactive waste.

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 Doctor – MUDr. Jan Kluh
Head Nurse - Jitka Hovorková

Basic description:

The department provides the full spectrum of examinations and treatments of diseases from the ENT specialization. Surgical procedures are carried out in the full extent, including the most specialized procedures, which are performed in many cases for the entire Czech Republic.
In 2020, 2,035 surgical procedures were performed at the department and 212 of these surgeries were carried out on patients outside the department's operating theatres. 3000 patients were admitted. Conventional subjective tonal audiometry was carried out in 3,134 patients. Objective audiometry was performed in 196 patients, an examination of the balance system was carried out in 611 cases, an ENG examination and a examination of vestibular myogenous potentials was carried out on 501 patients. The examination for indication of rehabilitation of hearing using hearing aids or alternation of the existing rehabilitation was carried out on 221 patients and 50 hearing aids were handed out. The speech processor mode of the cochlear implant/CI/ was adjusted or modified for 91 patients.

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

New methods and procedures:

- Use of the Montgomery salivary bypass tube after ressection 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);
- Treatment of the Frey syndrome with botulinum toxin;
- CODACS the first surgery with this type of cochlear implant in the Czech Republic;
- Endoscopic approaches to removal of tumours in the inner ear canal;
- Perioperative neuromonitoring;
- Fibreoptic 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 an exoscope in posterior cranial fossa surgery, phonosurgery and traditional ear surgery;
- Rehabilitation of patients after total laryngectomy with synthetic voice recording in cooperation with the West Bohemian University in Plzeň – department of cybernetics.

Unique equipment:

- CO2 Laser, Dioxi Laser, Thulium laser, argon plasma coagulation
- harmonic scalpel, radiofrequency scalpel, shaver
- endoscopic equipment for minimally invasive procedures on the thyroid and in surgeries of the cranial base and the inner ear canal
- video-stroboscopy, video ENG
- NBI in early diagnosis of 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 2020:

- The clinic organized or co-organized a number of events in which some of those actively taking part were undergraduate and postgraduate students:
- 20. – 23. 1. 2020, Praha Temporal bone course - Prague 2020
- 12. 3. 2020, Špindlerův Mlýn - XVIII. Czech-Slovak Congress of Young Otorhinolaryngologists
- 17. 9. 2020, Prague IPVZ course - Examination and rehabilitation options in patients with dysphagia including FEES
- 22. 9. 2020, Prague Workshop - Voice Rehabilitation after Total Laryngectomy with the Aid of a Voice Prosthesis
- 13.- 14. 10. 2020, Prague IPVZ course - Sonography of the Head and Neck.
- 1.- 3. 10. 2020, Znojmo Conference of the Czech cooperative group for head and neck cancer with international participation
- Lectures by doctors and students were also given at other events:
- XXXVII. Congress of Czech and Slovak Allergologists and Clinical Immunologists: Kaňa M., Braunová A., Etrych T., Bouček J., Šírová M., Micellar polymer drug delivery systems in treatment of chemoresistant tumors
- Česká ORL akademie 2020: Kaňa M., Kalfeřt D., Plzák J., Surgical treatment of Zenker's diverticulum: a retrospective analysis of 84 cases
- MUDr. Jan Kastner, Ph.D. successfully completed his doctoral studies and thus obtained the academic-scientific title „Ph.D."
- Kutvirt Award from the Czech Society for Otorhinolaryngology and Head and Neck Surgery - winners:
  - Under 35 category :
    Simonidesová, S., Hamšiková, E., Ludvíková, V. et al.: Prognostic value of post-treatment HPV-specific antibodies in patients with oropharyngeal tumors. J Surg Oncol, 120, 2019, 2, pp. 117-124. (IF: 3,114). https://onlinelibrary.wiley.com/doi/abs/10.1002/jso.25473
  - Over 35 category
    Lukeš, P., Zábrodský, M., Sýba, J. et al.: Efficacy of Transnasal Flexible Videoendoscopy With Narrow Band Imaging for Follow-Up of Patients After Transoral Laser Cordectomy. Lasers Surg Med, 52, 2020, 4, s. 333-340. Published online: 6. 8. 2019 (IF: 3.262) https://onlinelibrary.wiley.com/doi/abs/10.1002/lsm.23143
    Monographs or a chapter in a monograph
    Betka, J., Hybášková, J., Klozar, J., Šonka K. et al.: Respiratory disorders in sleep - surgical treatment Head and Neck Medicine, Tobiáš, 2019.
- Kutvirt Award from the Czech Society for Otorhinolaryngology and Head and Neck Surgery - laureates:
  - Under 35 category
    Hrubá, S., Chovanec, M., Čada, Z. et al.: The evaluation of vestibular compensation by vestibular rehabilitation and prehabilitation in short-term postsurgical period in patients following surgical treatment of vestibular schwannoma. Eur Arch Otorhinolaryngol, 276, 2019, 10, pp. 2681-2689. (IF: 1.750)
    Jechová, A., Kuchař, M., Novák, S. et al.: The role of fine-needle aspiration biopsy (FNAB) in Warthin tumour diagnosis and management. Eur Arch Otorhinolaryngol, 276, 2019, 10, pp. 2941-2946. (IF: 1.750)
    Kaňa, M., Kaňa, R., Povýšil, C.: New Developments in Understanding the Histological Structure of Human Ear Cartilage. Folia Biol (Praha), 65, 2019, 5-6, pp. 256-264. (IF: 1.073)

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

Head - prof. MUDr. Jan Štulík, CSc.
Senior Doctor – MUDr. Jan Kryl
Head Nurse - Dagmar Šeborová

Basic description:

Specialized department with national operation for the treatment of injuries and diseases of the spine, including consequences in children and adults (acute spinal fractures and addressing their consequences, primary and secondary tumours, degenerative defects, inflammatory diseases, congenital and acquired deformities). **In 2020, 1,359 patients underwent surgery, 1,397 patients were admitted, 10,731 patients were treated in the outpatient unit of spondylosurgery and the Centre for Conservative Therapy treated 2,115 patients.**

Specialized outpatient units:

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

New methods and procedures:

- A new technique for en bloc resection of the subaxial vertebra;
- An en bloc resection of the sacrum;
- An en bloc resection of the thoracolumbar vertebrae;
- Correction of scoliosis deformities;
- Correction of kyphosis deformities;
- Osteotomy of the spine PSO;
- Axial transsacral fixation;
- Cultivation of osteoblasts from stem cells;
- Use of unique carbon screws to treat spinal tumours;
- Use of 3D printing to visualize spinal anomalies;
- Visualizing the surgical field with an exoscope.

Unique equipment:

- postoperative 3D O-arm imaging
- operational navigation
- Endeavor CR for IOM
- Prusa 3D printer
- EOS Asculap exoscope

Major events in 2020:

- Organization of the 3rd May spondylosurgery. symposium Prague - cancelled due to Covid -19;
- Publications:
  - JONAS, J., DURILA , M., MALOSEK, M., MARESOVA, D., STULIK, J., BARNA, M., VYMAZAL, T.: Usefulness of perioperative rotational thrombelastometry during scoliosis surgery in children. J Nerurosurg Spine, 32: 865-870, 2020. (IF 2, 820 Q1)
  - RICHTR, P., HOCH, J., SVOBODOVÁ, K., JECH, Z., KŘÍŽ, J., HYŠPERSKÁ, V., ŠTULÍK, J.,

BABJUK, M., PŘIKRYL, P.: Hemicorporectomy-the ultimate solution of terminal pelvic sepsis. Acta Chir. Belgica, 2020. (IF 0.460 Q3) (in print)

- KOBESOVÁ A., KOLÁŘ, P, ANDEL, R., KYNČL, M., ŠTULÍK, J., DAVÍDEK, P., LARDNER, R.: Dynamic MRI assisted diagnosis of occult spinal instability-a new useful approach. J. Med. Imaging Health Inf., 10: 2649-2653, 2020.(IF 0.670 Q4)
- ŠTULÍK, J., GERI, G., SALAVCOVÁ, L., BARNA, M., FOJTÍK, P., NAŇKA, O.: Paediatric dens anatomy and its implications for fracture treatment: anatomical and radiological study. Eur Spine J, (IF 2.620 Q1) in print
- BARNA, M., ŠTULÍK, J: Spondylosurgical treatment of patients with SMA. Cesk Slov Neurol N, 83/116 (S2): 41-44, 2020. (IF 0.390)

Department of Long-term Treatment - Aftercare Centre

Senior Doctor - MUDr. Martina Nováková
Head Nurse - Lucie Kubová

Basic description:

The Department of Long-term Treatment - Aftercare Centre has 381 beds at 13 inpatient stations. The centre specialized in geriatric issues (wound healing, nutrition, physiotherapy and occupational therapy), and on the issue of patients after traumas, surgeries, long-term internal diseases or strokes. The 14th inpatient station with 29 beds focuses on aftercare for patients in the chronic haemodialysis programme. **The total number of patient admissions in 2020 was 1,123** (29 beds were closed for 7 months due to referral 1 station for the needs of FIC-LINC in the context of the Covid-19 pandemic). **The number of procedures in the geriatric outpatient unit was 184.**

Specifics of the facility:

The Department of Long-term Treatment - Aftercare Centre specializes in wound healing, nutrition, physiotherapy and occupational therapy. A clinical psychologist, 3 speech therapists, 13 physiotherapists, 2 occupational therapists and 4 social workers help the patients. There is ongoing cooperation with the Volunteer Centre, which organizes entertaining and educational programmes, memory training or dog-assisted therapy. A library for patients is available in the Aftercare Centre. The department has the 1st degree accreditation for tuition in geriatrics and contributes to the postgraduate education for physicians in geriatrics, tuition in internal medicine and bachelor's studies for nurses. Teaching courses are held here, among other things, we cooperate with the CTU to teach paramedics. In 2020, the project from a MoHCR grant for developing consulting palliative care (the activities of the palliative consulting team for the adult part of the hospital under the leadership of MUDr. Gricajev) was successfully continued.

Unique equipment:

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

Major events in 2020:

- The year 2020 was a busy year for our department in terms of caring for Covid--positive patients, 150 patients passed through our beds between September and December.
- In the framework of the 2nd Faculty of Medicine, our workplace held its first attestation exam in the field of geriatrics from 21. + 22.10.2021, 7 subjects were tested, all of them passed.
- All of 2020 was continuously devoted to tasks related to setting up a new workplace - the Geriatric Internal Clinic of the 2nd Faculty of Medicine of Charles University and MUH
- MUDr. Martina Ocelková successfully passed the attestation in geriatrics in May 2020
- MUDr. Martina Nováková started her doctoral studies at the Faculty of Humanities of Charles University at the Department of Longevity.
- Publications:
  - Nováková M.: Polypharmacotherapy in the geriatric patient, the CNP experience (article in Geriatrics and Gerontology 3/2020)
  - Ocelková M., Nováková M.: Resolving eating disorders in geriatric patients by PEG - experience from the Aftercare Centre of MUH (article in Geriatrics and Gerontology 2/2020)
  - A geriatric patient with polypharmacotherapy - case reports from practice.
  - Kvapil M., Nováková M .Jarkovský J. Dušek L.: Geriatric Diabetology - Review Article in Geriatrics and Gerontology (3/2020)

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

Head - prof. MUDr. Petr Marusič, Ph.D.
Senior Doctor doc. MUDr. Aleš Tomek, Ph.D., FESO
Deputy for Science and Research prof. MUDr. Jakub Hort, Ph.D.
Head Nurse - Hana Chvátalová

Basic description:

The Department of Neurology provides comprehensive diagnostics and treatment for patients with nervous system diseases. The main programmes developed at the highest achievable level in the CR include the cognitive, epileptological, neurootological, neuromuscular, neuroimmunological and neurovascular programmes. Besides caring for patients from the region, medication consultation is also provided selectively to patients from the entire CR. **In 2020, the department's outpatient section examined more than 40,000 patients. 2,044 patients were admitted.**

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

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

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

- ERN EpiCARE–European Reference Network for rare and complex epilepsies
- ERNRND –European Reference Network for rare neurological diseases
- ERN EURO-NMD – European Reference Network on Neuromuscular Disease

Specialized centres accredited by professional societies:

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

Specialized outpatient units:

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

New and unique methods and procedures:

- Advanced EEG assessment in intracranial EEG and high-density scalp EEG, as well as implementation of the protocol for examination and mapping of cognitive functions from intracranial electrodes is carried out in cooperation with the Academy of Sciences CR and the Czech Technical University.
- The department cooperates on the international project E-PILEPSY, which has allowed for the introduction of a methodology for assessing sources of EEG signals (Electrical Source Imaging) and postprocessing in neuro-imaging (advanced processing of PET image and its coregistration, 3D Slicer).
- Under the longitudinal study Czech Brain Ageing Study (CBAS), homocysteine, oxidative stress markers, and pathological protein (TDP-43, phosphorylated tau and beta-amyloid) levels in the serum and in the liquor are analyzed. Genetic examination was expanded by determination of polymorphisim for TOMM, BDNF-met. and TDP-43.
- The set of samples from patients with limbic encephalitis was further expanded and examination of neutralizing antibodies in patients with MS was carried out. The set of patients treated with donepezil, from whom liquor was collected, was expanded by the set of patients with rivastigmin and memantin.
- In the field of multiple sclerosis, there is a significant increase in patients treated with DMD and their scientific processing, including registries.
- The cognitive centre innovated the tests for examining preclinical and prodromal Alzheimer's disease, including a new examination battery of 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 by Zic4, Tr (DNER), SOX1, Ma1.
- A unique electrochemical method of body fluid fingerprinting was introduced in laboratory differential diagnostics of neurodegenerative diseases.

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

Unique equipment:

- Simoa analyser - automated device for detecting immunological markers in cognitive and autoimmune brain diseases
- laboratory for augmented virtual reality
- 256-channel high-density EEG
- ICS Impulse device by Otometrics for examining the function of individual semi-circular canals
- telemetry with central monitor Philips IntelliVue M3150 for 9 patients
- ultrasonography device RIMED Intraview with a helmet for long-term monitoring
- ultrasonography device Toshiba Aplio 500 for examining transcranial and extracranial arteries and peripheral nerves with 3D imaging along with the MR/CT data
- 128-channel EEG system NicoletOne for 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
- Somedic thermal tester, Sweden - electrodiagnostic device evaluating the function of thin fibres Adelta + C fibres
- digital algesimeter Somedic, Sweden - electrodiagnostic device for research into deep neuropathic pain
- experimental laboratory for examining spatial memory and spatial orientation (Blue Arena)

Major events in 2020:

- Co-organization of a number of domestic on-line neurological congresses (Cerebrovascular, Epileptological, etc.);
- Organizing International Training Days in v neuro-otology and neuro-otology courses;
- A total of 36 professional publications in foreign impact or peer reviewed magazines, 8 articles in local impacted magazines, 1 articles in peer-reviewed local magazines and 6 chapters in foreign and local monographies.

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

Head - prof. MUDr. Ivan Landor, CSc.
Senior Doctor - prof. MUDr. Stanislav Popelka
Senior Doctor - MUDr. Jaroslav Kalvach - traumatology
Head Nurse - Jana Sládková

Basic description:

The department provides conservative and surgical treatment for adult patients throughout the entire spectrum of orthopaedic procedures. It provides services under traumatology of the locomotor system with the exception of spine and paediatric orthopaedics. The department has 129 beds in total, of which 14 beds for intensive care for aseptic patients and 2 beds for intensive care for septic orthopaedics, 30 traumatology and 20 septic beds. **In 2020, a total of 3,373 patients were hospitalized and 40,812 patients were treated in the outpatient section. 3,389 surgeries were performed.**

Specialized outpatient units:

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

New methods and procedures:

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

Major events in 2020:

- The department was the co-organizer of the orthopaedic congress in Harrachov. It also organized quarterly surgical courses in implantation of total shoulder joint replacement at the MUH.
- Heraeus Medical GmbH -Dr. Hans Bösebeck Philipp – Reis - Strasse 8/13, D - 61273 Wehrheim, Germany Cooperation in the study: Evaluation of the local and systemic bioavailability of gentamicin released from a new gentamycin containing bone void filling material and a collagen fleece in patients after aseptic revision of a hip-socket arthroplasty A comparative, randomized, monocentric study.
- Heraeus Medical GmbH - Anna-Maria Holl Cooperation in the study: Evaluation of the local and systemic bioavailability of gentamicin released from a new gentamycin containing bone void filling material and a collagen fleece in patients after aseptic revision of a hip-socket arthroplasty A comparative, randomized, monocentric study.
- ENDO-Clinic Hamburg- prof. Dr. Thorsten Gehrke Cooperation in the project Second International Consensus on Periprosthetic Joint Infection .
- Sidney Kimmel Medical College, Javad Parvizi MD, FRCS Rothman Institute at Thomas Jefferson University HospitalSheridan Building, Suite 1000, 125 South 9th Street, Philadelphia, PA 19107, USA. Cooperation in the project Second International Consensus on Periprosthetic Joint Infection.
- Kantonsspital Winterthur - Peter P. Koch. M.D Klinik für Orthopädie und Traumatologie, Brauerstrasse 15, 8400 Winterthur, Switzerland. Cooperation on publication "GMK Sphere Implant exhibits Medial Stability during Gait Activities in vivo: A Dynamic Videofluoroscopy Study"
- University Hospital Balgrist - Sandro Fucentese, M.D.Forchstrasse 340, 8008 Zürich, Switzerland. Cooperation on publication "GMK Sphere Implant exhibits Medial Stability during Gait Activities in vivo: A Dynamic Videofluoroscopy Study"

- Zimmer Biomet – Cooperation on development of a new ankle joint replacement, preparation of the international publication – ankle replacement Rebalence Ankle.
- Publications:
  - Vavřík P., Landor I., Gallo J., Koudela K. a kol.:Revision surgery of total knee replacements. Maxdorf , 2019, ISBN 978-80-7345-602-3 Awarded the CSOT Chlumsky Prize 2019 (announced in autumn 2020)
  - Barták, V., Štědrý, J., Hornová, J., Heřt, J., Tichý, P., Hromádka, R. Biomechanical Study Concerning the Types of Resection in Arthrodesis of First Metatarsophalangeal Joint. The Journal of Foot and Ankle Surgery. 2020, 59: 1135-1138.
  - Pavel Melicherčík, Eva Klapková, Karel Kotaška, David Jahoda, Ivan Landor and Václav Čeřovský. Chromatography as a Novel Method for the Determination of α-Defensins in Synovial Fluid for Diagnosis of Orthopedic Infections, Diagnostics, 2020, 10.1:33. IF: 3.110
  - Jahoda D, Vogt S, Bösebeck H, Landor I, Judl T, Tomaides J, Holl Am, Jahodová I.: Gentamicin release of a calcium sulphate/carbonate composition compared to collagen in 30 patients with a one-year follow-up, a randomized open trial.

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

Head - doc. MUDr. Jana Prausová, Ph.D., MBA
Senior Doctor MUDr. Zdeněk Linke
head nurse - Renata Limaxová
Senior Radiology Assistant - Alena Čuprová

Basic description:

The facility provides comprehensive care for oncological patients in antitumor pharmacotherapy and radiation treatment. It is one of the Comprehensive Cancer Centres in the Czech Republic, where highly specialised 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 2020, a total of 114,667 outpatient checks, treatments and examinations were carried out at the Oncology Clinic of the MUH; the number of new patients reached a total of 3,002 in 2020. **A total of 2,366 patients were admitted to the Oncology Clinic of the MUH in 2020,** and this result, virtually identical to that of 2019, was achieved despite the fact that the hospitalization process was significantly hindered due to the COVID pandemic19. All patients were tested to rule out COVID19 infection, and some rooms have been turned into exam rooms. Moreover, compared to 2018, this number was even 200 hospitalizations higher. In 2020, **the parenteral administration of chemotherapy/biological treatment came to 8,544 cycles of anticancer treatment**, an identical result to 2019, despite the obstacles during the COVID 19 pandemic. In 2020, the total number of patients undergoing external beam radiotherapy was 895 - of which 785 patients were newly irradiated and the number of series was 915. The number of irradiated fields was 74,980, the number of irradiation fractions came to 20,292.
In 2020, the brachytherapy department carried out 695 applications to a total of 115 patients. These results represent the immeasurable efforts of the clinic's staff, where, under very difficult conditions and having to comply with all the hygiene and epidemiological requirements, the number of procedures did not fall below the results of previous years. On the contrary - some of the numbers given on operations were even higher than in previous years. During the entire period of the pandemic, while observing all the hygiene and epidemiological measures, no employee at the COVID-19 clinic was infected in the course of their work.

Specialized outpatient units:

- outpatient unit for follow-up care for patients after completion of antitumor treatment
- outpatient unit for checking patients during chemotherapy
- outpatient unit for checking patients during teletherapy
- outpatient unit for chemotherapy application
- outpatient unit for checking patients during brachytherapy
- outpatient unit for palliative and symptomatic care

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. A major share in creating the therapeutic outcomes of the drug registries in the CR.
- Introduction of central vascular accesses (ports) and peripheral PICCs or midline in all patients with application of parenteral chemotherapy and a part of the patients with biological treatment.
- 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 at the MUH in the application of the SNP01 preparation - Centre for Treatment of Prostate Cancer.
- Full use of the IMRT (intensity modulated radiotherapy) technique allowing for a higher dose of radiation in the target volume while avoiding irradiating healthy tissue. 40 % of patients are irradiated with this technique.
- Implementation 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. Use of localization grains (fiducial markers) for more precise targeting of the target volume in patients undergoing radiotherapy of prostate cancer.
- Option of merging images from MRI and CT diagnostic measurement with planning CT images for more accurate determination of the target volume.

Unique equipment:

- In February 2020, the public contract „MUH - Replacement of 3 Linear Accelerators" was completed. This involved the gradual replacement of all three linear accelerators. The replacement of instrumentation was preceded by an upgrade of the verification and planning system, which is integrated into the unified oncology information system ARIA by Varian. This system interconnects the linear accelerators, a simulator, planning systems for external radiotherapy (Eclipse) and brachytherapy (Brachyvision). It is also used to archive radiation treatment records and all the patient's image documentation related to radiotherapy. **The upgrade of the Aria system** meant a transition from version 8.6 to the newer version 15.6. In addition to replacing the servers, all workstations were replaced

and increased to a total of 5 planning stations, 10 contouring stations and 10 verification system editing stations. The planning system is equipped with modern algorithms for the dose distribution calculation and software for optimizing IMRT and VMAT plans. It has been expanded with RapidPlan software, which allows a customized library of radiation treatment plans to be created to efficiently use existing experience in optimizing radiation treatment plans, i.e. Knowledge Based Planning. The planning system is also complemented by Velocity software for image data processing and deformable registration, especially registration of the planning CT with the cone-beam CT (CBCT) obtained at the accelerator. On the basis of the deformable registration, adaptive radiotherapy can be performed. Here the radiation plan is adapted to the patient's changing anatomy during the radiation series.

- Three Truebeam linear accelerators, Varian Medical Systems, the first of which was installed at the end of 2018, another during 2019, and the last - the third in the sequence - in February 2020. Compared to the original Clinac accelerators the Truebeam accelerators ensure higher geometric accuracy (up to 0.5mm), are equipped with an irradiation table and low-density board of carbon fibres and a modern megavoltage and kilovoltage imaging system allowing 3D imaging to check the patient's position during irradiation. The kilovoltage system enables 3D imaging of the patient using a Cone-beam CT (CBCT). All three accelerators are fitted with a system for controlling the patient's breathing movements during irradiation – Respiratory Management System. Radiotherapy controlled by the breathing cycle provides significantly improved accuracy of the treatment in chest and is gentler to the cardiac and pulmonary tissue when irradiating breasts. All three accelerators are equipped with a multi-lens collimator (MLC) enabling intensity modulated techniques, except for the IMRT (Intensity Modulated Radiotherapy) technique, in which the collimator blades move dynamically and the accelerator gantry remains in a static position, also the intensity-modulated motion technique - VMAT - Volumetric Modulated Arc Therapy, in which the beam is modulated not only by the dynamic movement of the Multileaf Collimator (MLC) blades, but also by changing the rotation speed of the arm (gantry) and the dose rate during patient irradiation. Two of the Truebeam accelerators are equipped with a Millenium120 multi-leaf collimator with a leaf width of 5mm in the central part of the irradiation field, the third Truebeam has a multi-leaf collimator HD MLC - High Definition MLC with finer resolution - with a leaf width of 2.5mm in the central part of the irradiation field, which is suitable for stereotactic radiotherapy and for irradiation in the head and neck or prostate area. The HD MLC accelerator produces photon beams with an energy of 6 MV, the two Millenium120 multi-leaf collimator accelerators are identical and produce photon beams with energies of 6 MV and 18 MV and electron beams with five different energies ranging from 6 to 20 MeV. Besides the standard photon beams, the two Truebeam accelerators also produce beams without the homogenization filter, the so-called FFF beams (Flattening-Filter Free), which significantly accelerate irradiation with the IMRT and VMAT techniques owing to very high dosage input and this reduces the time of irradiation and thus inaccuracy caused by movement of the patient and the patient's organs during irradiation.

- The Acuity EX radiotherapy simulator, Varian Medical Systems, for preparing radiation treatment.
- CT device Brilliance Big Bore, Philips for planning treatment.

Major events in 2020:

- In 2019, the Oncology Clinic of MUH became a full member of OECI (Organisation of European Cancer Institute), which brings together just a small number of the highest-quality cancer centres in Europe. This membership was reaffirmed in 2020 and allowed priority participation in research on new innovative drugs, access to such drugs in academic clinical trials, and priority and reimbursed educational programmes for our physicians.
- The Head of the department, doc. MUDr. Jana Prausová, Ph.D., MBA, is the Chairperson of the Czech Society of Oncology under the Czech Medical Association of J. E. Purkyně.
- The department cooperated with the Department of Oncology of the University Hospital in Prague 2 on organization of a unique educational event for oncologists - the 4th year of Best of ASCO in September 2020 in Prague.
- The department contributed to the organization and lectures at the 11th Prague Onco colloquium in January 2020, the Urological Oncology Symposium, the 44th Brno Oncological Days, Radiological Days and other major Czech symposia - although due to the COVID19 pandemic it was in a distant form.
- Physicians actively took part in international ASCO, ESMO and ESTRO events with expert communications, abstracts and posters - understandably, in a distant form due to the COVID19 pandemic.
- The department is an active member of the Sarcoma Group EORTC and contributes to academic clinical studies (such as Survival Outcomes in Adolescent and Young Adults with Colorectal and Pancreatic Cancer).
- The department contributes to the work on the grant of the Czech Science Foundation: Nanofibre Systems for Local Release of Drugs in the Treatment of Oncological Diseases with the Institute of Macromolecular Chemistry of the Academy of Sciences of the CR.
- The facility also contributes to the EU Health Programme: Joint Action on Rare Cancers.
- The work on the pilot study of the impact of genetic factors on the effects of therapy and survival of patients with pancreatic cancer continues (in cooperation with the National Institute of Public Health, Department of Surgery of the 1st and 2nd Faculty of Medicine, Charles University and MUH).

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

Head - MUDr. Libor Fila, Ph.D.
Senior Doctor - MUDr. Dmitry Rakita, CSc.
Head Nurse - Jana Zelenková

Basic description:

The Department of Pneumology focuses on diagnostics, treatment and research of diseases of the lower respiratory tract and the lungs. The department has two stations with 56 standard beds and an ICU with 10 beds. The main programmes focus on pneumology, lung transplantation, cystic fibrosis, interventional bronchology and intensive care in pneumology.
In association with the SARS-CoV-2 pandemic in 2020, these standard beds were transformed into oxygen therapy units for patients with respiratory insufficiency during COVID-19 pneumonia, and our department simultaneously ran two other stations with 40 standard beds.
In 2020, a total of 1,680 patients were hospitalized, 12,381 were treated in the outpatient section, 1,055 bronchoscopies were carried out and 843 chemotherapies were administered. In 2020, a total of 279 patients were admitted to the intensive respiratory care unit; 126 patients (45.2%) were treated with ventilation support (non-invasive and invasive).

Specialized outpatient units:

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

New methods and procedures:

- Treatment of COVID-19 patients using new antivirals (remdesivir, favipiravir), convalescent plasma and high-flow nasal oxygen therapy (HFNO);
- Biological treatment of bronchogenic carcinoma (alektinib, osimertinib ceritinib and lorlatinib), cystic fibrosis (tezacaftor/ivacaftor) and bronchial asthma (reslizumab and benralizumab);
- Examination using radial EBUS and an ultra-thin bronchoscope with the option of biopsy of peripheral pulmonary lesions, which is a method allowing us to avoid surgical lung biopsy carried in many patients;
- Optimizing patient examinations prior to lung transplantation and post-transplantation care with regard to the SARS-cov-2 pandemic;
- Cooperation with the Neuromuscular Centre at MUH in the field of ventilatory support and expectoration support for patients with neuromuscular disorders;
- Cooperation with ResMed in the field of telemedicine - home monitoring for patients with sleep-disordered breathing.

Unique equipment:

- bronchoscope with EBUS Olympus MAJ-1720 with a radial probe
- Olympus BF-MP190F ultra-thin bronchoscope
- Airvo 2 devices for high-flow nasal oxygen therapy
- Simeox devices for airway decongestion based on the principle of decompression shocks

Major events in 2020:

- Taking part in a national project concerning a registry of patients with lung carcinoma called LUCAS, which is dedicated to biological treatment of this disease;
- Participation in a project for the early detection of chronic obstructive pulmonary disease in the at-risk population led by the National Screening Centre of the Institute of Health Information and Statistics;
- In autumn, attestations in the field of pneumology and phthisiology took place at our department and all 11 candidates succeeded.

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

Head - Prof. MUDr. Marek Babjuk, CSc.
Senior Doctor – MUDr. Marek Schmidt, FEBU
head nurse - Mgr. Sandra Dvořáková

Basic description:

The Department of Urology provides therapeutic and preventive care in the entire spectrum of adult urology nationwide and internationally. The site specializes in surgical treatment of cancers of the urogenital tract including the subsequent oncological treatment. It is one of the top facilities for the treatment of lithiasis and laparoscopy. The facility is the only site for surgical gender conversion in the CR. **In 2020, there were 23,360 outpatient examinations, 1,927 admissions and 1,822 surgical operations. As of 2018, it has had the daVinci robotic operating system. In 2020, there were a total of 352 robotic surgical procedures.**

Specialized outpatient units:

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

New methods and procedures:

- Advanced laparoscopic procedures - reconstructive surgery, retroperitoneal lymphadenectomy, kidney resection, vesicovaginal fistulas, Boari plastics; possibility of perioperative sonographic control of surgical procedures
- Improvement of endoscopic treatment of lithiasis – percutaneous mininephrolithotomy technique, percutaneous nephrolithotomy in supine position, flexible urethroscopy, laser endoscopic disintegration of complex and multiple nephrolithiasis
- 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
- Introduction of surgical implantation of sacral neuromodulator for the treatment of idiopathic hypoactivity of the bladder;
- Intradetrusor application of neurotransmitter blockers in the treatment of hyperactive bladder;
- Use of Ho:YAG laser in surgical procedures;
- Transurethral enucleation of the prostate using a morcellator;
- MRI/USG fusion prostate biopsies;
- Implantation of artificial urethral constrictor in severe incontinence.
- Robotic operations - radical prostatectomy, kidney resection, pyeloplasty, radical cystectomy, robotic occlusion of vesicovaginal fistula.

Unique equipment:

- Ho:YAG laser
- instruments for NBI (“narrow band paging”), fluorescence cystoscopy
- instruments for miniPNL
- 3D laparoscopic system Einstein Vision
- endoscopic morcellator Piranha
- Toshiba Aplio 500 sonographic device for MRI/USG fusion biopsies of the prostate
- The daVinci Xi robotic system

Major events in 2020:

- Organization of the 3rd ESU - ESOU Masterclass EAU 20.2.-21.2.2020, Prague
- Organization of the conference Comprehensive News in Oncology 21.5.2020, Prague
- MUH Creative Achievement Award 2020 - Babjuk M., Brisuda A., Horňák J., Háček J. - „Treatment of bladder tumours“

COMMON EXAMINATION AND THERAPEUTIC UNITS

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

Head - prof. MUDr. Miloslav Roček, CSc.
Senior Doctor of the adult section - MUDr. Radek Pádr
Senior Doctor of the children’s section - MUDr. Helena Dvořáková
Senior Radiological Assistant of the adult section - Tomáš Schilla
Senior Radiological Assistant of the children’s section - Alice Jará

Basic description:

In 2020, a total of 202,390 patients were screened in the adult section of the Department of Radiology and 294,692 examinations were made. Overall, this is about a 10% decrease in the number of examinations, especially in the area of conventional scans. The slight drop can be explained by the epidemiological situation and the state of emergency in the CR. The number of MRI scans increased slightly, the number of CT scans remained comparable, as did the number of interventional procedures. **In 2020, a total of 51,984 patients were examined in the children’s section of the Department of Radiology (DoR) and 71,164 examinations were carried out.** There was a 19% decrease in CT scans, a 13.6% decrease in ultrasound scans, a slight decrease of 1.26% in MRI scans and a 2.9% decrease in dental X-rays. The number of outpatients and inpatients could not be compared due to a glitch in the UNIS statistical module.
An internal clinical audit was carried out at the Department of Radiology and the department was preparing for reaccreditation, but this was postponed until 2021. The departmental regulations were updated, e.g. the Operating Rules, the Organisational Chart, the DoR Handbook. As of 1 January 2020, a separate Senior Doctor has been appointed to the children’s section of the DoR, as has as a senior radiology assistant.

Unique equipment:

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

New methods and procedures:

- CT angiography, 3D VR visualization, CT cardio, CT coronarography;
- CT generation of Vol data for neuronavigation, ENT navigation and stomatology;
- MR – new options for examination of the veins, functional examination of the heart, tractography, T2 relaxometry, examination of non-cooperating patients, spectroscopy;
- Thanks to the new Siemens VIDA 3T MRI, the DoR's capacity for MRI examinations has expanded by approximately 220 adult and child patients per month. This has led to a certain shortening of waiting times for some examinations. The main benefit of the new device, apart from better quality images, is the introduction of advanced techniques (MRS, fMRI, whole body MRI) that can be used both in routine practice and for research purposes. The accuracy of diagnosing pelvic tumours and pathologies of the musculoskeletal system has also seen great progress. With the delivery of a mobile MR-compatible ventilator, patients requiring general anaesthesia can now also be examined on 3T MR;
- Prenatal US and MR diagnostics;
- MAMO SONO site – ductography, puncture of cysts and core cut biopsy under US control, puncture with the Vacora device;
- Radiofrequency ablation and chemoembolization of metastasis in the liver, lungs;
- Implantation of 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 hemodialysis;
- 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 with elastography;
- Expanded use of dictation systems;
- Conferences and consultations also take place outside the CR;
- Conference system allowing for monitoring surgical procedures was involved;
- Arterial spin 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;
- The Horizon QDR densitometer has expanded the range of services offered by the DoR. The device can also be used by other clinics at MUH.

Major events in 2020:

- As of 1 January 2020, a separate Senior Doctor has been appointed to the children's section of the DoR, as has as a senior radiology assistant.
- The reconstruction of the examination room for simple interventions and the new examination room for densitometry was completed, its operation has started on a trial basis. Regular operation has started of the new MR workstation with a 3T magnet from Siemens MAGNETOM Vida.
- With regards to the situation with Covid-19, the clinic had to cancel the two-week Prague European Tutorial of Radiology, the Motol Day of Paediatric Radiology and MOST 2020 - an interdisciplinary symposium on MRI and CT of the heart.
- Close scientific cooperation was established with the Department of Radiodiagnostic and Interventional Radiology at IKEM, the spectroscopy group and the CAS.

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

Head - prof. MUDr. Milan Macek, DrSc.
Senior Doctor – MUDr. Markéta Havlovicová
Head Nurse - Hana Strouhalová
Economist - Ing. Ivana Funková, MBA
Quality manager - RNDr. Alexandra Štambergová

Basic description:

The department (hereinafter the DBMG) provides a wide spectrum of preventive and diagnostic medical care in medical and molecular genetics also through medical consultations throughout the Czech Republic. The DBMG diagnoses selected congenital defects, hereditary tumours, neurodegenerative diseases in children and adults, rare diseases including mental development disorders in prenatal and postnatal period. **In 2020, 13,078 consultations to patients were provided in the outpatient units of our department under postnatal and prenatal care. The DBMG laboratories carried out 6,322 molecular genetic tests of various types, ranging from targeted testing for a single gene variant to testing for a clinical exome.**
The DBMG laboratories are accredited by the Czech Institute for Accreditation and registered in the Register of Clinical Laboratories of the National Authorization Centre for Clinical Laboratories at the ČLS JEP (NASKL.cz) and hold a Certificate of Compliance with the Conditions of Audit I for Expertise in Clinical Biochemistry and Medical Genetics.
The National Coordination Centre for Rare Diseases, Centre for Diagnostics and Treatment of Paediatric and Adult Patients with Cystic Fibrosis was established under the DBMG and the site is also part of the national research infrastructure - "National Centre for Medical Genomics".
The DBMG likewise works on a number of projects of the 7th framework programme of the European Commission, Prague Competitiveness Operational Programme and Norway Grants (NG), Horizon 2020 in medical genetics and genomics.

Specialized outpatient units:

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

New methods and procedures:

- Diagnosis of new microdeletion syndromes using the FISH and aCGH methods as well as diagnosis without the need for direct culture of amniotic/chorionic cells continues to be expanded.
- A "custom" platform (4x180k CGH+SNP) has been introduced to the array CGH method to test patients with isolated heart defects or severe combined/complex congenital heart defects, which, compared to the standard 4x180k chip, is characterized by a higher probe coverage of the gene regions associated with congenital heart and aortic defects.
- The SNP array CGH method (a combination of oligochip with loci to test for loss of heterozygosity, e.g. for hereditary cancer syndromes and to exclude uniparental disomy) has been introduced.
- Classification of variants has been improved by the use of new database instruments and updating the evaluation algorithms of the software for data analysis. Apart from the passive use of Decipher, the international variant database, the results of the CGH array have also been fed into it since last year, i.e. we take part in creating this database.
- A national Czech array group for the improving chip diagnostics has been set up. Our colleagues hold expert positions in it.
- DNA diagnostics using the DNA sequencing method according to Sanger or using the fragmentation analysis method on more than 120 genes responsible for genetically conditioned syndromes with intellectual impairment, defects of the autistic spectrum, ataxia, dystonia, muscular dystrophy, myopathy, growth defects, osteochondrodysplasia, craniosynostosis, defects of gender development, syndromes with cancer predisposition, organ and sensory defects, thrombophilia, rare diseases and genetic syndromes are ongoing.
- We also examine for imprinting defects in PWS/AS and BWS/RSS syndromes.
- Gene deletions/duplications or microdeletion syndromes are examined using the MLPA.

- In diagnostic practice, we use diagnostics with the NGS methods. In 2020, we routinely used these methods to screen patients with suspected hereditary breast and ovarian cancer, patients with suspected HNPCC, neurofibromatosis, RASopathy, and some other selected hereditary diseases: familial multiple cerebral cavernous malformations, Gorlin syndrome, holoprosencephaly, Treacher-Collins syndrome, and Duchenne/Becker muscular dystrophy.
- We continued in the diagnosis of cardiomyopathies using our own diagnostic panel of genes, designed and validated during research projects in previous years. We examined the genes of this panel in 340 patients and purposefully in 409 of their relatives.
- We continued to analyse germline mutations in 286 genes associated with intellectual disability and autism by massively parallel sequencing with the NGS-CID panel. We used this panel to screen 203 patients in 2020, and another 135 people were screened specifically for a gene from the panel.
- We have initiated clinical exome analysis (CES) and whole exome sequencing (WES) in a pilot cohort of patients with the aim of replacing gene panel examination, which has lower yields, with CES or WES in the near future in indicated cases.
- We are improving filtering and prioritization of NGS data and the interpretation of a priori variants of uncertain significance using VarAFT, VarSome Clinical and Genoox.
- We screen newborns for cystic fibrosis throughout the Czech Republic in cooperation with the University Hospital in Vinohrady and the General University Hospital in Prague (approx. 50,000 newborns).
- In assisted reproduction, we offer cryopreservation of ovarian tissue for oncological patients prior to commencing their treatment in cooperation with the Department of Paediatric Haematology and Oncology and the Department of Gynaecology and Obstetrics.
- Since 2019, the LAISS (Laser Assisted Immotile Sperm Selection) method has also been used to select the most suitable sperm for fertilisation in patients with significant sperm motility disorders.

Unique equipment:

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

Major events in 2020:

- The DBMG has once again successfully taken part in international quality controls (CEQAS, EMQN, CF Diagnostic network) in its area of expertise. Likewise, we obtained a certificate of successfully taking part in an international external quality control of next-generation sequencing (NGS) for diagnostic purposes and certification in the field of BRCA1/2 gene testing for hereditary forms of breast and ovarian cancer.
- Clinical applications of NGS in neurogenetics, cardiogenetics and dysmorphology, often associated with intellectual disability and autism spectrum disorders, and also in hearing disorders.
- As part of the 3D Facial Morphometry project, it is used as a tool to accurately describe and digitise the phenotype of patients, providing the possibility of finding genotype/phenotype correlations, the scanning of probands' faces continued in 2020. A pilot study of overall facial shape indicated some differences in facial morphology in patients with autism spectrum disorders when compared to a control group, which is being tied in to grant projects.
- The Head of the DBMG in his position of the coordinator of the National Coordination Centre for Rare Diseases continues to guarantee inclusion of a large part of the departments at the MUH in the European Reference Networks (ERN) for rare diseases. Permanent cooperation with the Czech Association for Rare Diseases (CAVO) has been established.

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

Head - prof. MUDr. Richard Průša, CSc.
Senior Doctor - MUDr. Jana Čepová, Ph.D., MBA
Head laboratory technician - Mgr. Martina Bunešová, MBA

Basic description:

The laboratory of the DMCCB provides more than 222 different laboratory examinations. Every year we process biological material from 101,153 unique personal ID numbers . Every day (including Saturdays, Sundays and bank holidays) the laboratory examines an average of 2,500 biological samples, i.e. 830,464 examinations per month, in a non-stop three-shift operation. Many examinations (MTX, cyclosporine A, tacrolimus, sirolimus, lead, platinum, antimycotics, busulfan, IGF-1, gentamycin, α defensin, etc.) are also carried out for other external medical facilities. Examinations are also carried out for self-payers and veterinary medicine. **In 2020, a total of 8,865,579 laboratory tests were performed.** The DMCCB has specialized outpatient units focusing on the issues related to hyperlipoproteinemia, bone metabolism defects, nutritional defects in the sense of obesity and malnutrition. **In 2020, 4,000 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:

- 2018 - development of a method and demonstration of determination of the levels of Busulfan from HPLC on LC/MS
- 2018 - expansion of the ELFO methodology by special quantification of BJB in the urine
- 2018 - new determination of CDT
- 2018 - new determination of the prostate health index (PHI)
- 2019 - transfer of STFR analysis to Advia and Mg analysis to Vitros
- 2019 - MTX transferred from Integra to Architect (automatic dilution)
- 2019 - busulfan routinely transferred to LC/MS
- 2019 – Lp(a) routinely to Advii
- 2019 - AMH - change of reference limits
- 2019 - 17-OH progesterone - method changed due to restandardization
- 2020 – ganciclovir
- 2020 - α defensin

Unique equipment:

- 2018 - new urine analyser – Atellica, chemical + microscopical module
- 2018 - new analyser Optilite, replacement for Immage 800
- 2018 - new gamma counter Berthold LB 2111, replacement for the old item
- 2019 - installation (renewal) of two Atellica 1500 urinalysis lines (chemical determination + sediment), replacement of the old one
- 2019 - installation of Stat Strip a new network glucose meter from Nova Biomedical for ward 2 inpatient station/ICU I. orthopaedic clinic of the 1st Faculty of Medicine, Charles University
- 2019 – 2 new OsmoPRO osmometers
- 2019 – electrothermal atomization absorption spectrometer and flame atomization absorption spectrometer Agilent 200 Series AA Spectrometer 240FS AA
- 2019 –Cobas Integra 400plus analyzer (replaced the old one)
- 2020 – POCT- installation of a new network glucose meter
- 2020 – Stat profile Prime, Ca++, Mg ++ analysis
- 2020 – POCT –installation and subsequent responsibility for 6 x ABR analysers
- 2020 - new biochemical analyser - Atellica - 3, fundamental change in basic biochemical operation

Major events in 2020:

- Menhir of Professor Masopust 23 January, specialized conference.
- February/March 2020 Installation of a new analytical system, change in the receipt and processing of patients' biological material in favour of faster and better laboratory services;
- By their active participation, the DMCCB employees managed to cope with both major analytical changes and the demanding pandemic situation in the CR with an impact on hospital operations.
- Total number of publications: 14
  - of which with IF: 7
  - peer-reviewed articles 5
  - educational articles for the general public 2

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

Head - prof. MUDr. Jiřina Bartůňková, DrSc., MBA
Senior Doctor- prof. MUDr. Anna Šedivá, DSc.
Head laboratory technician - Mgr. Jarmila Grecová

Basic description:

The Department of Immunology provides comprehensive care for paediatric and adult patients with immunopathological conditions, including clinical and laboratory examination and follow--up care. Besides outpatient examinations and treatment in the full range of allergology and clinical immunology, the Department of Immunology also provides a specialized outpatient clinic for vaccinating patients at risk, as well as regular therapy and application by infusion for indicated drugs. For severe immune disorders in the children's and adult day care units. Clinical trials in the field of immunotherapy are also conducted in the outpatient clinics and laboratories of the Department of Immunology. The department is the base for pregraduate and postgraduate tuition in immunology and carries out research in the same field. The Department of Immunology provides highly specialized care in immune disorders, immunodeficiencies and autoimmune diseases, including neuroimmunology, severe forms of allergic diseases and focuses on immunology of tumorous diseases. The department operates nationally in these areas of highly specialized care, sometimes even internationally.
In 2020, 15,408 patients were examined in the outpatient section and laboratories performed 217,489 examinations in 38,187 patients, and a further 19,904 examinations in the CSF laboratory

Specialized outpatient units:

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

Centres:

- centre for the treatment of difficult-to-treat asthma (Omalizumab, Xolair, monoclonal antibody against IgE, and Mepolizumab, Nucala, monoclonal antibody against IL-5/R)
- centre for the treatment of hereditary angioedema (C1inhibitor substitution, bradykinin inhibition, from 2019 and in 2020 biological therapy Lanadelumab, Takhzyro, monoclonal antibody against kallikrein)
- Centre for diagnostics and treatment of immunopathological conditions of the Department of Immunology, 2nd Faculty of Medicine of Charles University and MUH in the framework of the Federation of Immunological Societies' Centres of Excellence

Specialized laboratory:

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

New methods and procedures:

- Extended options for diagnosis of severe immune disorders especially in methods for examining cell immunity;
- Functional examination of parameters of congenital and acquired immunity;
- Intracellular examination of anti-inflammatory cytokines;
- Extension of the cell immunity panel (proliferation test ki-67, examination of Th17 and T regulating lymphocytes);
- Introducing new methods in the context of the COVID-19 pandemic, determining IL-6, sIL2R and SARS-CoV-2 antibodies
- Extended day-care units in supervision of home application of subcutaneous immunoglobulins;
- Clinical studies of immunoglobulin preparations;
- Clinical studies of modern targeted treatment of immunopathological conditions;
- Clinical studies of immunopathology of tumors.

Unique equipment:

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

Major events in 2020:

- Continued individual administration of unregistered preparation DCVAC under the hospital exception for modern therapy pharmaceuticals Sections 49b) and 49c) of the Act on Pharmaceuticals;
- Operation of an immunodeficiency centre as part of the global network of centres of the Jeffrey Modell Foundation, USA; contract prolonged until 2020
- Continuing in the work of the Centre of Excellence FOCIS (Federation of Clinical Immunology Societies, USA, EU);
- Working on projects for the Institutional Support of the MUH and solving AZV grants - AZV grant 16-32838A on the topic of Innate Immunity in Type 1 Diabetes advanced to the nomination round for the Minister of Health Award.
- Project "Longitudinal Monitoring of Immune Parameters in Patients with Type 1 Diabetes", Response of Innate Immunity to SARS-CoV-2 Infection. and PID Diagnostics - companion web app. in the Modern Therapies scheme;
- Clinical study of a rare disease Activated PI3 Kinase Syndrome with a Specific Inhibitor CCDZ173X2201; inclusion of a patient from Germany in this study;
- 43 foreign impacted publications with a total impact of 244.138, 13 publications in Czech language, 1 chapter in a book.

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

Head - prof. MUDr. Pavel Dřevínek, Ph.D.
Senior Doctor – MUDr. Otakar Nyč, Ph.D.
Senior Laboratory Technician - Bc. Vilma Klemensová

Basic description:

The department provides laboratory diagnostics of bacterial, viral, mycotic and parasitic infections. It provides consultation in ATB therapy, differential diagnostics of infections and infection complications. The department cooperates on monitoring the occurrence of nosocomial infections and monitors the occurrence of extraordinary profiles of ATB resistance. The site contributes to the activities of the Independent Quality Control Department by preparing, presenting, implementing and assessing audits focused on rational use of ATB and other medication in the hospital. It is connected to the European system of surveillance of ATB resistance and a European study for monitoring the incidence of infections caused by Clostridium difficile. Through its representatives in the Central Coordinating Group of the National Antibiotic programme, Subcommittee for Antibiotic Policy of ČLS JEP and the committee of the Society for Medical Microbiology ČLS JEP, the department participates actively in the implementation of the antibiotic policy in the CR. Special emphasis is placed on evaluation of the latest diagnostic procedures and their implementation in the clinical practice with the aim to further improve microbiological diagnostics. Since the beginning of the COVID-19 pandemic, the department has been providing PCR laboratory diagnosis of this infection. In the person of the departmental head, the facility is represented in the Laboratory Group of the COVID of the Ministry of Health of the Czech Republic; four departmental workers are on the committee of the Society for Medical Microbiology of the ČLS JEP. **In 2020, the department reported a total of 231,655,160 points.**

New methods and procedures:

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

Unique equipment:

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

Major events in 2020:

- In 2020, due to the epidemiological situation, SARS-CoV-2 diagnostics (COVID-19) were quickly introduced. The MUH was one of the first five laboratories in the CR to start conducting this test.
- Monitoring the prevalence of plasmid-encoded colistin resistance (mcr-1 gene) in inpatients and outpatients with a travel history
- In the area of infections with Clostridioides difficile, risk factors associated with 90-day mortality were analysed in a multicentre European study.
- In collaboration with Slovakia, 400 strains of MRSA (methicillin-resistant Staphylococcus aureus) were typed. It was found there was a high frequency of the epidemic community line USA300 (carrying the Panton-Valentine leukocidin gene)
- Participation in preparation of specialized seminars held by the Society for Medical Microbiology;
- Prof. MUDr. Pavel Dřevínek, Ph.D: member of the Committee of the European Cystic Fibrosis Society (ECFS), chairman of the SLM ČLS JEP;
- Mgr. Marcela Krůtová, Ph.D: member of the European ESCMID Study Group for Clostridium difficile – ESGCD;
- Publications: 28 foreign impacted publications

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

Head - prof. MUDr. Roman Kodet, CSc.
Senior Doctor – MUDr. Daniela Nováková Kodetová,
Senior Laboratory Technician - Vladimíra Kratinová

Basic description:

The department focuses on diagnostics of various types of diseases. It used conventional histology methods with additional subsequent special laboratory examination methods. **In 2020, 25,001 patients were examined, which is 392,529 histological and cytological preparations. The laboratory of molecular pathology carried out 28,566 examinations using the flow cytometry, PCR, FISH, and predictive IHC methods on a total of 2,521 patients.** The department also operates as a pregraduate and postgraduate educational institution. Its autopsy operation fulfils the educational and inspection function within the hospital.

Specialized laboratories:

- biopsy laboratory
- laboratory for electron microscopy
- laboratory for immunohistochemistry (ihc)
- laboratory for diagnostics of neuromuscular diseases
- laboratory for flow cytometry
- laboratory for in situ hybridization
- laboratory for DNA and RNA analysis
- cytological laboratory
- necroptic laboratory
- laboratory for pulmonal cytology
- nephrological laboratory

New methods and procedures:

- Over the year we continuously introduced new immunohistochemical methods for tumour diagnosis, e.g. anti BCL-2 to improve detection of BCL-2 protein expression in follicular lymphomas.
- Standardized and optimized procedure for detecting PD-L1 expression in patients with lung cancer.
- The introduction of new colouring methods in the biopsy laboratory. Standardization and optimization of procedures.
- Continuation of next-generation sequencing (NGS) methodology on paraffin-embedded cancer tissues and the introduction of new targeted panels at both the DNA and RNA levels.
- Introduction of the “liquid biopsy” methodology and detection of circulating tumorous DNA(c+DNA)
- The department participates significantly in Motol Hospital’s transplantation programme. Tissues from kidney, heart, lung and uterus transplant patients are regularly examined. New immunohistochemical antibodies and procedures have been introduced to improve the diagnosis of determining rejection and tissue status after transplantation.
- Development of molecular neuro-oncology for more accurate diagnosis of CNS tumors, especially in childhood. Introducing new markers: FGFR1-TACC1, FGR-3-TACC3, FGFR1 ITD, NTRK gene fusions, novel BRAF rearrangements, FGFR1 and PIK3CA hot spot mutations.
- Developing molecular diagnostics for soft tissue tumours.
- Developing diagnostics for systemic histiocytoses that have a mutation in the BRAF gene.
- Introducing diagnostics for NUT-BRD positive sarcomas by RT-PCR or next generation sequencing (NGS).

Unique equipment:

- cyclers for PCR in real time.
- device MiSeq for the “Next Generation Sequencing” methodology
- genetic eight-capillary analyser
- automated colouring and mounting machine for processing histological preparations.
- automated deep freeze machine for slicing perioperative biopsies.
- an Idylla Biocartis device to detect specific gene changes.

Major events in 2020:

- The project of institutional support for science from the Ministry of Health CR continued in 2020 at a good level.
- The facility’s total IF for 2020 was 186.615.
- Publications:
  - Expression of cancer stem cells markers in urinary bladder urothelial carcinoma and its precursor lesions Jaromir Hacek, Antonin Brisuda, Marek Babjuk, Josef Zamecnik Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub. 2020 May 18. IF 1.000
  - Durable Response to Brentuximab Vedotin-Based Chemotherapy in Refractory Hodgkin Lymphoma with Central Nervous System (CNS) Involvement Heidi Mociková, Hana Malikova, Michal Holesta, Abdulfattah Elturki, Vit Campr, Tomas Kozak Am J Case Rep. 2020 Mar 14;21:e921657
  - Gastric tumors in children: single-center study with emphasis on treatment of repeated recurrence
  - Natalia Petrasova, Jiri Snajdauf, Ondrej Petru, Barbora Frybova, Karel Svojgr, Zdenek Linke, Vladimir Mixa, Roman Kodet, Martin Kyncl, Michal Rygl Pediatr Surg Int. 2020 Aug;36(8):917-924
  - The role of fine-needle aspiration biopsy (FNAB) in the diagnostic management of parotid gland masses with emphasis on potential pitfalls Lucie Dostalova, David Kalfert, Alzbeta Jechova, Vladimir Koucky, Stepan Novak, Martin Kuchar, Michal Zabrodsky, Daniela Novakova Kodetova, Marie Ludvikova, Ivana Kholova, Jan Plzak Eur Arch Otorhinolaryngol. 2020 Jun;277(6):1763-1769. IF 1.809
  - Expression of molecules of the Wnt pathway and of E-cadherin in the etiopathogenesis of human thymomas Prokop Vodicka, Lenka Krskova, Igor Odintsov, Ludmila Krizova, Eva Sedlackova, Jan Schutzner, Josef Zamecnik Oncol Lett. 2020 Mar;19(3):2413-2421. IF 2.311
  - Novel ZEB2-PLAG1 fusion gene identified by RNA sequencing in a case of lipoblastoma Lenka Krsková, Tereza Němečková, Jan Balko, Petr Brož, Aleš Vícha Pediatr Blood Cancer. 2020 Sep 12;e28691. IF 2.355

- Novel variant in the KCNK9 gene in a girl with Birk Barel syndrome Marie Šedivá, Petra Laššuthová, Josef Zámečník, Lucie Sedláčková, Pavel Seeman, Jana Haberlová Eur J Med Genet. 2020 Jan;63(1):103619. IF 2.368
- Dent Disease Type 2 as a Cause of Focal Segmental Glomerulosclerosis in a 6-Year-Old Boy: A Case Report Martin Bezdíčka, Jan Langer, Jaromír Háček, Jakub Zieg Front Pediatr. 2020 Oct 28;8:583230. IF 2.634
- Giant lung metastasis of NRAS-mutant melanoma in a 24-year-old patient with a history of BRAF-mutant conventional melanoma harboring Spitzoid morphology: a case report Jiri Vachtenheim Jr, Roman Kodet, Ondrej Fischer, Vitezslav Kolek, Zuzana Strizova, Andrej Ozaniak, Jan Simonek, Alan Stolz, Jiri Pozniak, Jan Kolarik, Monika Svorcova, Jiri Vachtenheim, Robert Lischke Diagn Pathol. 2020 Oct 25;15(1):132. IF 2.528
- Interleukin-35 in idiopathic inflammatory myopathies Heřman Mann, Olga Kryštůfková, Josef Zámečník, Jaromír Háček, Hana Hulejová, Mária Filková, Jiří Vencovský, Ladislav Šenolt Cytokine. 2021 Jan;137:155350. IF 2.952
- M2-like macrophages dictate clinically relevant immunosuppression in metastatic ovarian cancer Michal Hensler, Lenka Kasikova, Karel Fiser, Jana Rakova, Petr Skapa, Jan Laco, Tereza Lanickova, Ladislav Pecen, Iva Truxova, Sarka Vosahlikova, Irena Moserova, Ivan Praznovec, Vit Drochytek, Martina Rehackova, Tomas Brtnicky, Lukas Rob, Vladimir Benes, Jelena Pistolic, Ludek Sojka, Ales Ryska, Catherine Sautes-Fridman, Wolf Herve Fridman, Lorenzo Galluzzi, Radek Spisek, Jitka Fucikova J Immunother Cancer. 2020 Aug;8(2):e000979. IF 10.252
- Rare IDH1 variants are common in pediatric hemispheric diffuse astrocytomas and frequently associated with Li-Fraumeni syndrome David Sumerauer, Lenka Krskova, Ales Vicha, Adela Misove, Yasin Mamatjan, Pavla Jencova, Marketa Vlckova, Lucie Slamova, Katerina Vanova, Petr Liby, Jakub Taborsky, Miroslav Koblizek, Radek Klubal, Martin Kyncl, Gelareh Zadeh, Jan Stary, Josef Zamecnik, Vijay Ramaswamy, Michal Zapotocky Acta Neuropathol. 2020 Apr;139(4):795-797. IF 14.251

Department of Clinical Haematology

Senior Doctor - MUDr. Jitka Segethová
Senior Laboratory Technician - Blanka Hájková

Basic description:

The department provides extended haematological care according to the criteria of the Czech Haematological Society ČLS JEP. It is divided into two sections - the laboratory and the clinical section. The laboratory performs routine and special haematological examinations for the MUH and for requests from outside the region. **In 2020, the laboratory performed almost 903,000 procedures.** The laboratory is a reference laboratory for diagnostics of acute leukaemia 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. **38,000 procedures were carried out in the outpatient section in 2020.** 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 adults' outpatient section includes application rooms used for the application of transfusion preparations and chemotherapy.

New methods and procedures:

- Examination of the function of thrombocytes;
- Introducing a methodology for examining the levels of new antithrombic medicines;
- Introduction of the methodology for the examination of fibrine monomers.
- 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 department is carrying out a clinical studies for Boehringer Ingelheim – no. 2013-002114-12, no. 2014-000583-18 with dabigatran.

Unique equipment:

- SYSMEX XN 3000 - automated line for examination ob blood count including digital morphology
- coagulometers (ACL) for the examination of routine and special coagulation tests.
- STA-R Evolution – analyzer for examining fibrine monomers.
- device for functional analysis of thrombocytes (Innovance PFA 200)
- a satellite incubator for receiving haemocultures

Major events in 2020:

- The COVID 19 pandemic has meant an increase in the number of coagulation tests in the haematology laboratory, especially those performed multiple times a day in critically ill patients (e.g. antiXa, fibrin monomer tests have increased by 25-30%).

Department of Clinical Psychology

Head - Mgr. Zuzana Kocábová

Basic description:

The Department of Clinical Psychology (DCP) is made up of 37 clinical psychologists in various positions who provide psychodiagnostic and psychotherapeutic care to adult and paediatric patients at the MUH. **In 2020, the department treated 3,039 patients and performed 8,144 procedures.** The department provides care for paediatric and adult patients before and after organ transplantation, paediatric haemato-oncology patients and patients with chronic pain. The psychologists are involved in complex diagnostic and therapeutic care for paediatric patients with autism spectrum disorders, eating disorders and other psychiatric diagnoses. DCP psychologists are also part of multidisciplinary teams caring for paediatric patients with chronic renal failure, cystic fibrosis and diabetes. They also care for paediatric and adult patients in the epilepsy surgery programme, patients in the Aftercare Centre, and are also part of the teams focused on research and treatment for neurodegenerative diseases. Currently, the DCP also works closely with support and palliative care teams for children and adults. There is also a Family Therapy Centre within the department. The DCP provides psychological services to MUH employees, including regular interviews. The department is accredited by the Ministry of Health of the Czech Republic for the theoretical-practical and practical part of specialization training in Clinical Psychology and Child Clinical Psychology.

New methods and procedures:

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

Major events in 2020:

- Employees of the Department of Clinical Psychology were involved in international research projects and actively participated in lecturing activities for the professional and general public. They have published in major scientific journals (Journal of Alzheimers Disease, Journal of the International Neuropsychological Society, Aging, Neuropsychology and Cognition, European Psychologist, Annals of clinical and translational neurology) and actively participated in professional conferences (e.g. The European Society of Human Reproduction and Embryology conference).
- In 2020, DCP staff also received the Vladimír Vondráček National Psychiatric Award in the practical application category for a book: Čechová, K., Fendrych Mazancová A., Marková H. (Eds.) et al. (2019). In the Maze Called Alzheimer's: What There's Little Time for in the Clinic. Prague: Albatros Media.

Blood Bank Department

Senior Doctor - 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 ensured purchasing, storage and issue of all types of transfusion preparations for patients in the MUH. **In 2020, the department issued a total of 29,377 T.U. of all types of transfusion preparations,** 19,086 T.U. or erythrocytic preparations, 6,706 T.U. of plasma, 3 585 T.U. of thrombocytic preparations. Consumption of transfusion products remained virtually the same as in 2019. The Blood Bank Department carries out the basic and specialized immunohaematological examinations as requested by medical facilities, prenatal examinations for the pregnancy advisory centre of the Department of Gynaecology and Obstetrics and provides transfusion preparations for intrauterine and exchange transfusion as needed. **In 2020, 9,975 blood group examinations, 20,362 antibody screening tests, and 35,518 compatibility tests were carried out as part of the basic pre-transfusion examinations.** The number of specialized immunohaematological examinations is similar in 2020. Prenatal examinations are without any major changes. The number of transfusion product irradiations was higher than in 2019 - 9,935 in all. At the autotransfusion and apheresis section, autologous full blood is collected mainly for patients from the Departments of Orthopaedics of the MUH, Department of Urology of the 2nd Faculty of Medicine and MUH, and for patients of the Na Homolce Hospital. **In 2020, a total of 76 autologous whole blood donations, 41 leukapheresis donations and 121 extracorporeal photochemotherapy procedures were performed.** The department provides tuition under the 2nd Faculty of Medicine, Charles University and for pregraduate and postgraduate students in transfusion medicine for physicians and NGO.

Specifics of the department:

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

New methods and procedures:

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

Unique equipment:

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

Major events in 2020:

- In cooperation with the DPHO, international accreditation was 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 Doctor - 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, primary vasculitis and autoinflammatory diseases. Other cooperating fields and laboratory cervices 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 2020, 5,575 collections, 5,749 inpatient examinations, 3,341 minimum contacts, 443 consultations by phone and 264 specialized ultrasound examinations were carried out at the department and 265 medical consultations were provided for inpatients at various departments of the MUH.**

Specialized outpatient units:

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

New methods and procedures:

- The portfolio of biological drugs used was expanded by new IL-17 blockers in indications of ankylosing spondylitis, non-radiographic spondyloarthritis a psoriatic arthritis.
- The portfolio of biologic drugs has been expanded to include new IL-6 inhibitors for RA indications.
- The drug portfolio has been expanded to include small targeted synthetic molecules (JAK inhibitors) to treat RA and, in clinical trials, in paediatric patients with JIA.
- The portfolio of biologic drugs has been expanded to include new IL-1 in indications of rare autoinflammatory syndromes.
- Bedside diagnostics and dynamic monitoring of the activity of inflammatory rheumatological diseases with musculoskeletal ultrasonography have been established.
- Collaboration has been established with the Clinic of Imaging Methods of the 2nd FM CU and MUH in the field of whole-body MRI in specific indications (e.g. CRMO).

Unique equipment:

- two ultrasound devices (Esaote Mylab Class C, Esaote Mylab Seven) fitted with high frequency probes
- capillaroscope for examining pathology in patients with SSc, SLE, MCTD and system autoimmunity
- The Hologic Horizon-A densitometric device is now shared with the Department of Radiology for the densitometric evaluation of patients with a calcium-phosphate metabolism disorder.

Major events in 2020:

- The department's employees regularly contributed to local specialized congresses organized by the Czech Rheumatological Society ČLS JEP and foreign congresses EULAR and ACR with their lectures.
- The centre actively presents the outcomes of the ATTRA registry in the Czech Republic and at the international congresses EULAR and ACR.
- Departmental employees regularly publish in domestic and foreign periodicals.
- In 2020, the work on the internal grant, with institutional support form the MUH, entitled "Use of Musculoskeletal Ultrasonography in Detecting Cartilage Damage in Patients with Rheumatoid Arthritis and Osteoarthritis" continued successfully.
- Steps have been taken to set up a clinical osteology department.
- Specialist outpatient clinics worked continuously during 2020, despite the coronavirus pandemic, to ensure the continuity of the care for complicated patients with inflammatory rheumatological problems.

Department of Central Operating Theatres for Children

Head Nurse - Bc. Alice Podařilová
Supervising Physician - MUDr. Vladimír Mixa, CSc, Ph.D., KARIM

Basic description:

The Department of Central Operating Theatres for Children concentrates all surgical procedures for all surgery and other fields from the paediatric part of the hospital, except for cardiac surgeries. This concerns the fields of paediatric surgery, ENT, orthopaedics (also adult surgery), dental surgery, neurosurgery and ophthalmology. Bone marrow sampling, trepanobiopsy, PICC and Midline are also carried out here. Pregraduate and postgraduate tuition for physicians and other medical staff is carried out in the premises of the central operating theatres for children.
6,300 surgical procedures were carried out in 2020.

New methods and procedures:

- The first surgery on a tracheoesophageal H fistula in a newborn using a silicone silo in the CR was carried out in 2018;
- The first thoracoscopic surgery of long gap atresia in a child's oesophagus in the CR was in 2018;
- Establishment of a multidisciplinary group for comprehensive surgical and conservative treatment of lymphangiomas and haemangiomas of the head and neck;
- Robotic surgery in paediatric urology;
- Extension of surgery in orthopaedics by including individual tumorous endoprosthetics;
- New methods of endoscopic surgery in proctology;
- Constantly expanding endoscopic, laser and plasma techniques;
- Wider use of navigation in neurosurgery;
- Pilot operation of transfer from laparoscopic surgeries to the training room of paediatric surgery (image and sound) used for the Department of Paediatric Surgery and international conferences;
- Introduction of central vascular catheters led from the peripheries PICC (54) and Midline (59), for a total of 113 procedures in 2020.

Unique equipment:

- equipment for minimally invasive surgery with 3D imaging from B. Braun
- LS instruments for the smallest children 3.5 mm and 5.0 mm
- Aeris balloon catheter – used for gentler dilation of stenosis of the respiratory tract in children
- EndoCameleon – optics with variable angle
- Neo Laser with microfiber
- Bienaire, Colibra, Aesculap bone cutters
- modernization of operating table accessories - mechanism for head support for NCH surgeries and suspension mechanism for fixation of hand during ASC of the shoulder
- advanced electrocoagulation systems (by Covidien/Metronic, Ligasure, Voyant)
- 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 anesthesiology devices by GE, series Aisys, Avance and Carestation
- Radix (Storz) 4K endoscopic tower
- Olympus endoscopic tower

Major events in 2020:

- A laparoscopic assisted proctocolectomy + POUCH was carried out.
- It manages to keep fully operational in today's unpropitious staffing and hygiene--epidemiological situation, caused by the shortage of nurses and orderlies and the COVID 19 pandemic. The situation is reflected in the total number of procedures, with 7,012 surgeries performed in 2019 and a drop to 6,300 surgeries in 2020.

Department of Central Operating Theatres for Adults

Senior Doctor - MUDr. Zbyněk Jech
Head Nurse - Vladana Roušalová

Basic description:

The COT department for adults is the background for surgical treatment at eight surgical departments in the adult part of the MUH. I. and III. surgery, ENT, I. and II. orthopaedics cardiovascular surgery, spondylosurgery and neurosurgery. Anaesthesiological care at the COT is provided by KARIM MUH. The 24 operating theatres perform operations ranging from routine to highly specialized. Of all the specialized procedures, these are primarily lung transplantation, operations in multidisciplinary teams for cancer patients and close cooperation when treating polytrauma patients. In the framework of the surgical facilities, COT employees take part in running the MUH Robotic Surgery Centre. The COT provides undergraduate and postgraduate training for medical and non-medical health professionals. **In 2020, there were 15,012 operations performed at the COT for adults.**

New methods and procedures:

- Microsurgery with an operating microscope - Exoscope with a 3D display;
- Robotic surgery at surgical theatres in the framework of the Robotic Surgery Centre of MUH on the daVinci Xi robotic operating system.

Unique equipment:

- Aeos DSM operating microscope (Exoscope in 3D view) - B.Braun
- Stealth Station S8 neuronavigation device - Medtronic
- Two disinfection units were purchased to disinfect the air at the COT Novaerus--Defend 1050.
- High-End laparoscopic tower - Olympus with 4K image resolution
- Olympus bronchoscopic tower
- replacement of operating lamps in theatres E2, E3; replacement of coagulation devices, surgical instruments, accessories and suction devices

Major events in 2020:

- As a result of the Covid-19 pandemic (even for COT staff) and related measures, 2,760 fewer operations were carried out than in 2019. The total number of operations performed in previous years differed in the order of tens of operations.
- one nurse completed the 2nd degree of higher education in nursing in perioperative care; one nurse completed the 1st degree of higher education in nursing; one nurse completed the post-secondary specialization study; four orderlies completed the accredited qualification course - general orderly.

Department of Transplantations and Tissue Bank

Chief Physician - MUDr.Jan Burkert, Ph.D.
head nurse - Anna Habrmanová, CETC, CTBS

Basic description:

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

Specifics of the facility:

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

- National programme of kidney transplantation in children (head physician MUDr. Jakub Zieg, Ph.D. from the Paediatric Department)
- National programme of lung transplantation in children and adults (lead physician prof. MUDr. Robert Lischke, Ph.D. from III. surg. dept.)
- National programme of heart transplantation in children (chief physician Senior Doctor MUDr. Roman Gebaurer from the Children's Cardiac Centre)
- The organ and tissue donation programme at MUH is coordinated by Prof. MUDr. Karel Matoušovic, DrSc. from the Internal Medicine Department.

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.
In 2020, 6 multi-organ collections (MOC) from cadaveric donors were carried out. 6 kidney transplantation in children (all from cadaveric donors) were carried out. 35 lung transplantations were carried out (93% of which were bilateral and 85% on ECMO) as were 4 heart transplants in a child. 86 hearts were received in the cardiovascular tissue bank and 119 grafts for transplantation of heart valves and conduits were issued, 115 of which were transplanted. Two vascular grafts were removed and 8 were received. 60 femoral heads were taken from living donors, of which 34 were transplanted. 43 collections of the calva from living donors for autologous use were carried out and 11 cranioplasty procedures were carried out. Amniotic membrane grafts from the placenta were collected from 20 living donors and 392 grafts were issued for transplantation.

Major events in 2020:

- Although it was not possible to keep the number of lung transplants above 40 per year, we consider the 35 transplants we did manage to do to be a great success during the covid pandemic.
- The number of transplanted valve grafts continues to increase: 2014 - 78, 2015 - 98, 2016 – 114, 2017 – 114, 2018 – 127, 2019 – 105, 2020 – 115 transplanted valve grafts.
- The human amniotic membrane processing programme is now running smoothly. Thanks to grant support, the programme continues to expand (AZVCR, internal number 5368, ministry number NV18-04-00106).

Outpatient sector

Emergency Department and Medical First Aid Service for Children

Senior Doctor - MUDr. Jitka Dissou
Head Nurse - Monika Vilímová

Basic description:

The Emergency Department and Medical First Aid Service for Children cares for A+E paediatric patients aged 0- 17 years + 364 days. The department has the following 3 parts: Urgent admission - acute boxes, Urgent admission - ambulance and Urgent admission - expectoration. From 4:00 p.m. to 7:00 a.m. on weekdays and on weekends, the emergency room works non-stop as a children's emergency room. Priority 1 and 2 patients and patients received from the ambulance service are treated in the acute emergency boxes. The department also has the "expectoration", where it is possible to provide acute infusion therapy, analgesic treatment or observe patients for up to 8 hours. POCT ABR, ECG, ultrasound are all available directly in the department. CT, ultrasound, X-ray and MRI are located in the immediate vicinity of the emergency room.
In 2020, 22,289 children were treated at the Emergency Department and LSPP, of which 4,905 children through the emergency admissions.

Department of Dermatovenerology for Adults

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

Basic description:

This is an outpatient unit without a link to an inpatient unit within the MUH. The department provides basic and specialized care in dermatology and venerology focusing on dermatoallergology and occupational skin defects, prevention and treatment of skin tumours and treatment of psoriasis. In 2020, more than 7,496 patients were treated in the outpatient care and almost 21,042 treatments were carried out.

Specialized outpatient units:

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

New methods and procedures:

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

Unique equipment:

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

Department of Dermatology for Children

Senior Doctor - MUDr. Štěpánka Čapková
Charge nurse - Alena Kurešová

Basic description:

The Dermatology Department for Children provides outpatient services in 3 outpatient clinics and a surgery room. It is involved in the diagnosis, treatment and observation of paediatric patients with all skin diseases. It also provides consultation services to patients in the inpatient wards of the hospital's children's section. It acts as the CR's super-consultation workplace for serious or rare diseases. It takes part in training doctors in the fields of dermatovenerology, allergology or paediatrics in the framework of postgraduate education.
In 2020, 10,286 outpatient procedures were carried out and 340 medical consultations were provided at the inpatient beds of the hospital's children's section.

Specifics of the facility:

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

Unique equipment:

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

Major events in 2020:

- The department took part in organizing the dermatology section 37. Congress of Czech and Slovak Allergologists and Immunologists - 2 physicians actively participated. Lectures continued in the ČLK courses for paediatricians, in the IPVZ for dermatologists and in pre-testing courses for paediatricians and allergologists
- MUDr. Čapková was involved in creating the AtopikOnline project, which was done under the auspices of the Czech Dermatovenerological Society. Educational videos on the causes, treatment and prevention of atopic eczema are prepared for patients with atopic eczema and their parents.

Primary Care Department

Senior Doctor - MUDr. Jaroslava Kulhánková
Head Nurse - Alena Kašajová

Basic description:

The department provides acute and long-term preventive care for the staff, patients from outside the Motol hospital registered under individual payments, foreigners with or without insurance from the local health insurance companies, and non-standard care for persons with Czech health insurance. In the first half of 2020, we carried out smears in our department to investigate Covid 19. The department is a pregraduate and postgraduate tuition site accredited in general practice.
29,848 patients were treated at the Primary Care Department in 2020.

Emergency Department and Medical First Aid Service for Adults

Senior Doctor - MUDr. Lenka Kozlíková
Head Nurse - Bc. Lucie Vacková
Chief Physician of LSPP – MUDr. Aleš Ducháček

Basic description:

The Department of Emergency Admission for Adults (DEAA) specialized in basic examination, stabilization of vital functions, treatment of acute problems and decision on admission or release for all patients seeking the services of this department.
The department has an inpatient section of emergency admission equipped with 17 monitored beds, (60% of patients in this section are brought by ambulance, 25% come without a referral and 15% on the recommendation of an outpatient specialist, most often a general practitioner), as well as acute outpatient departments for surgery, traumatology, neurology, urology and the A+E outpatient section, which together have another 12 examination beds. The DEAA also has a triage room with one bed and an ARO box with one bed, where patients in critical condition with various aetiologies are admitted in cooperation with KARIM. A total of 31 beds is available.
The total number of patients treated at the Department of Emergency Admission and Medical First Aid Service for Adults in 2020 is 65,949, of which 26,987 patients were treated in the department's inpatient section, 29,485 in the acute outpatient departments of surgery, neurology, traumatology and urology and 9,486 in the LSPP.

Department of Hospital Hygiene and Epidemiology

Senior Doctor - MUDr. Vilma Benešová
Senior Hygiene Assistant - Jana Hrončeková

Basic description:

The department's activities meet the legislative requirements of the acts on health services and protecting public health, namely the obligation of health service providers to establish and implement a programme to prevent and control healthcare-associated infections. In practice, this means carrying out measures to reduce the occurrence or spread of all infections in the medical and non-medical areas of the hospital depending on the specific conditions of each workplace. In 2020, this represented a major activity.

Specifics of the facility:

The Covid-19 epidemic was already developing during the first quarter of 2020 and a number of anti-epidemic measures were adopted. These had an immediate impact on the running of the entire healthcare facility and, quite fundamentally, on the activities of the Department of Hygiene and Epidemiology. Priority was given to anti-epidemic measures in connection with the Covid-19 outbreak, in particular quarantine and isolation measures, routing, contact tracing and providing staff with protective equipment and devices. Likewise the implementation of emergency anti-epidemic measures in all areas of health care provision.
During the year, 2,479 quarantine measures were imposed, 1,143 employees were diagnosed with Covid-19 infection, and 1,201 patients were hospitalized with this diagnosis in appropriated inpatient units.
Data from the reporting of healthcare-associated infections (HAIs), called incidence rates, were continuously monitored and analysed. In 2020, **the incidence of HAI was recorded as 1.66 with a significant prevalence of uroinfections.** Barrier measures, including isolation if multidrug-resistant strains were found, and follow-up monitoring were imposed and monitored in all patients with HAI.
The legislative requirements (Ministry of Health of the Czech Republic, SÚKL) in the field of **checking the bacterial cleanliness of the environment, endoscopic techniques, sterilization and disinfection techniques,** checking water quality (including legionella prevention) were all met, even with the epidemic situation. There was a significant cut in the number of **audits on the hygiene and epidemiological regime (219)**, and the number of epidemiological investigations exceeded one thousand. The gravity of the epidemic situation was also reflected in the number of **room disinfections (877)**. Likewise, hand sanitizer consumption also reached a record 60 litres per 1,000 treatment days.

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

Hospital Pharmacy of the MUH

Senior Pharmacist - PharmDr. Petr Horák
Deputy Senior Pharmacists - 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 pharmaceutic care. The pharmacy provides consultation service to patients and medical professionals and theoretical and practical tuition including internships for pregraduate and postgraduate students. The hospital pharmacy takes part in formulating MUH's drug policy by its methodological guidance of and participation in the Commission for Effective Pharmacotherapy. It also develops the MUH's internal regulations in the area of handling pharmaceuticals and takes part in auditing activities within the pharmaceutical quality management system.
In 2020, 35,200 ready-to-use doses of cytotoxic drugs were prepared in the Hospital Pharmacy - Department for Preparation of Cytostatic drugs. The IPLP department' work included preparing 234,800 capsules and 18,500 children's suppositories and 6,000 adult suppositories. The individual preparation of medicinal products containing medicinal cannabis is also expanding, with annual consumption exceeding 2,000 g.

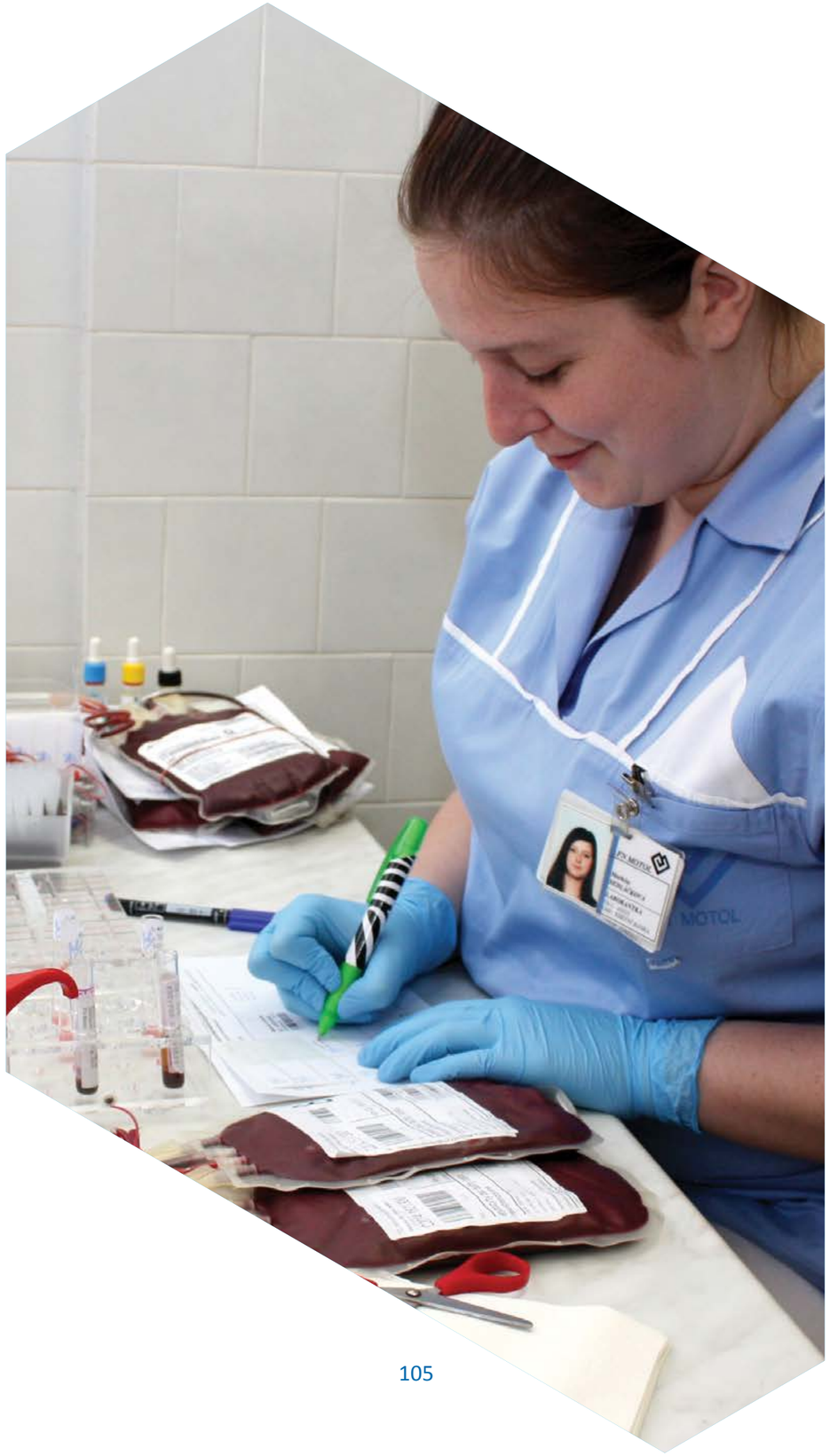
In 2020, the Hospital Pharmacy prepared and dispensed parenteral nutrition and related medications for 18 paediatric and 19 adult outpatients; 12 paediatric patients had bags individually prepared in the Department for Preparation of Sterile Drugs (DPSD). In addition, a number of preparations not available in the form of HVLP are prepared for stock (antidotes etc.), cardioplegic solutions etc., hydration and neonatal bags, sterile eye ointments and drops. The hospital pharmacy has also prepared more than 1,500 products for in vitro diagnostics.
Approximately 800,000 packs of medicines prescribed on more than 40,000 requests were dispensed to the hospital. A total of 1.08 million units of medicines, medical devices and the supplementary range, prescribed on 275,000 prescriptions or vouchers, were issued to the public.
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, over 8,000 packs of medicines have been issued in clinical trials. **Among the things our clinical pharmacists carried out were: 3 593 assessments of pharmacotherapy of hospitalized patients and provided 569 medical consultations upon request.**
In the scientific and publication activities, the pharmacy focused on individual preparations for patients of specific age groups, especially paediatric patients, development of new customized formulas with suitable recipes and stability verified by validated methods, an inquiry into the preparedness of European hospital pharmacies to a pandemic. The outputs from these activities are regularly published and presented at specialized fora in Europe and in peer-reviewed and impacted magazines.

New methods and equipment:

- A new laboratory started preparing non-sterile drugs containing hazardous substances in vacuum mode, equipped with an Envair isolator.
- Brand-dispenser Seripettor, dispenser Dispensette S an adjustable analogue for filling and possible filtration of individual preparations - Acidi borici aqua ophthalmici, Sacharosum 25% sol.p.o.
- New formulations: cidofovir 3% cream for topical application to treat disseminated viral skin infection, NaCl 10% gel, KCl 1 mmol/ml gel, Midazolam p.o sol. 1 mg/ml
- Digital burette Brand titrette for determining chloride in Natrii chloridi solutio 10.0% (sodium chloride solution 10.0%) and Kalii chloridi solutio 10.0% (potassium chloride solution 10.0%).

Major events in 2020:

- Took part in research on the issue of the lack of drug availability;
- International collaboration on the covid-19 Calculation tool (for hospital pharmacy preparedness with an emphasis on providing critical medicines to treat covid-19 patients);
- Active participation in national and international events and membership in the leadership of European and national professional societies and contribution to the management of major European projects, such as the Common Training Framework in Hospital Pharmacy;
- First deliveries of covid-19 vaccines in the CR.



NURSING CARE

In 2020, we are faced with a new, previously unknown situation in connection with the emergence of the Covid - 19 pandemic. Circumstances have led us to change our approaches and put them into practice. Good management skills and capabilities were particularly useful in this extraordinary time. New covid wards were set up for patients, new teams were formed and new hygiene and epidemiological procedures were introduced. It was shown that the non-medical professions were able to respond to the change in conditions and provide high-quality patient care. Nonetheless, there were also issues that need pondering and are a challenge for the future.

Quality Indicators

Monitoring nursing care indicators /pressure ulcers and falls/ is a natural part of our work now. We are putting increasingly greater emphasis on preventive measures. For the sixth time the Motol UH has participated in the international "Stop Pressure Ulcers" day on 19/11/2020. The purpose of this event is to bring the issue of preventing and treating decubitus to the lay and professional public. This time by means of leaflets, videos and presentations of products that prevent and heal wounds, all distributed in the hospital premises.

Another of the pivotal themes of 2020 was the definitive launch of the new electronic reporting for risks and the occurrence of poorly healing wounds and falls in the records of hospitalized patients. Thanks to the new tracking methodology and 2020's generally unconventional image, the statistical processing is also different. It allows us to take a comprehensive view of the issue, guaranteeing continuous and effective care for hospitalized patients. In terms of the issue of poorly healing wounds and falls, 2020 can be seen as a watershed year.

The PICC team at the Internal Clinic

The PICC team provides comprehensive vascular insertion care for inpatients and outpatients. During 2020, nurses introduced **2,223 vascular insertions**;

- 940 PICC (most 282 gynaecology, 132 internal medicine, significant numbers in pneumology, orthopaedics I, neurology, surgery III);

-182 midline catheters, 782 mini midline catheters (most on internal medicine 221, AC-LSH 145).

Part of patient care is also dressings and managing complications from all vascular insertions. There were 983 PICC dressings and 627 additional treatments of established insertions. Educating general nurses in PICC and midline catheter care, continued during the first 3 months and tied in with training for charge nurses in 2019. Unfortunately, due to the epidemiological situation, the courses for nurses had to be stopped. Nonetheless, in 2020 we are already seeing the positive impact of these trainings. Obstruction of inserted catheters during use was significantly eliminated. 7 certified courses "Inserting PICC and Midline Catheters" were started last year. The number of participants in these courses is 19. All of them took part in the theoretical part. 7 students have already completed the course with a practical exam. 12 have not yet completed the practical part. The epidemiological situation has restricted our ability to complete the practical part and resume training.

Department of Medical Nutrition

Nutritional therapists provided care to 1,350 outpatients. The therapists provided education and set up nutritional plans. They worked closely with doctors from the Paediatrics and Internal Medicine Clinic 2. SFM CU and Motol UH, who care for outpatients on long-term clinical enteral or parenteral nutrition. Nutritional care is given to inpatients with nutritional risk throughout the hospital. With regards to the number of therapists, they provide care in some departments on a consultation basis, while in others they monitor patients continuously.

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 2020, the department prepared 150 litres of infant food on average. We proceed in accordance with the HACCP system. Determining the critical and control points in the entire production process is the most important criterion. These points monitor the process of cooling milk and infant food and storing prepared food in cooling equipment. We have used a new technology to increase safety when preparing infant food at the Motol UH.

Department of Central Sterilization

The department ensures the entire process from pre-sterilization preparation of medical devices, washing, surgical net setting, packing, preparation, the actual sterilization and subsequent distribution to the original workplaces for further use. **In 2020, we carried out 8,292 cycles in steam sterilizers, 2 230 in plasma sterilizers and 91 in chemical sterilizers. Automated washing machines carried out 25,046 cycles.**

Social Care

The Social Department provided social care to 5,001 adult patients in 2020. Social care was provided to 3,583 patients in acute beds and to 1,418 patients at the Aftercare Centre (AC). 726 patients from all inpatient departments were released with the provision of home healthcare and 55 patients were released to home hospice care. 297 patients were released into inpatient rehabilitation aftercare and inpatient hospice care was arranged for 20 patients. 936 patients required beds for the long-term sick, of which 764 were transferred to the AC, from where 270 patients were discharged to home care and 116 patients to residential facilities - homes for the elderly and homes with a special regime. Once again, social work with children and their families (including newborns and children in the Children's Psychiatric Clinic) saw an increase, i.e. the total number of child patients and their families was 1099. This concerned providing social and legal counselling, psychosocial support to families and assistance with foundation activities. Furthermore, in the interests of children, there was collaboration in the framework of social and legal protection for children.

Two medical and social workers were integrated in the palliative team for the adult part and one for the children's part. One health and social worker is a consultant in the children's palliative care team at Motol UH. Employees of the social department participate in pregraduate and postgraduate education for healthcare professionals. They are also involved in teaching medics from the SFM CU and at the same faculty to teach future paediatric nurses in the bachelor's programme Paediatric Nursing. Participants of the Accredited Qualification Course - Health and Social Worker continued with their practical training.

Psychosocial Intervention Service

A team of psychosocial intervention services was established at Motol UH at the end of 2019 and currently has 18 members. It is made up of motivated hospital staff - general and paediatric nurses, paramedics and a clinical psychologist. In 2019 and 2020, the above-mentioned health workers graduated from the certified course „Psychological First Aid in Health Care - Interventional Care Provided to Secondarily Affected People“, and thus acquired specific professional competence to provide psychological first aid as health care interventionists.
In 2020, interventionists worked at five selected workplaces of Motol UH, where, as part of a pilot project, they offered one-off support to relatives or survivors of patients (exceptionally even to the patients themselves), who are severely affected by a serious situation and showing signs of an acute stress reaction. This concerned the Clinic of Anaesthesiology, Resuscitation and Intensive Medicine, SFM CU and Motol UH of Children and Adults, the Gynaecology and Obstetrics Clinic of the SFM CU and Motol UH and the Emergency Department for children and adults. There were 27 interventions, of which 18 gave support to parents of paediatric patients, 5 to relatives or survivors and 4 to adult patients. Most often, the interventionist was called to the Gynaecology and Obstetrics Clinic, specifically to the Neonatal Unit with the NICU, which treats children with severe congenital developmental defects and premature babies. The Motol team's activities are methodically covered by the System of Psychosocial Intervention Services (SPIS). It is a national organisation supported by the Ministry of Health of the CR in cooperation with the National Centre for Nursing and Non-Medical Health Professions in Brno. Since November 2020, in relation to the SPIS activities, the hospital has been involved in the Prevention II project - „Mitigating the Negative Impact of Psychological and Physical Stress on Mon-Medical Healthcare Workers by means of Systemic Measures“, co-financed by the ESF. One of its aims is to set up psychosocial services in selected health facilities.

Spiritual Care

Providing spiritual care has become an integral part of supportive care for hospitalized patients. **In 2020, hospital chaplains provided care for 2,661 patients. 449 employees also used the services of the hospital clerics.** The total number of consultations was 7,306.

Healthy Hospital

The hospital motto chosen for 2020 was „Patient Activation or Neurons on Alert“.
Activities were limited due to the epidemiological situation. Individual forms of activities continued, such as stair walking, libraries, on-line exercises and the range of programmes from www.STOB.

Volunteer Centre

All volunteer activities were carried out in line with the restrictions during the influenza epidemic /start of the year/ and subsequently with the outbreak of the Covid -19 pandemic. **In 2020, volunteers worked a total of 710 hours at the University Hospital and provided care for 904 patients.** In the adult section, they focused mainly on musical and artistic activities and memory training, in the children's section, apart from the above activities, they focused on teaching English. A very popular programme with paediatric and adult patients are the therapy dogs and zootherapy. 2020 also saw several hospital-wide events, such as the puppet show „The Little Mermaid“, Pictures for the Elderly, Letters for the Elderly, Kaleidoscope - Points of Interest, a dog afternoon and a pre-Christmas visit for patients.

HOSPITAL OMBUDSMAN

The hospital ombudsman has been operating in the Motol University Hospital since January 2012. The independent Department of the Hospital Ombudsman was established as of 01/10/2012 and renamed to the **Independent Department of Hospital Ombudsman and Complaints** as of 01/01/2013.
The main objectives of the Independent Department of the Hospital Ombudsman and Complaints is to protect the patients' rights, improve communication among patients, their relatives and hospital staff, and increase the quality of the medical services provided and patient satisfaction. The Hospital Ombudsman addresses 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 especially available when a patient or a third party believe that their rights have been violated or threatened or when a conflict has or may occur and communication between the parties involved is failing and the matter needs to be addressed objectively.

A total of **383 submission**s were addressed **during 2020**. Furthermore, **509 enquiries**, which often represented a precursor to a potential complaint, were addressed and responded to. Of the total number of **383 submissions, 341 were complaints**. A vast majority of the complaints were assessed **as unjustified complaints; there were 33 partially justified complaints and 26 justified complaints.** Corrective measures involving mainly education of employees were applied in the case of justified or partially justified complaints.
The most frequent submitters are patients **(157 submissions)** and a person close to the patient **(98 submissions)**. As regards the subject of complaints, most of the submissions involved unsuitable communication (reported in **147 cases)** and the medical services provided **(106 submissions)**.
All submissions are always dealt with the managements of individual sites. Where suitable in view of the character of a complaint, complaints are discussed orally with participation of management of the sites involved to find a suitable resolution. In the case of urgent matters, complaints are resolved with participation of the Hospital Ombudsman directly at the medical facility.
Detailed records of all processed submissions are kept in accordance with the valid legislation. Outputs of the department's activities along with proposals for adopting necessary measures are regularly presented at meetings of the hospital management and at meetings of managing staff.

An independent Hospital Ombudsman and Complaints Unit handles requests under the Freedom of Information Act. The Hospital Ombudsman organizes legal training in the latest issues of medical law according to requests received from individual sites. The department regularly cooperates with hospital ombudsmen from other medical facilities and participates in national sessions for exchanging experience. It takes an active part in events organized by the Association of Health Care Ombudsmen.

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 specializations and most of the university hospital's departments and institutes are involved. The close interconnection with the 2nd Faculty of Medicine of the Charles University, the 1st Faculty of Medicine of the Charles University and other research organizations in the Czech Republic and abroad is reflected in these activities. The Motol UH supports innovation and integration of research outcomes in practice in accordance with new trends in the application of the outcomes of scientific research activities.

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

Institutional Support for Research and Grants

- The Motol UH 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 Motol UH through a system of internal grants at the hospital's individual departments and institutes. 2020 was the ninth year of applying to this scheme.
- **In 2020, the hospital carried out 11 projects of the Czech Health Research Council of the Ministry of Health of the CR as the principal researcher and 35 projects as the cooperating researcher. 29 internal grant projects were conducted in 2020 under institutional support, as were 2 JUNIOR projects for young scientists under 35.** The hospital also worked on TAČR and GAČR projects and was significantly involved in the Horizon 2020 system within the EU. In 2020, the EU also began funding the aforementioned European Reference Networks for Rare Diseases.
- In 2020, the Motol UH managed the following allocated and distributed funds in science and research amounting to a total of CZK 159,471,258.78
- Support of research activities is directly conditional on the outputs of scientific assessments reported to the national databases of the Research, Development and Innovation Council. The outcomes of the Council's outputs are used for comparisons within the CR and for distributing funds in the Internal Grant system to ensure that individual research facilities are supported in accordance with their performance. In 2020, which was significantly affected by the COVID-19 pandemic, the Motol University Hospital maintained its output and even achieved a further increase in the overall impact factor, which came to 2646 points, and an increase in the average impact factor, which reached 5.4, reflecting the higher quality of the papers published.
- In 2020, the third national assessment was carried out according to Metodika 17+. The Motol University Hospital took the leading positions, especially in the assessment of the quality of the scientific results with a significant representation of the hospital's outputs in the first decile of medical sciences.
- Priorities of the scientific research activities were gradually defined at the Motol University Hospital. Paediatric specializations appear to be the strongest directions in research. The Department of Paediatric Haematology and Oncology with its laboratory and research facility at the CLIP site is the dominating actor in research. Traditionally, paediatrics and its branches, gastroenterology, endocrinology, pneumology, nephrology, paediatric neurology and others are also strongly represented. Cardiology and neurology stand out the most as concerns adult medicine. The hospital's main research activities take place primarily in the laboratory facilities of the Department of Paediatric Haematology and Oncology, Department of Biology and Medical Genetics, Department of Pathology and Molecular Medicine, Department of Microbiology and Department of Immunology.

Modern Therapies Projects

- The Motol UH has introduced a system of projects entitled "Modern Therapies". it offers support for innovation and integrating scientific research into practice. Under this scheme, 11 projects were conducted in 2020 and practical output in the form of new diagnostic or therapeutic options is expected from all five projects.
- Utility model number 32064 was granted in 2018 under the title: Equipment for Detecting a Joint Defect and/or Determining Suitable Treatment of the Joint System and a Substance for Determining the Cause of a Joint Defect and its Monitoring, on the basis of which a licence agreement was concluded with I.T.A. - Intertact s.r.o. in 2019. In 2020, the validity of the utility model registration was extended until 2024.
- In 2020, European Patent No. EP3570868 entitled Synthetic Antimicrobial Peptides and Their Applications for the Treatment and Prevention of Musculoskeletal Infections from the Motol UH and the Institute of Organic Chemistry and Biochemistry was recognized.
- In 2019, the project „Development and Clinical Application of the AndroidAPS Hybrid Artificial Pancreas Software" was also dealt with within the Modern Therapies projects, which was turned into a TAČR project in 2020.

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

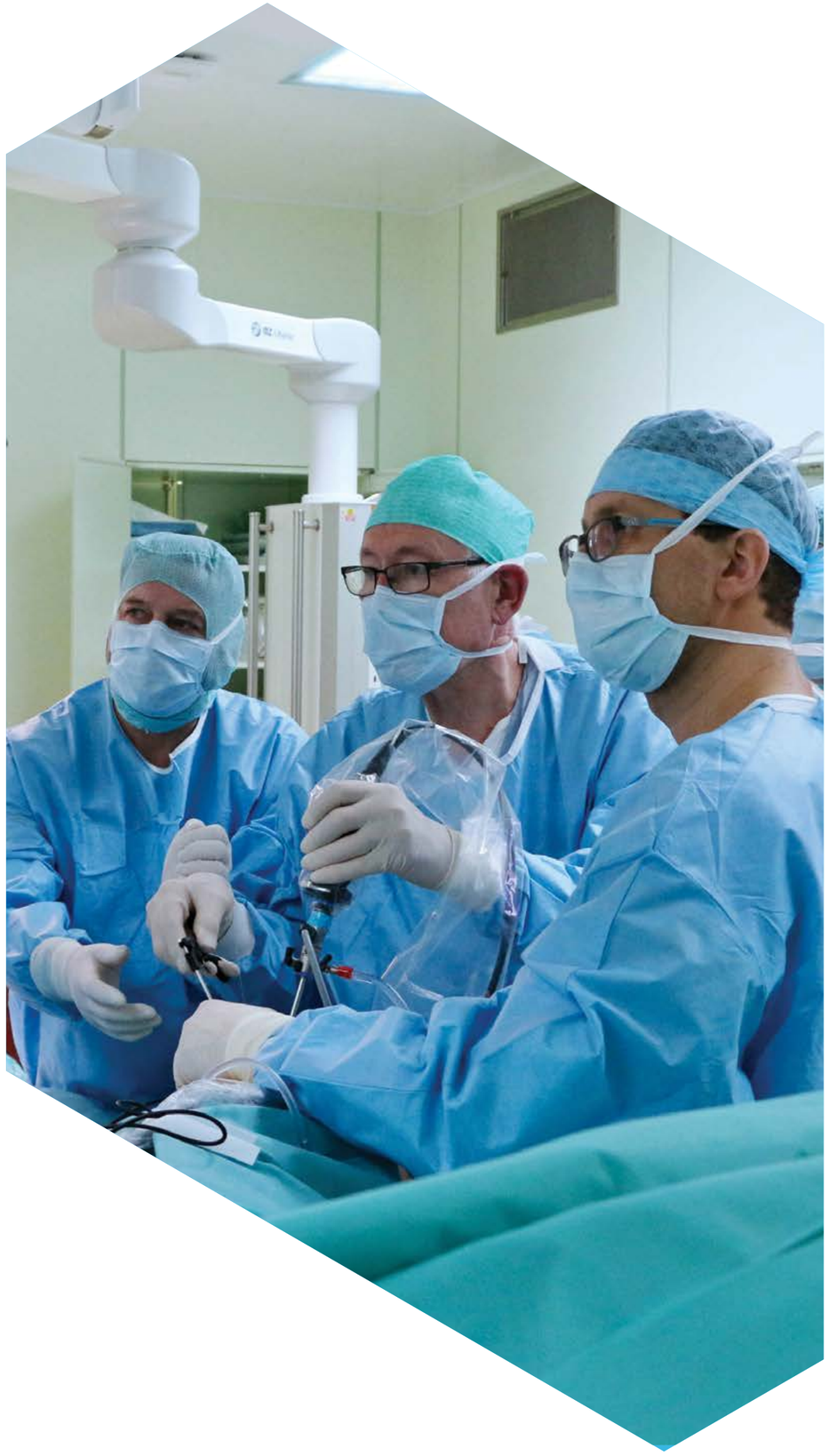
The combined MD/Ph.D. programme has been running at the Motol UH since 2004. A total of 122 students have been educated through the 17 years of the programme's operation and 26 students have obtained the Ph.D. title and postgraduate certification in their specializations. 39 active students are enrolled in the program.

International Activities

In 2020, the hospital continued to develop its international research activities especially at the level of individual departments and institutes, which is reflected in excellent publication outputs presented in the Register of Information on Results (RIR).
As regards international activities, the Motol University Hospital was also actively involved in the system of European Reference Networks for Rare Diseases, ERN. 11 sites participating in the ERN currently operate within the hospital under this Europe-wide scheme and this confirms the Motol UH's leading position in rare diseases. In 2019, in the framework of the new call, 3 more sites are applying in the scheme and in 2020 the EU approval process was delayed by the COVID-19 pandemic. Results are expected in 2021.

Creative Act

The Motol University Hospital monitors and appreciates quality and success in medicine and scientific research progress. In 2020, the best creative achievement from the previous year was awarded for the twelfth time, this time to the Urology Clinic team for the Bladder Cancer Treatment programme. The JUNIOR Creative Act Award went to MUDr. Adam Klocperk, Ph.D. from the Department of Immunology of the 2nd Faculty of Medicine of the Charles' University and Motol UH for the thesis "Immunity of Patients with Primary Immunodeficiencies."



ECONOMIC ACTIVITY

BALANCE SHEET (abbreviated balance sheet in thous. CZK)	status as at 01/01/2020	status as at 31/12/2020
ASSETS	11 571 181,30	11 496 406,98
Permanent assets	9 321 922,26	9 185 186,26
Long-term intangible assets	12 658,35	24,351.51
Long-term tangible assets	9 293 005,61	9 145 408,53
Long-term financial assets	0,00	0,00
Long-term claims	16 258,30	15 426,22
Current assets	2 249 259,04	2 311 220,72
Stock	171 673,28	243 779,79
Claims	1 261 306,85	705 654,87
Financial assets	816 278,91	1 361 786,06
LIABILITIES	11 571 181,30	11,496,406.98
Own resources	10 021 495,63	10 098 643,20
Assets of unit of account	9 336 847,11	9 202 103,40
Property funds	2 069 631,25	2 268 674,31
Profit/loss for current accounting period	30 586,71	12 848,23
Accumulated loss of previous years	-1 415 569,44	-1 384 982,74
Profit/loss in licensing procedure	0,00	0,00
Foreign resources	1 549 685,67	1 397 763,78
Reserves	0,00	0,00
Long-term liabilities	309 213,05	205 818,29
Short-term liabilities	1 240 472,62	1 191 945,49
Bank assistance and loans	0,00	0,00

STATEMENT OF PROFIT AND LOSS (abbreviated - in thousands CZK)	stav k 31. 12. 2020
Material cost	5 086 375,60
Cost for repairs and services	796 778,22
Personnel costs	5 192 229,40
Taxes and fees	267,06
Other costs	77 713,44
Depreciation, Assets sold, Reserves, Adjustments, Low value long-term tangibles, Low value long-term intangibles	594 580,85
Financial costs	4 273,81
Costs for uncontested claims on SR,USC and SF resources	0
Total costs	11 752 218,38
Revenue from own performance and goods	10 793 998,46
Other revenues	382 969,59
Financial returns	725,27
Revenues from undisputed claims on SR, USC and SF resources	587 373,29
Total revenues	11 765 066,61
Pretax profit	12 848,23
Income tax	0,00
Additional income tax deductions	0,00
Profit or loss after tax	12 848,23

Summary of economic indicators					thous. CZK
indicator	2017	2018	2019	2020	20/19 (%)
Revenues	8 507 754	9 509 016	10 348 373	11 765 066	113,69
Costs	8 504 452	9 502 217	10 317 786	11 752 218	113,90
Profit or loss	3 302	6 799	30 587	12 848	42,00
Accumulated loss of previous years	-1 422 369	-1 415 569	-1 384 983	-1 372 134	99,07
Tangible fixed assets	8 913 069	9 383 965	9 293 006	9 145 408	98,41
Stock	159 465	142 348	171 673	243 779	142,00
Claims	1 027 134	720 767	1 261 307	705 655	55,95
Debts	859 080	1 103 022	1 240 473	1 191 945	96,09
Financial assets	830 122	1 014 874	816 279	1 361 786	166,83
Remuneration Fund	0	0	0	0	0.00
Cultural and Social Needs Fund	44 110	60 004	73 126	93 122	127,34
Reserve fund	65 678	50 385	54 456	66 419	121,97
Asset Replacement Fund	2 225 494	1 822 409	1 942 049	2 109 132	108,60

As of 31 December 2020, the Motol University Hospital's financial position was balanced and the accounting period for this year ended with a profit of CZK 12.85 million.

The economic result was primarily affected by the global SARS-Cov 2 pandemic, which affected the running of the entire hospital. The Motol University Hospital was entrusted with setting up 66 beds for patients with COVID 19 and in September increased the reserve capacity for covid patients to 500 beds. In connection with the emergency measure by the Ministry of Health on 19 March 2020, elective care has been restricted. A further restriction to elective care took place in October. Due to the epidemiological situation, there was a significant increase in the purchase of medical supplies, especially protective equipment, but also drugs and medical devices (e.g. ventilators, suction machines, anaesthesia machines, mobile X-ray) so that COVID workplaces could be equipped. The purchase of medical equipment was partly covered by a subsidy and partly from the hospital's own resources from April to June.

There has also been an increase in personnel costs related to COVID 19. The rise in personnel costs was caused by an increase in overtime work, surcharges pursuant to Government Decree 263/2018 and 332/2018 for nursing staff, Government Decree No. 603/2020 on a 10% increase in tariffs for medical staff and remuneration at workplaces treating patients with COVID 19.

The COVID 19 pandemic meant the hospital's set or adjusted budget could not be kept to. The Compensation Reimbursement Decree for 2020 No. 350/2020 Coll., on determining the method of including compensation in the amount of reimbursement for covered services provided in 2020, reduced the mandatory production limit for health insurance companies and set the option to cover increased costs from March to May 2020 and to earn through increased activity in the summer and autumn months. We would have made up the financial deficit from the 1st wave of COVID by the end of 2020 if the impact, in terms of the economic opportunity of the Compensation Decree (overproduction), could be shown. However, the 2nd wave of the COVID 19 pandemic, which was stronger than the previous one and much more costly, especially in terms of drugs and protective equipment for staff, stymied this opportunity. For the reasons described above, hospitals will apply for an addendum to the 2020 Compensation Decree. The limited operation of the entire hospital due to the SARS - Cov2 pandemic has reduced not only medical services from health insurance companies, but also all revenues for self-payers, foreigners, and other revenues.

At the same time, the hospital's economics were also affected by a significant increase in the cost of centric medicines in the hospital's centres and the reimbursement of medicines pursuant to Section 16 of the Decree to Act No. 48/1997 Coll., on Public Health Insurance. Since the beginning of 2020, CZK 1,285,000 worth of centric drugs have been purchased as well as CZK 858,000,000 of medicines, in line with Section 16, this significantly affects the hospital's cash flow. The cash flow of the hospital in 2020 was also affected by financing investments from its own resources, i.e. repayments for the reconstruction of the DFN and the polyclinic. The inclusion of the DFN and the polyclinic increased the annual depreciation of assets.

The hospital management is trying to balance the hospital's financial inputs and outputs even in this crisis situation caused by the pandemic. The changes that the entire national economy underwent during the year were also reflected in the management of the Motol University Hospital. In some cases, the level of demand led to a multiple increase in the price of the goods and services purchased. Therefore, the annual economic management cannot be assessed objectively.

Motol University Hospital is the largest hospital in the CR with high-quality, modern equipment and expert staff in specialized and super-specialized fields. Through effective guidance, the hospital's management strives to continue to maintain top quality care for all patients throughout the CR so that its good reputation will continue in the coming period.

HUMAN RESOURCE ACTIVITIES

In 2020, the Motol University Hospital employed:

in converted numbers 5,461 employees, of which 4,364 were medical staff

in natural persons: 6,134 employees, of which 5,005 were medical staff

Structure of employees' professions

	2018	2019	2020	2018	2019	2020	INDEX 20/19	
	NP	NP	NP	CN	CN	CN	NP	CN
Total	5 858	6 041	6 134	5 220	5 380	5,461	1.02	1.02
PHYSICIANS	1 279	1 293	1 297	945	972	992	1.00	1.02
PHARMACISTS	33	36	40	30	34	37	1.11	1.09
NURSES	1989	2033	2 006	1814	1841	1,809	0.99	0.98
QUALIFIED MEDICAL STAFF	598	656	695	569	622	656	1.06	1.05
SPECIALIZED MEDICAL STAFF	244	261	271	193	206	211	1.04	1.02
SUPERVISED MEDICAL STAFF	590	613	634	568	590	607	1.03	1.03
OTHER QUALIFIED STAFF	59	59	62	49	47	52	1.05	1.11
TECHNICAL AND ECONOMIC STAFF	753	785	801	745	769	776	1.02	1.01
WORKERS	312	305	328	307	299	321	1.08	1.07

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

Qualification structure - status as of 31/12/2020

Achieved education among nurses and midwives	Total	%	of which with specialization	%
Secondary medical	1,242	62.76	944	76.00
Higher medical	196	9.90	61	31.12
Tertiary bachelor's	371	18.74	77	20.75
Tertiary master's	170	8.60	54	31.76
Total	1,979	100.00	1,136	57.40

Employees by education and gender - status as of 31/12/2020

achieved education	men	women	total	%
basic	120	150	270	4.36
vocational certificate	312	250	562	9.08
vocational secondary	41	10	51	1.44
completed general secondary	27	50	77	1.24
completed vocational secondary	309	1,977	2,286	36.88
higher vocational	61	246	307	4.94
tertiary	867	1,778	2,645	42.06
of which bachelors	82	536	618	
masters	785	1,242	2,027	
total	**1,737**	**4,461**	**6,198**	**100.00**

Employees according to age and gender - status as at 31/12/2020

age	men	women	total	%
up to 20 years	9	53	62	1.00
21 - 30 years	324	818	1,142	18.39
31 - 40 years	450	845	1,295	20.86
41 - 50 years	402	1,283	1,685	27.14
51 - 60 years	298	1,019	1,317	21.21
61 let a years and more	263	445	708	11.40
total	**1,737**	**4,461**	**6,198**	**100.00**
%	**28.12**	**71.88**	**100.00**	

1) Medical staff pursuant to Act No. 95/2004 Coll. = physicians, dentists and pharmacists: total 1,337
Of the 1,297 physicians in total, 403 (31%) only have a professional qualification and 894 (69%) physicians have a specialized qualification (i.e. 2nd level of postgraduate certification, additional certification, Czech Medical Chamber licence, certification of the Ministry of Health of the CR).

2) Medical staff pursuant to Act No. 96/2004 Coll. = medical professions other than physicians: 3,646 in total, of which 2,006 were general nurses and midwives.

WAGES

A total of **CZK 3,758,049,350** (excluding other personnel expenses - remuneration for work performed outside employment) was expended on wages in 2019. This was an increase by **CZK 514,977,078**, i.e. by **15.88%** compared to 2019.

The increase in wages was caused by the salary adjustment from 1 January 2020 in accordance with Government Regulation No.300/2019 Coll. In addition, the amount spent was significantly affected by the emergency pay provided to employees for working when dealing with the COVID-19 pandemic, as well as the increase in the qualification structure and the ageing of employees.

The average gross salary in the hospital as of 31/12/2020 was **CZK 57,346**. This is a 14% increase compared to 2019.

Development of average salary over the last 10 years

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
TOTAL	33356	35016	34364	34893	36302	38529	42111	46657	50237	57346
PHYSICIANS	61510	67464	65564	66478	68962	71753	76316	81758	85284	92394
NURSES	31307	32853	32079	32035	33425	36390	40317	45637	50681	59221

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Donors and Foundations - in-kind donations over CZK 100,000

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Motol University Hospital would like to thank all the donors who contributed to improving the care given to patients in our hospital in 2020, as well as for improving our employees’ conditions in connection with their work during the Covid-19 pandemic and the difficulties this situation brought about. At the same time we thank all other donors, whose names could not be listed here for technical reasons, but are listed on our web pages.

We care for generations!

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