

ANNUAL REPORT NA HOMOLCE HOSPITAL

2018



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# ABOUT US

Na Homolce Hospital underwent a major personnel change process in 2018, with two personnel changes in the position of the hospital director. It is difficult for me to evaluate the economy of the hospital when I started the office of director only at the end of the year, in November.

After a detailed analysis of the hospital's economic situation, state of purchasing and public contracts, we were forced to take a number of immediate measures and related personnel changes to stabilize the economy and operation of the hospital as soon as possible. If I were to evaluate last year in terms of management and economy, it would be a profitable year, but the profit from the main activity of the hospital, unfortunately, minimally contributed to the overall profitability. In addition, the investment plan was not fulfilled and thus the requirements for investment projects shifted to 2019.

On the other hand, in the area of health care provision, the hospital fulfilled its function of highly professional and specialized facility at 100% all year round, as evidenced by the highest possible rating of the project Quality as seen by patients, A+. What is more, the hospital was awarded the Satisfied Patient Certificate for the first time. Thanks belong to all the medical staff for the evaluation of patients in the previous year.

With total revenues of CZK 3.5 billion, the hospital had a net profit of CZK 77.4 million. In 2018, investments of CZK 235 million were included in the property of the hospital. Of this, 69% were medical equipment, 23% operation of the hospital and 8% information technology. Of the most important investment projects, I would like to mention the purchase of a new angio/CT system, two Stealth S8 navigation systems, the Allura Clarity angiography system, the Matrix spectrometric analyzer, and 92 new beds with an anti-decubitus mattress. In 2018, some of the necessary operational repairs and reconstructions were carried out, of which the most important was the reconstruction of the hospital pharmacy, the replacement of air-conditioning and cooling systems in the neurological ICU, the reconstruction of surgical operating rooms, and the construction of a backup medical gas distribution system.

For the year 2019, we have created a long-term plan for the renewal of medical equipment with the request for co-financing by the Ministry of Health of the Czech Republic for selected devices. In the near future, we will submit applications for grants, such as an angiography system for a multifunctional catheterization room or a fluorographic device at the Department of Radiodiagnosics. In 2019, we plan to purchase a backbone endoscopic system for the Department of Neurosurgery. It is a system for minimally invasive spinal surgery, which is a rapidly growing trend in Western Europe as well as in the Czech Republic. We will definitely continue the renewal of the ICU beds.

In parallel with these plans, the hospital must make maximum effort to consolidate and streamline purchases and public contracts, to implement a new hospital information system project co-funded by the EU, and to prepare the hospital for a new DRG.

Petr Polouček, M.D., MBA



Petr Polouček, M.D., MBA,  
Director of the Hospital  
appointed on 15 November 2018



Prof. Josef Vymazal, M.D., D.Sc.,  
appointed for the period  
from 28 July 2018 to 14 November 2018



Dr. Ing. Ivan Oliva  
Director of the Hospital  
until 27 July 2018



Zbyněk Fuksa, M.D.,  
Deputy Director  
for Treatment and  
Preventive Care



Ing. Martin Dařílek,  
Deputy Director  
for Economic  
and Technical  
Administration



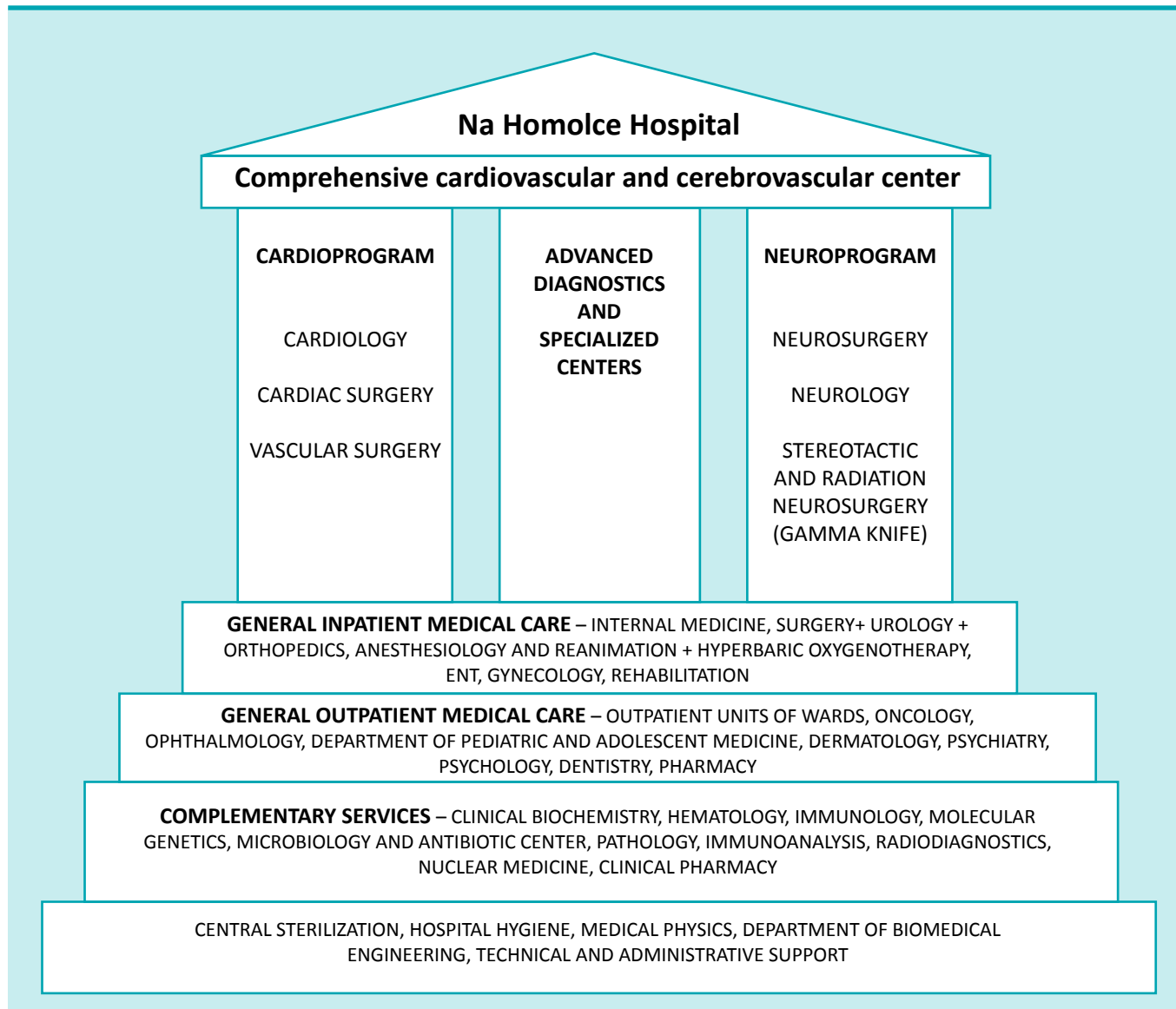
Mgr. Ivana Kirchnerová,  
Deputy Director  
for Nursing Care



Assoc. Prof.  
Otakar Bělohlávek, M.D.,  
CSc.  
Deputy Director  
for Science and Research



Ing. Milan Cejnek, MBA,  
Appointed to manage  
the Business  
and Medical Care  
Economy Department



## Basic data

Number of employees	Number of beds	Number of admissions	Number of surgeries	Number of outpatient interventions
1 787	357	20 790	15 591	1 192 860

## Staff and wage data for 2018

	Physicians	Pharmacists	General nursing staff	Other auxilliary medical staff with professional competence	Auxiliary medical staff with professional and specialized competence	Auxiliary medical staff under specialized supervision or direct guidance	Technical and administrative staff	Operators	Total
Total wages paid (in CZK)	338 844 999	12 132 265	412 666 615	68 225 488	32 760 951	84 664 611	136 822 705	39 590 771	1 125 708 405
Average recalculated number of employees	277,64	16,83	701,08	118,51	55,27	227,33	273,85	116,72	1 787,23
Average salary (in CZK)	101 704	60 073	49 051	47 974	49 395	31 036	41 636	28 266	52 489

Auxiliary medical staff - medical staff excluding physicians  
 Technical and administrative staff



# OUR ACTIVITIES

# NEUROLOGICAL-NEUROSURGICAL PROGRAM

## Department of Neurology

Head of Department: Martin Kovář, M.D.

### Activities of the Department

- Inpatient diagnostic-therapeutic care of neurological patients
- Diagnostics and treatment of epilepsy both in the outpatient consulting clinic and in the Epilepsy Monitoring Unit (EMU), including a complete epilepsy surgery program
- Emergency diagnostics and treatment of patients with acute ischemic stroke and other urgent cerebral diseases - at the neurological intensive care unit (a key part of the Comprehensive Cerebrovascular Center)
- Examination in the Center for Sleep Disorders with two beds for polysomnography and consulting clinic
- Cerebrovascular Consulting Clinic with neurosonology
- Two electromyography laboratories using EMG and somatosensory and motor evoked potentials
- Specialized laboratory for visual and auditory evoked potentials
- Two electroencephalographic examination rooms and a mobile EEG device
- General neurological clinic

### Organizational units of the Department

- **Inpatient ward:** The **Epilepsy Center** with a highly specialized care center status with an Epilepsy Monitoring Unit (EMU) and a counseling unit is part of the inpatient ward of the Department. The center is one of three such centers in the Czech Republic. The inpatient ward of the Department of Neurology also includes a fully accredited **Center for Sleep Disorders** with a sleep laboratory for sleep monitoring by polygraph recording, with two monitored beds, for indications of correction ENT operations, and especially supportive aids (CPAP, BiPAP) helping patients with sleep apnea syndrome.
- **Intensive Care Unit** with 12 beds is a central part of the **Center of Specialized Cerebrovascular Care** (formerly a Comprehensive Cerebrovascular Center).
- **Outpatient Department:** The outpatient section includes an extrapyramidal counseling unit, an outpatient unit focused on neuroimmunological diseases of the central nervous system, in particular multiple sclerosis, an outpatient unit for patients with cerebrovascular diseases, and an outpatient unit for patients with neuromuscular diseases.

## Basic data

Number of physicians	18
Number of nursing staff	50
Number of administrative staff	2
Total number of beds	36
Number of standard beds	18
Number of ICU beds	12
Number of EMU beds	4
Number of sleep laboratory beds	2
Average treatment period (in days)	4.4
Number of admissions	1,681 (103% as compared to 2017)
Number of outpatient examinations in total	18,703 (100% as compared to 2017)

## Performance overview

### Admissions

In 2018, 535 patients with acute ischemic stroke were admitted. 106 mechanical arterial thrombectomies (versus 65 in 2017) and 120 intravenous thrombolyses (versus 104 in 2017) were performed in the Department.

The Epilepsy Monitoring Unit treated 164 patients within admissions. In total, 15 patients were monitored from electrodes introduced using an invasive method, 39 patients were indicated for an epileptosurgical operation - an open surgery or implantation or re-implantation of a vagus nerve stimulator (19x).

Percutaneous vertebroplasty of a lumbar or thoracic vertebral fracture was performed in more than one hundred patients within a short hospitalization. It is an effective minimally invasive treatment method.

## Outpatient department

The year-on-year comparison shows no significant changes in the number of outpatient examinations, which is borderline with the level of personnel capacity and at the cost of longer waiting time for non-acute patients. A positive trend is a continuous increase in the number of patients in specialized outpatient units - epilepsy, sleep, cerebrovascular, neuroimmunological and extrapyramidal.

## Changes / new events in the previous year

- Since June 2018, Martin Kovář, M.D., has been the Head of the Department of Neurology and Head of the Center of Specialized Cerebrovascular Care. He replaced the long-time Head of the Department, Mr. Kalina, the founder of the neurological intensive care unit.
- In 2018, a breaking number of stroke patients were treated by mechanical thrombectomy. The Department easily fulfills the requirements set for the Center of Specialized Cerebrovascular Care (formerly the Comprehensive Cerebrovascular Center).
- The Center for Sleep Disorders now monitors approximately 700 patients with the device ensuring permanent overpressure in the airways (CPAP or BiPAP) and can newly remotely monitor the effectiveness of their treatment.
- A record number of 340 patients have been admitted to the Center for Sleep Disorders, 133 patients have been newly indicated for CPAP or BiPAP.
- The collaboration with the Department of Cardiology has been expanded in order to diagnose non-clarified disorders of consciousness and improve cooperation in the area of non-pharmacological treatment of atrial fibrillation (collaboration in studies) and hypertension.
- In July-August 2018, the air conditioning of the neurological ICU was reconstructed. During these 5 weeks, the Department of Neurology admitted, diagnosed and treated patients with acute strokes in collaboration with the Departments of Vascular Surgery, Anesthesiology and Reanimation, and Neurosurgery, so that the commitment towards the Health Rescue Services of Prague and Central Bohemia and the patients with brain stroke in the catchment area of the Department was fulfilled.
- In December 2018, two neurologist physicians received a specialized neurology certificate after passing the postgraduate examination.
- In summer 2018, the Department of Neurology and the Comprehensive Cerebrovascular Center successfully completed an internal audit.

## Perspectives for the next year

The main task is to maintain a high standard of care even with a high number of treated patients - both the inpatients and outpatients. In 2019, further increase in the number of patients with acute ictus as the result of mechanical thrombectomy and thrombolysis and in the treatment of patients with other cerebrovascular diseases is expected. Consultancy services of the Department are highly sought after even by other neurological sub-disciplines.

## Educational and other specialized activities

- **Lectures, educational activities:** Regular lectures held at the Institute of Postgraduate Studies in Health Care, managing study visits in the field of neurointensive care (Vondráčková, M.D., Panský, M.D.), active participation in congresses abroad, a number of presentations at domestic national events, teaching activities at the 1st and 3rd Schools of Medicine, Charles University (Assoc. Vojtěch), managing study visits in epileptology and electromyography (Assoc. Vojtěch), managing study visits in epileptology and electromyography (Jerie, M.D.), neurological study visits of physicians from other specializations within postgraduate certificate preparation
- **Grant investigators and co-investigators:** The Czech Health Research Agency (Head of the Department, Mr. Kovář) and internal grants (Head of the Department, Mr. Kovář, Assoc. Vojtěch) - applies also for the following years
- **Membership of professional associations:** The Czech Neurological Society, Czech League Against Epilepsy (Assoc. Vojtěch, member of the Board), European Stroke Organization, Epistop and EPI 99, z. s.



## Department of Neurosurgery

Head of Department: Jan Klener, M.D.

The Department of Neurosurgery continued to deal with comprehensive diagnostics, surgical treatment and follow-up care of patients suffering from diseases of the central and peripheral nervous system in 2018 in order to provide comprehensive and safe services that improve patients' quality of life.

### Activities of the Department

These activities mainly involve neurosurgical treatment of patients with diseases of the brain, base of the skull, spinal cord, spine and peripheral nervous system, including patient education, preoperative diagnostics, the actual surgical treatment and postoperative neurointensive and follow-up care. In particular, emphasis has been put on the high quality of surgical and postoperative care, using modern methods and technology, minimizing stress and risks for patients, good communication with them, and observance of JCI accreditation standards.

Patient care was traditionally provided in four key areas - as part of the neuro-oncological, neurovascular, functional neurosurgical and spinal programs. In 2018, a total of 2,522 surgeries were performed, 2,392 patients were admitted and 7,825 patients were seen in the outpatient unit.

The Department of Neurosurgery is a superregional, national or even international center for a number of treated diagnoses. Morbidity of planned surgeries ranges at lower values than national data. These are mainly patients with serious diseases which can only be treated in a small number of centers in the Czech Republic.

In 2018, surgical treatment was performed in a multifunctional complex of operating rooms equipped with state-of-the-art technology, including intraoperative magnetic resonance imaging (MRI) and surgical navigation systems, surgical microscopes, and intraoperative electrophysiological monitoring. Integration of operating room technologies enables the Department to provide patients undergoing operations of the brain, spinal cord or spine with a higher standard of precisely targeted, highly efficient and safe treatment.

## Neuro-Oncological Program

Within the Neuro-Oncological Program, operations on a wide range of brain tumors, including both intra-axial and extra-axial brain tumors, as well as tumors of the base of the skull are performed. In the surgical treatment: emphasis is put on mini-invasive approaches which reduce the burden on patients. Where appropriate, “keyhole” craniotomy and “non-retraction” neurosurgery, minimizing trauma to the brain, are preferred. The Department of Neurosurgery of Na Homolce Hospital is one of the pioneers in the use of this technique and is a leading facility in the Czech Republic. The surgical standard employs microsurgery techniques using neuronavigation and intraoperative imaging aided by intraoperative MRI and perioperative duplex ultrasonography. The safety and accuracy of surgical operations are increased by using functional neuronavigation, intraoperative fluorescent visualization of tumors or intraoperative electrophysiology monitoring. In the field of electrophysiological monitoring, we promote the use of subcortical stimulation integrated in the suction device that is permanently placed in the surgical field, leading to increased safety of the procedure. Resections of speech centers are routinely performed by means of so-called “awake craniotomy” which means that part of the procedure is performed on a patient who is fully conscious. We continued in the development of endoscopy surgical techniques, especially in surgeries of hypophysis adenomas, and rarely in surgeries of intradural tumors.

In addition to its own surgical program, the Department of Neurosurgery also promoted other treatment methods for patients with brain tumors in 2018, for instance in the form of regular interdisciplinary neuro-oncology workshops attended by a multidisciplinary team of specialists from Na Homolce Hospital and oncologists from Motol Teaching Hospital (fractionated radiotherapy, chemotherapy, radiosurgical treatment especially with the use of Leksell gamma knife or proton treatment).

## Neurovascular Program

With regard to the neurovascular program, the Department of Neurosurgery is part of the Comprehensive Cerebrovascular Center, which was established at Na Homolce Hospital in April 2010.

The main task is to provide comprehensive care to patients with subarachnoid hemorrhage which includes both treatment of the most frequent cause of bleeding, i.e. cerebral aneurysm rupture, as well as neurocritical and other types of care. A wide range of microsurgical and endovascular treatment techniques are available. In 2018, microsurgical treatment included a broad range of currently used methods – plain clipping, clip reconstruction, temporary clipping and remodeling, trapping and indirect methods using vascular occlusion and revascularization bypass techniques. Neurosurgeons have applied a mini-invasive approach to surgery and cerebral retraction, routinely used electrophysiological imaging, state-of-the-art intraoperative video-angiography and the selectively useful method of flowmetry. In individual cases, circulation was



stopped by means of adenosine during cerebral aneurysm surgeries. In the field of endovascular treatment, interventional radiologists have at their disposal all currently available endovascular methods for aneurysm treatment. Microsurgery and endovascular treatments are available around the clock.

The year 2018 saw large numbers of operations on unruptured aneurysms, arteriovenous malformations and cavernomas, as well as numerous operations to stop spontaneous intracerebral hemorrhage. In cooperation with the Department of Neurology, procedures were performed in accordance with prepared indication criteria for decompression (pressure relief) craniotomy for some types of ischemic cerebral strokes, and bypass procedures between extra- and intracranial blood flow.

The safety of surgical procedures to treat vascular lesions can be increased by using microscope fluorescence mode which shows the patency of critical vessels and obstruction of pathological vessels after the application of a special fluorescent agent. Procedure safety is also increased by a flowmeter measuring blood flow in individual arteries. Monitoring of blood flow allows for a prompt response to hemodynamic changes and prevents a critical lack of blood supply to individual parts of the cerebral tissue.

### Functional Neurosurgery Program

The Functional Neurosurgery Program mainly includes epilepsy surgery and neurosurgery aimed at reducing pain. The Department of Neurosurgery in Na Homolce Hospital is one of the largest in the country for epilepsy surgery. In cooperation with the Neurology Department, Leksell Gamma Knife Center, Department of Radiodiagnostics, and PET Center, approximately 30-40 patients are operated on each year.

Resection operations were carried out both by standard microsurgery technique and by stimulation treatment (application of vagal stimulators). During the procedure, patients are examined by intraoperative MRI which provides instant feedback on the extent of the resection, thus increasing the safety and efficiency of surgical procedures. In cooperation with the Department of Stereotactic and Radiation Neurosurgery, selected patients with drug-resistant epilepsy are treated by stereotactic thermal lesion.

The main procedures aimed at alleviating pain include a so-called microvascular decompression and partial sensory rhizotomy for intractable pain of the trigeminal nerve. The treatment of pain by neurostimulation and neuromodulation has been further developed in collaboration with the Department of Anesthesiology and Reanimation.

## Spinal Surgery Program

The Department of Neurosurgery at Na Homolce Hospital has been for years one of the leading centers in the Czech Republic for its spinal surgery program. These operations are performed on the entire spine using all access routes to treat degenerative diseases, as well as trauma and oncological conditions. Preference is given to a microsurgical approach and safe minimally invasive techniques using electrophysiological monitoring where indicated. Spine surgery uses a complete range of spinal implants, including arthroplasty systems and percutaneously implanted stabilizers at its disposal. A minimally invasive character is also preferred for major fixation surgeries which can be performed by means of novel, safe techniques. Further, minimally invasive percutaneous vertebroplasty or kyphoplasty are used, which are most commonly performed to treat osteoporotic fractures of the vertebral column, in cooperation with intervention radiology.

The range of spinal tumor operations included in 2018 all types of lesions, including intradural, extradural, intramedullary and extramedullary tumors.

## Operational data

Total number of beds	65
Number of standard beds	45
Number of intensive beds	8
Number of intermediate beds	12
Number of physicians	18
Number of general nursing staff	88
Number of outpatient interventions	7,825
Number of admissions	2,392
Bed occupancy rate (in %)	80
Average treatment period (in days)	7.2

**Breakdown of interventions**

Cerebral tumors	206
Vascular diseases	196
Functional procedures	83
Spinal diseases, including tumors	1,542
Craniocerebral injuries	112
Other	383
Total	2,522

**Educational, research and other specialized activities**

- The Department of Neurosurgery of Na Homolce Hospital is the Center of Excellence in navigation neurosurgery and neurosurgery for the dynamic stabilization from the cervical spine (Bryan, Prestige, Prospace, Discover) in the Czech Republic and the Eastern European region.
- In 2018, neurosurgeons of Na Homolce Hospital were involved in postgraduate training of neurologists and neurosurgeons for postgraduate certificate and organized study visits in neurosurgery for Czech and foreign physicians.
- In 2018, 5 internal grant projects were carried out in the Department of Neurosurgery. The physicians took an active part in international and national congresses and gave 22 presentations in 2018. Two physicians participated in long-term study visits at the top center in Japan.

## Department of Stereotactic and Radiation Neurosurgery

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

### Activities of the Department

Radiosurgical treatment using the Leksell gamma knife, stereotactic and functional neurosurgery. In addition to consulting and follow-up care provided to our neurosurgical patients, our outpatient unit provides also specialized ophthalmic and neurosurgical consulting care.

### Organizational units of the Department

**Outpatient clinic:** Neurosurgical outpatient unit, neurophysiological outpatient unit, neurological outpatient unit, ophthalmological outpatient unit

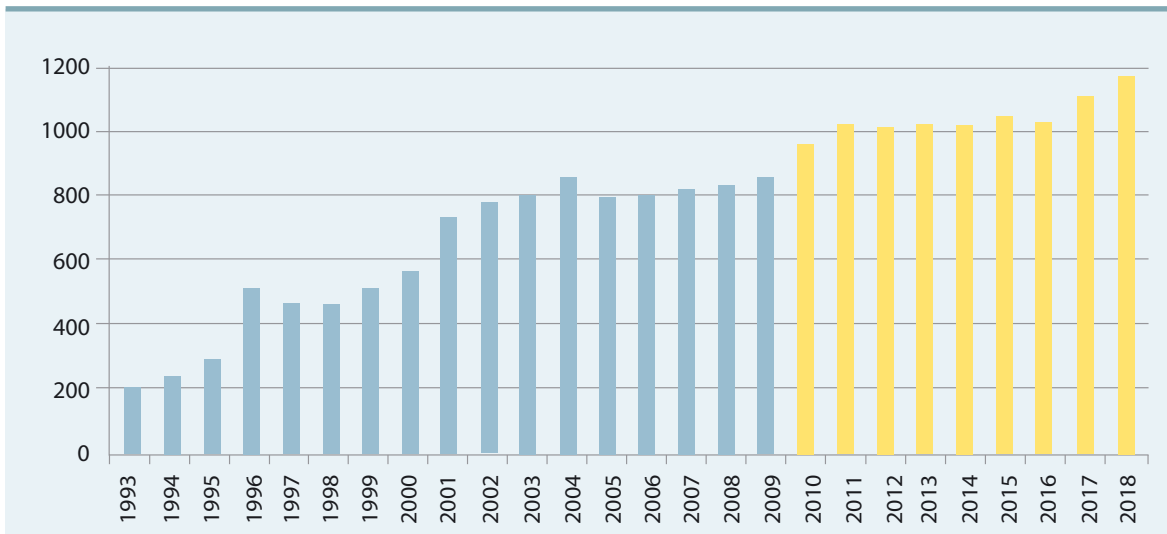
**Inpatient ward:** 1 operating room for stereotactic and functional neurosurgery, Leksell gamma knife treatment unit

### Operational data

Number of physicians:	5 + 2 external ophthalmologists, 2 neurologists, 1 systemized post (vacant at present)
Number of nursing staff:	12 + 1 radiology laboratory assistant
Number of other staff:	7 (3 attendants, 4 paramedical staff)
Number of beds:	8 - short stay ward (Monday-Friday)
Number of operations performed using Leksell gamma knife:	1,151
- Of which 113 were foreigners (9.8%) - Poland 6, Slovakia 99, Lithuania 1, Sweden 2, Armenia 1, Ukraine 4	
- Form S 2:	97
- Self-payers from EU:	13
- Contractual price:	4

Number of other operating room surgeries:	190
- Of which deep brain stimulation 51 (26 primary implantations, 25 reimplantations), 2 implantations for self-payers from Serbia	
Number of admissions:	994
Average treatment period days:	1.21
Bed turn-out:	212,79
Number of outpatient examinations:	2,349
Number of consultations sent by mail:	4,421

Number of patients treated using the gamma knife in individual years (yellow - following installation of the Perfexion model)



## Changes / new events in the previous year

- In 2018, a total of 1,151 patients were treated by the gamma knife. In addition to high work commitment, a replacement of the sources of radiation in 2016 also contributed to this record-breaking number of treated patients, so the exposure time was still favorable. This frequently enabled treating up to 6 non-complicated patients a day. The number of foreigners remains approximately 10%, with the majority of patients coming from Slovakia. Only four foreign patients from outside the EU paid a contractual price for gamma knife treatment.
- Consultations were continuously provided to patients with extrapyramidal disorders by Prof. Evžen Růžička, M.D., DrSc., and Prof. Robert Jech, M.D., Ph.D., in the outpatient unit for musculoskeletal disorders within the Department. 2 Serbian patients paid contractual prices for deep brain stimulation for motoric disorders.
- The number of ophthalmology indications was similar to the previous year – 30 patients with ophthalmological disorders.
- In 2018, we offered further international radiosurgical courses, together with the Department of Medical Physics. In 2018, six courses were held with a total of 31 participants, who came from the following countries: Turkey 4, Indonesia 4, Egypt 4, Italy 3, Iraq 3, Romania 3, Japan 2, Greece 2, USA 2, India 1, Singapore 1, Kazakhstan 1, Croatia 1.
- At the end of the year, the long-time head nurse of the Department, Romana Caklová, retired.

## Perspectives for the next year

- Since 1 January, Mgr. Daniela Vymazalová will take over the position of the head nurse.
- In February 2019, 20,000 surgeries using the gamma knife will have been performed at Na Homolce Hospital since its installation in 1992. So far, no other gamma knife was used to treat more patients on a global scale.
- In April 2019, the contract for maintenance of the Leksell gamma knife Perfexion will expire. It is desirable to combine the new contract for maintenance with the replacement of the 10 year old gamma knife with the latest Icon model in order to maintain the high standard of the Department. It is not a purchase of a new device, but an upgrade of the existing gamma knife.
- We will continue organizing four-day educational courses for foreign participants and we have announced five terms for 2019.

## Educational and other specialized activities

- In 2018, 5 neurosurgeons underwent a study visit in our Department.
- In the course of 2018, the gamma knife was visited by 198 registered visitors in the controlled area.
- 2 grant projects supported by the institution and 1 project supported by the Czech Grant Agency were carried out.
- We published 10 articles in foreign impact journals.

# CARDIOVASCULAR PROGRAM

## Department of Cardiology

Head of Department: Prof. Petr Neuzil, M.D., Ph.D., FESC

The clinical activities of the Department cover a wide range of preventive, diagnostic and therapeutic care provided to patients with diseases of the heart and blood vessels or who have an increased risk of these diseases. As in previous years, the Department continued to cover all individual specialized areas in 2018.

### Multifunctional Catheterization Unit

The number of catheter ablations has been increasing for several years. In 2018, our Department carried out a total of 1,280 ablations (increase by 6%), which is the highest number in the Czech Republic for several times already. So-called comprehensive interventions (ablations of atrial fibrillation, atrial and ventricular tachycardias) accounted for approximately 80% of all ablations. Most cases of comprehensive ablations related to ablations of atrial fibrillation – a total of 777 procedures (of which 70% of ablations were due to paroxysmal form and 30% due to persisting or long-term persisting forms of atrial fibrillation). In 2018, the number of catheterization ablations due to ventricular tachycardia also had an increasing trend, with a total of 164 procedures (increase by 20%). Idiopathic ventricular tachycardia ablation accounts for 60% of the procedures, while the remaining 40% are ablation in structural cardiac diseases.

The Department still routinely uses the Niobe II (Stereotaxis) remote magnetic navigation method for ablation. The laboratories are equipped with three types of electroanatomical 3D navigation systems, the use of which significantly increases the efficiency and safety of catheterization ablations while significantly decreasing radiation exposure. We can perform ablations of “simpler” forms of atrial fibrillation using balloon methods (cryoablation and laser ablations), the advantage of which is especially shortening of procedure time while maintaining treatment efficiency.

In 2018 clinical research, the Department was involved in developing and validating the effectiveness and efficiency of new mapping and ablation technologies such as:

- pulsed electric field ablation,
- ablation with automatic laser beam movement,
- innovative 3D imaging system with the option of short ablation with high-energy applications,
- robotic ultrasonic contactless navigation and ablation, etc.



In terms of the number of implanted pacemakers and defibrillators (ICD - implantable cardioverter defibrillator), the Department has been one of the largest centers in the Czech Republic and Europe over time. A total of 1,523 implantation procedures were performed in 2018. The Department specializes in defibrillator implantation (511 procedures) and cardiac resynchronization therapy (209 procedures). A new method of physiological stimulation of His beam is being developed, which may be an alternative to traditional biventricular stimulation in some patients. The Department continues implantations of the so-called subcutaneous ICDs, there were a total of 19 implants in 2018. Implants are also connected with procedures when stimulative or defibrillating electrodes need to be extracted. The total number of these procedures in 2018 was 70 with the rate of success reaching 98%.

Since 2012, the Department has been the world-wide recognized development center for implantation of leadless pacemakers. In 2018, we successfully implanted 27 of these unique devices.

Our electrophysiological laboratory closely cooperates with a newly established syncope and neurology outpatient unit in diagnosing cardiac arrhythmias, non-clarified disorders of consciousness or cryptogenic cerebral strokes. For these indications, an implantable Reveal LINQ cardiac monitor was implanted into 87 patients in 2018.

Our center participated in the organization of a number of Czech as well as international conferences and workshops (including direct inputs from our laboratories). The most important include the Prague Ablation Workshop on Catheter Ablation (Prague) and the AF Symposium 2018 (U.S.A.).

The experimental laboratory implementation project was carried out in the Institute of Physiology of the 1st School of Medicine, Charles University. Experiments with different types of cardiac support, new ablation technologies and treatment devices have been performed.

## Intervention cardiology

A total of 3,558 catheterization interventions were performed, of which 3,134 were diagnostic coronary angiographies and 929 percutaneous coronary interventions - **the program of structural cardiac interventions is being further developed**, including foramen ovale patents closure, defect of the atrial septum, pulmonary vein stenoses and closures of paravalvular leaks; certain unique combined cathetrization procedures for structural cardiac defects were performed. **The total number of catheterizations of defects of the interatrial septum reached 64, making the Department one of the centers performing the highest number of these interventions.** In all the above parameters, the number increased compared to 2017.

The transcatheter aortic valve implantation (TAVI) program also continued, in 2018, a total number of 72 procedures were performed (in 2017, it was 34 procedures of the same kind). We newly performed catheterization implantations in failing bio-prostheses in the tricuspidal - the 12 procedures performed represent the highest number in the Czech Republic - and in the mitral positions. This program is highly complex with regard to both the scope of diagnostic preoperative examinations and interventions and postoperative care and the demanding multidisciplinary cooperation. TAVI is successfully performed in analgesedation in a large proportion of patients, allowing for earlier physiotherapy and mobilization and subsequent discharge of these patients

After the first catheterization implantation of the pulmonary valve was newly performed in 2015 in a patient with a complex congenital heart defect, we performed this procedure in 5 more patients in 2018. This has led to further development of the program for these interventions which will be an integral part of care for patients with complex congenital heart defects who have been systematically treated on a long-term basis in our Cardiac Center.

The development of percutaneous coronary interventions with different types of circulatory support continued and in cooperation with the angiology outpatient department, our Department routinely performs diagnostic examinations and interventions on peripheral arteries.

The center is traditionally involved in the preparation of numerous professional programs and presentations at professional conferences and meetings in the Czech Republic.

As in the previous years, we participated in the organization of a closely specialized workshop in interventional cardiology imaging methods (IVUS workshop), which was attended by more than 35 physicians from the Czech Republic.

For the first time, a workshop focused on coronary rotablation - Prague Rotablation workshop - was held at the Department. 8 physicians from other departments in the Czech Republic attended.

### Non-invasive cardiology

Within non-invasive cardiology, the number of transthoracic echo examinations shows a continuously increasing trend. The achieved result of 9,330 examinations is the best ever achieved ever and the situation is the same for gulf echo examination.

In 2018, the Department of Cardiology reached the highest number of admissions in its history, at 5,320.

**Multifunctional Catheterization Unit**

<b>Ablations - total</b>	<b>1,280</b>
Ablations according to arrhythmias:	
Atrial fibrillation	777
paroxysmal	547
persisting	185
long-term persisting	45
re-ablations	176
Atrial flutter	92
Atrial tachycardias	59
Non-selective RFA of AV node	43
Atrioventricular nodal reentry of tachycardia (AVNRT)	112
Wolff-Parkinson-White syndrome (WPW syndrome)	33
Ventricular tachycardia	164
structural	61
non-structural	103
<b>ICD (implantable cardioverter defibrillators) - total</b>	<b>511</b>
ICD: primary implantation	308
ICD: exchanges	203
CRTD	209
VVI ICD	108
DDD ICD	175
Subcutaneous ICD	19
<b>Pacemakers - total</b>	<b>627</b>
Pacemakers: primary implantation	453
Pacemakers: replacements	174
VVI pacemaker	88

DDD pacemaker	527
CRTD	12
Leadless pacemakers	27
Extraction procedures - total	70
Subcutaneous monitor implantations (Reveal)	87
Catheterization left atrial appendage occlusion	28

## Intervention cardiology

Diagnostic catheterization	3,143
Ventrikulography	521
Bilateral cardiac catheterization	187
Percutaneous coronary intervention (PCI)	929
Primary PCI (in acute myocardial infarction)	201
Number of stents	1,211
Fractional flow reserve	243
Intravascular ultrasound	46
OCT	20
Catheterization occlusion of the defect of the atrial septum (DSS) / foramen ovale patens - PFO	64
Transcatheter aortic valve implantation (TAVI)	72
Percutaneous pulmonary valve implantation (PPVI)	5

## Non-invasive cardiology

General and angiology outpatient unit	17,766
Stimulation outpatient unit	6,687
Anticoagulation outpatient unit	2,621

Transthoracic echocardiography	9,330
Esophageal echocardiography	1,227
Outpatient monitoring: Holter ECG + Loop monitor + Omron ECG + BP monitor + ECG card	2,302
ECG stress test (ergometry)	453
Tilt test	71
Tilt test	755

### Coronary unit

Acute coronary syndrome	353
Extracorporeal membrane oxygenation (ECMO)	15
Length of hospitalisation (median)	2
Total mortality (in %)	5.25

### Operational data

Total number of beds	52
Number of standard beds	30
Number of intermediate beds	4
Number of intensive beds	18
Number of physicians	43
Number of general nursing staff	120
Number of outpatient interventions	46,713
Number of admissions	5,320
Number of treatment days	13,996
Bed occupancy rate (in %)	76.03
Average treatment period (in days)	2.63

## Department of Vascular Surgery

Head of Department: Prof. Petr Štádl, M.D., Ph.D.

### Activities of the Department

- Comprehensive surgical treatment of diseases of the vascular system, primarily the narrowing or occlusion of blood vessels caused by atherosclerotic changes or dilation (aneurysms) and also injuries of the arteriovenous system except for the coronary arteries, the ascending aorta and aortic arch. Focus on classical surgery in the region of the thoracoabdominal aorta and on new trends and techniques in vascular surgery (minimally invasive approaches, endovascular treatment, robot-assisted surgery, and laparoscopic surgery)
- Since the beginning of 2009, the Department has also been performing minimally invasive operations on varicose veins using a radiofrequency method that reduces postoperative pain and facilitates early return to daily routine activities
- Referential clinic for surgical treatment of the thoracoabdominal aorta, robot-assisted and laparoscopy vascular surgeries, international training center in the area of robot-assisted vascular surgery
- Outpatient care and follow-up of patients undergoing vascular surgery and patients indicated for conservative treatment

### Organizational units of the Department

Outpatient units	6 examination rooms
Reception	1
Standard bed station (B)	17 beds
Standard bed septic station (A)	17 beds
Intermediate care unit	13 beds
Intensive care unit (6th floor)	5 beds
Intensive care unit (2nd floor)	7 beds

There are 2 operating rooms available daily, and in addition, a hybrid multidisciplinary operating room and a robot-assisted operating room are available once a week. An X-ray operating room is also used in cooperation with radiologists for some acute procedures. The Department provides continuous operation for urgent vascular surgery procedures and above-regional service for difficult aorta surgeries.

## Operational data

Number of physicians	18
Number of nursing staff	95
Number of auxiliary medical staff	24
Number of paramedic staff - attendants	1
Number of technical and administrative staff	5
Number of standard beds	34
Number of intermediate beds	13
Number of ICU beds	12
Number of admissions	2,611
Number of admitted patients	2,003
Bed occupancy rate (in %)	70
Average treatment period (in days)	6
Number of treatment days	15,411
Mortality (in %)	0.9

## Number of interventions

<b>Surgical interventions - total</b>	<b>1 761</b>
Thoracic aneurysm - classical	
Thoracic aneurysm - stent graft	20
Abdominal aneurysm classic - classical	81
Abdominal aneurysm - stent graft	56

Aneurysm of popliteal artery	13
Aortofemoral reconstructions	49
Pelvic reconstructions	12
Extra-anatomic reconstructions	39
Treatment of infections vascular prosthesis	20
Aortic arch branch surgeries - total	135
Of which: Carotids - endarterectomy	132
Glomus tumor	0
Carotid aneurysm	0
Bypass or implantation of carotid/subclavian	1
Bypass from ascending aorta (sternotomy)	0
Femoropopliteal proximal reconstructions	70
Reconstructions of arteries in the groin area	99
Crural reconstructions - total	140
Varicose vein surgeries	442
Of which: Classical	361
Radiofrequency	81
AV shunts	30
Transplantation of vascular allografts	3
Robot-assisted surgeries - total	34
Of which: Abdominal aorta aneurysm	15
Aortobifemoral bypass	11
Aortofemoral unilateral bypass	3
Endoleak	0
Deliberation of coeliac artery	4
Spleen artery aneurysm	1



Laparoscopy surgeries:	14
Of which: Iliacofemoral	2
Aortobifemoral	4
Aortofemoral	6
Thoracoscopic thoracic sympathectomy	6
Lumbar sympathectomy by laparoscopic method	1
Endoscopic sampling of vena saphena magna for vascular reconstructions	3
Vascular Interventions in collaboration with the Department of Radiodiagnostics	585
Malignant diseases of the vascular system	3
<b>Number of outpatient examinations / number of examined patients</b>	<b>15 272 / 8 180</b>

## 2018

Since January 2008, the Department of Vascular Surgery has been managed by Prof. Petr Štádl, M.D., Ph.D., who is also a member of the external educational staff of the 1st School of Medicine, Charles University, with which the Department actively cooperates. Since 2015, the Department has participated in the training of students from the 2nd School of Medicine, Charles University, managed by Petr Šedivý, M.D., Ph.D.

In 2018, the Department routinely performed comprehensive diagnostics and surgical treatment of diseases of the vascular system, primarily the narrowing or occlusion of blood vessels caused by atherosclerotic changes, and also of injuries to the arteriovenous system except for the coronary arteries, the ascending aorta and aortic arch that are traditionally the responsibility of cardiac surgery. The range of surgical interventions included operations on branches of the aortic arch, thoracic and abdominal aorta, including aneurysms (the Department of Vascular Surgery has the highest number of aortic operations in the Czech Republic), reconstruction of arteries supplying abdominal and retroperitoneal organs, operations on arteries supplying the limbs, as well as varicose veins, and a relatively unique transplantation of vascular grafts to deal with the infection of vascular prostheses. One of the largest groups of patients includes those with ischemic disease of the lower limbs and with narrowing of the arteries supplying blood to the brain. Minimally invasive approaches are used in thoracoscopic or laparoscopic lumbar sympathectomy procedures, endoscopic operations of varicose veins, endoscopic sampling of veins for vascular reconstructions and operations of the abdominal aorta through reduced surgical approaches, the so-called mini-laparotomies, and in particular robot-assisted and laparoscopic vascular surgery (these procedures have been newly covered by public health insurance since 2018).

The Department of Vascular Surgery continues to retain its unique position of a world leader in robot-assisted vascular surgery and a national leader in thoracoabdominal aortic surgery. The number of these types of procedures increased in 2018.

Another important area vascular surgery deals with is endovascular surgery. It especially focuses on implanting stent grafts for treating abdominal or thoracic aortic aneurysms. Implantation of stent grafts, perioperative angiography and intraoperative angioplasty are routinely carried out in collaboration with the Department of Radiodiagnostics at Na Homolce Hospital. A specialized team of vascular surgeons and radiologists (P. Šedivý, M.D., Ph.D., K. El Samman, M.D., H. Přindišová, M.D., A. Šnajdrová, M.D.) has been established for this purpose and successfully continues to perform these activities. Both vascular surgeons who are members of the endovascular team now have this specialization certification.

The Department also performs complicated interventions to treat infections of vascular prostheses by transplantation of vascular allografts. Together with the Institute of Clinical and Experimental Medicine, the General Teaching Hospital in Prague and the Tissue Bank of the General Teaching Hospital in Hradec Králové, the NHH Department of Vascular Surgery participates in the program of vascular graft cryopreservation. A number of centers in the Czech Republic take advantage of the Department as a consultancy center for the treatment of a range of serious vascular problems.

Since 2016 our Department has had a hybrid multidisciplinary operating room available at least once a week, where robot-assisted surgeries, implantations of stent grafts and hybrid procedures are carried out.

In 2018, a bovine pericardial prosthesis (xenograft), which is subject to extra approval by the health insurance company, was used in seven cases of vascular prosthesis infection.

There were no major changes in personnel.

### Outlook for 2019

The Department will also provide comprehensive diagnostics and the complete range of surgical treatment of arterial and venous diseases focused on new trends in 2019. We plan to cooperate with the Department of Cardiac Surgery in addressing vascular conditions falling into both these specializations. Thoracoabdominal aortic surgeries will be developed. Minimally invasive approaches in operations with a focus on robot-assisted and endovascular surgery will be further developed. Since January 2018 robot-assisted vascular surgeries have been on the official list of procedures and it will not be necessary to ask approval for every surgery of this type.

The 3D laparoscopy tower will be used for furthering another type of minimally invasive surgery. Successful cooperation with the Department of Radiology in the field of endovascular surgery will continue as agreed with its head, Prof. Vymazal. In addition, the Department of Vascular Surgery will continue to deal with infections of vascular prostheses, the incidence of which grows nationwide. These interventions are technically and economically highly demanding and the Department still does not have a septic operating room for this purpose. Negotiations with insurance companies will have to be initiated to cover these demanding interventions. The focus of the Department on the latest trends in the field of minimally invasive approaches in arteriovenous surgery is also of great importance.

Also in 2019, international training activities in robot-assisted vascular surgery will continue. At the same time, the vascular surgery unit will be involved in providing training in laparoscopic vascular surgery to physicians as part of the Aesculap Academy program.

### Educational and other specialized activities

- The Department is also involved in undergraduate training of students of the School of Medicine and postgraduate studies of physicians to obtain a postgraduate certificate in vascular surgery, as well as of physicians whose specialization requires a study visit to in the Department of Vascular Surgery.
- Head of Department Prof. P. Štádler, M.D., Ph.D., is an external teacher and a member of the Board for Postgraduate Certificate in Vascular Surgery at the 1st School of Medicine, Charles University in Prague. He also works as a lecturer in robot-assisted vascular surgery at the European Institute of Telesurgery in Strasbourg and as a lecturer in Intuitive Surgical in the U.S.A. Prof. Štádler also holds the post of the president of subcommittee for robot-assisted vascular surgery MIRA in Los Angeles, U.S.A., is deputy president of a committee of the Czech Society for Cardiovascular Surgery and a member of the accreditation committee of the Czech Ministry of Health for the specialty of vascular surgery. He is also the founding member of the International Endovascular & Laparoscopic Society, a member of ISMICS (International Society for Minimally Invasive Cardiothoracic Surgery) and a reviewer of the journal Surgical Laparoscopy Endoscopy & Percutaneous Techniques.
- Zbyněk Šedivý, M.D., Ph.D., participates in the teaching of medical students of the 2nd School of Medicine, Charles University in Prague.
- El Samman, M.D., continues his doctoral studies at the 2nd School of Medicine, Charles University in Prague.
- The Department is also involved in undergraduate training of students of the 2nd year of the 3rd School of Medicine, Charles University in Prague, in the "general nurse" specialization.
- The Department will most probably continue to organize courses in robot-assisted surgery, vascular surgery and surgery of varicose veins for both domestic and foreign physicians.

## Department of Cardiac Surgery

Head of Department: Ivo Skalský, M.D., Ph.D., MBA

### Activities of the Department

- Comprehensive surgical treatment of heart and intrathoracic major blood vessels
- Follow-up of selected groups of patients in outpatient unit before and after cardiac surgery

### Organizational units of the Department

Outpatient unit	3 examination rooms
Standard bed station	14 beds
Intermediate care unit	10 beds
Unit of postoperative and reanimation care	10 beds

2 classic cardiac surgery operating rooms are available for 5 working days a week. Moreover, surgeries are performed in the hybrid and robot-assisted operating rooms, one day a week at each. One operating room is open 24/7 for urgent procedures.

### Operational data

Number of physicians	18
Number of nursing staff	85
Number of auxiliary medical staff	21
Number of technical and administrative staff	2

Number of standard beds	14
Number of intermediate beds	10
Number of reanimation beds	10
Total number of beds	34
Number of admitted patients	911
Bed occupancy rate (in %)	84.68
Average treatment period (in days)	11.05
Total number of treatment days	10,065

### Number of Procedures and Mortality

Total number of surgical procedures	793
Isolated aortocoronary reconstructions	218
Combined procedures (valve, bypass, aorta)	300
Heart valve replacements / plastic surgeries	493
Isolated procedures on ascending aorta and aortic arch	9
Other (myxoma, pericardectomy, PM extraction)	32
Implantation of epicardial stimulation electrodes	7
MAZE surgery (combination with ACB and valve procedures)	140
Operations on the thoracic aorta (combined with other procedures)	114
Robot-assisted interventions	55
Acute and emergency interventions	153
Planned interventions	640

30-day Total Mortality (%)	1.63 (13/793)
30-day mortality in acute interventions (%)	1.13
30-day mortality in elective interventions (%)	0.5
Number of outpatient interventions(visits)	10,784

## Changes / new events in the previous year

- A total of 793 cardiac surgery procedures were performed in 2018. We managed to maintain a high number of surgeries despite the need to reduce the operational program for epidemiological reasons, the need to reconstruct the post-operative department and the chronic lack of nurses.
- We continue to develop robot-assisted surgery, which is becoming a common part of the range of the cardiac surgery performed at our Department. A total of 55 procedures were carried out, including valve reconstructions, atrial septal defect closures, sampling of arterial grafts for myocardial revascularization, and arrhythmology procedures.
- There is a continuing trend of a high number of valve procedures, which accounted for over 50% of all surgeries. They include both isolated procedures on a single valve, and combined with other valves or other interventions.
- The number of combined interventions indicating the complexity of surgical interventions is above 40% of all surgical procedures.
- A fifth of surgeries related to acute and emergency interventions which are necessary for a patient on one hand, but on the other, more risky in general, financially highly demanding and have a direct impact on total surgery results.
- The total annual mortality of 1.63% is considerably lower compared to the predicted mortality calculated according to Euroscore II, an international scoring system, which is 6.14%. Acute interventions contributed to the total mortality by two thirds.
- In the field of valve surgeries, there is still a trend of performing reconstructive surgery, rather than valve replacement. The long-term share of reconstructive surgeries, especially of mitral valves, is about 70%. Thanks to these results, we have been a leading cardiac surgery center in the Czech Republic for a long time. In this regard, we can emphasise that approximately 2/3 of mono-procedures on mitral valve were performed using a minimally invasive approach.
- Of the spectrum of interventions performed last year, surgeries of congenital heart defects should be mentioned again, as they represented approximately 7% of all procedures last year. This specific program with excellent results which has been systematically run and developed in our Department in cooperation with the Children's Cardiac Center of the Teaching Hospital in Motol, is not only unique in our country, but also in Europe.

- The Department is regularly involved in clinical studies in collaboration with international institutions and our Department of Cardiology. The promising results mean a great perspective, especially for our patients.
- We continue in cooperation with associated workplaces for whose patients we offer a top cardiac surgery background both for elective and acute interventions. In particular, they include hospitals in Karlovy Vary, Liberec, Příbram and Kladno.
- Intra-hospital interdisciplinary cooperation, especially with the Departments of Cardiology and Vascular Surgery, has continued to our high satisfaction and we believe this trend will be maintained in the future as well.

### Perspectives for development in the next year

- In 2019 we plan to perform 800 surgeries. We presume the range of procedures will be similar to the previous year.
- We will further develop four systematic programs which form our foundation stones. They are: the treatment program for aortic diseases (cooperation with Vascular Surgery and Radiology), the program for surgical treatment of valve disorders and the program for congenital heart defect treatment in adulthood (cooperation with the Children's Cardiac Center of the Teaching Hospital in Motol).
- In the field of minimally invasive procedures, we would like to remain a leading center in the Czech Republic.



## Department of Cardiac Anesthesiology

Head of Department: Pavel Jehlička, M.D., MBA

### Anesthesia care

The Department covers two basic areas, namely anesthesia care for cardiac surgery and cardiology and intensive care for the cardiac surgery postoperative unit.

#### Anesthesia care

We provide anesthesia care for patients undergoing either cardiac surgery, with or without extracorporeal circulation, or cardiac robot-assisted surgery with a minimally invasive approach. For cardiology patients, the Department ensures anesthesia for complicated heart mapping in arrhythmology, anesthesia for the extraction of pacemaking systems, anesthesia for the ablation of renal arteries in patients with high blood pressure and for electrical cardioversions.

#### Intensive care

In the field of intensive care, the Department is responsible for running the cardiac surgery postoperative unit and also closely cooperates with the cardiac surgery intermediate care unit. Within our Cardiac Center, it supports other units of intensive cardiology care by providing consultations. Together with the Department of Cardiology and the Department of Biomedical Engineering, we participate in the program of extracorporeal support of circulation for patients in cardiogenic shock.

In 2004, the physicians of the Department of Cardiac Anesthesiology were the first to introduce extracorporeal pulmonary support (the Nova-lung artificial lung) in the Czech Republic in a patient with a severe pulmonary failure that could not be managed by standard methods. As the only facility in the Czech Republic, the Department ensures anesthesia in robot-assisted cardiac surgeries and anesthesia for operations on adult patients with congenital heart defects.



## Operational data

Number of physicians:	10
Number of nursing staff:	9

### Administered anesthesia for:

cardiac surgery	1,217
cardiology procedures	976
procedures longer than 2 h	1,124
procedures longer than 6 h	211

# PROGRAM OF GENERAL MEDICAL CARE

## Department of Internal Medicine

Head of the Department: Viera Křížová, M.D.

### Activities of the Department

The Department of Internal Medicine provides back-up for the activities of the key disciplines of the hospital (Cardiovascular Program and Neuroprogram), to the inpatient ward and to the Polyclinics, Department of Gastroenterology and Center for Pulmonary Endoscopy. The majority of hospitalised patients are diagnostic admissions from all disciplines of the internal medicine, i.e. gastrointestinal, respiratory, cardiac, diabetic and infectious and autoimmune diseases.

In some cases, the Department also treats patients from other regions. The Department provides specific care for patients with short bowel syndrome and ensures their long-term parental nutrition, which includes treatment of any related complications. Specific interventions are performed under ultrasound guidance (central catheter introduction, diagnostic/evacuation puncture, etc).

### Intensive Care Unit

The total capacity of the unit is eight beds. On these beds, we provide comprehensive intensive care for often polymorbid patients with primarily internal issues. Due to the lack of beds at the Department of Oncology, we often provide the beds for the patients with complications of the oncology therapy and, last but not least, we also take over patients from surgical fields of Na Homolce Hospital - especially when the patient's surgical issues are solved while the need for the complex nutritional and internal therapy continues. Two beds of the ICU of the Department of Internal Medicine are equipped for providing artificial lung ventilation, the cleansing methods are represented by the intermittent hemodialysis which is provided in cooperation with the hemodialysis center B-Braun, s.r.o. Our ICU also provides the back-up for monitoring and observation of patients after gastroenterological surgical procedures and after surgical procedures performed at the Center for Pulmonary Endoscopy.

### Inpatient unit

The standard inpatient ward provides comprehensive internal medical care both to patients with acute internal diseases referred by the acute internal medicine outpatient unit, and to patients with planned diagnostic and therapeutic treatments. Patients from the internal medicine outpatient

units of Na Homolce Hospital, patients with internal issues from other departments of the hospital (including treated oncology and chronic hemodialysis patients with complications), and patients indicated for observation after invasive procedures (gastroenterology, Center for Pulmonary Endoscopy, interventional radiology) are admitted to treatment. Treated oncology patients with complications are admitted because the Department of Oncology has no beds at its disposal.

Generally, the care is of an above-regional character, and patients from districts outside Prague have also repeatedly approached us, including the acute cases. We also provide inpatient care to patients of the Homolka Premium Care Program, H Plus Program and relatives of hospital staff. In summary, the bed capacity does not cover the demand.

In the inpatient ward, the continually increasing average length of hospitalization has been reduced for the first time. However, the length of hospitalization is mostly the result of long-term parenteral administration of antibiotic treatment and treatment of complicated conditions and therefore cannot be further influenced. The proportional bed occupancy is one of the highest in the hospital.

### Internal medicine outpatient unit

Physicians of individual specialisations work in specialised inpatient wards, closely cooperating and mutually well substitutable both in the outpatient and inpatient wards. In addition to the traditional general internal medicine outpatient unit, care is provided in pulmonary, gastroenterological and metabolic outpatient units (in the outpatient unit for parenteral and enteral nutrition, diabetes, endocrinology and lipid counselling).

### Acute internal medicine outpatient unit

In particular, the Department provides treatment and examinations to patients with acute non-surgical issues who have no special referral for a particular specialised examination. Other activities include outpatient infusion therapy and planned diagnostic and therapeutic interventions offered to cover the needs of the Department of Internal Medicine.

The acute internal medicine outpatient unit is the most fully used outpatient unit in the Department, the average number of treated patients is 500 to 600 per month. In the past year, the total of 6,256 treatments were performed. An increase in the number of treated patients can also be expected in the future due to the fact that the outpatient unit partially supplements the lack of an emergency department and that care accessibility in other facilities has been deteriorating. Should the number of patients further increase, it will be necessary to increase the staff of the outpatient unit and extend its areas.

## Gastroenterology unit

The Gastroenterology Unit is the showcase of the Department of Internal Medicine. It provides excellent gastroenterology care using a wide range of endoscopic methods. It performs common endoscopy of the upper and lower gastrointestinal tracts, as well as a highly specialised ERCP examination of the bile ducts. It has achieved excellent results in the use of endosonographic techniques, including unique interventions for which patients from the entire country are referred to the Department. This has been taking place for many years in unsatisfactory and confined spaces.

One-time investments in the instrumental equipment led to partial improvement. We have borrowed the Spyglass set permanently, thereby significantly improving the diagnosis and treatment of biliary diseases. This year, we plan to purchase this device. Unfortunately, the spatial arrangement of the Gastroenterology Unit still does not correspond to its significance within the hospital or its position in Prague and often also the national health care system. Therefore, it is vital to continue investing both in technical equipment, and especially spatial arrangements, especially considering the findings of the JCI accreditation committee that warned of the unsatisfactory arrangements of the operations on its last visit. Under the current spatial arrangements, the unit will not meet the hygiene conditions at the next JCI accreditation, and the accreditation will not be granted.

## Center for Pulmonary Endoscopy

The Center for Pulmonary Endoscopy and related specialized pulmonary outpatient unit offer comprehensive bronchological diagnostics including autofluorescent bronchoscopy, NBI (Narrow Band Imaging) and endobronchial ultrasonography. The combination of new diagnostic methods with the existing ones, such as PET-CT, provides an exceptional opportunity for early diagnostics and staging of bronchogenic carcinoma followed by pneumo-oncological treatment. The capacity and the use of bronchologic care has been steadily growing, inter alia due to active cooperation with the Center for Interstitial Pulmonary Processes, other field pneumologists and other hospitals.

## Educational activities

The Department of Internal Medicine is accredited by the Czech Medical Chamber to train and issue functional licenses in internal medicine, gastroenterology, general medicine, abdominal ultrasonography (F008) and endoscopic ultrasonography (F004). Postgraduate and pre-certification study visits of younger colleagues from other disciplines of Na Homolce Hospital are annually held in the Department. For a long time, the Department has organised postgraduate courses for physicians preparing for general medicine postgraduate examinations, in cooperation with the Institute of Postgraduate Healthcare Education. To a lesser extent, pre-graduate students of the 1st, 2nd and 3rd Schools of Medicine, Charles University, come within compulsory practice.

### Operational data

Number of physicians	27 main employment + 6 agreement to complete work + 1 contract for work
Number of nursing staff	51
Number of paramedical staff	8
Number of standard beds	21
Number of intensive beds	8

### Total inpatient unit performance / comparison with 2017:

Bed occupancy rate (in %)	85.74
Average treatment period for the whole Department	6.62 (7.48 the previous year and 7.03 two years ago)
Total number of treatment days	8,830 (9,285 the previous year)
Admissions	1,334 (1,242 the previous year)



## Department of Clinical Oncology

Senior Physician: Martin Šafanda, M.D., Ph.D.

### Activities of the Department

The Department of Clinical Oncology focuses on the treatment of malignant tumors in adult patients. The oncology program consists of four key areas:

#### I. Gastroenterology program

- Tumors of small and large intestine
- Stomach and esophageal tumors
- Pancreatic tumors
- Liver and bile duct tumors

#### II. Breast cancer program

- Breast tumors

#### III. Urogynecological program

- Prostate tumors
- Renal tumors
- Urinary bladder tumors
- Ovarian tumors

#### IV. Pneumo-oncology program

- Pulmonary and bronchial tumors

The Department of Clinical Oncology is involved in close cooperation with the Comprehensive Oncology Center of the Teaching Hospital in Motol. Radiation therapy is carried out in the cooperating facility. In the absence of an inpatient ward, acute care, including ICU care, is covered by the Department of Internal Medicine at Na Homolce Hospital. Symptomatic treatment of terminal stages is provided in cooperation with the Institute of Pneumology and Oncology in Pleš. Since 2009, the Department has been involved in multicenter randomized studies of phase II and III. Due to the development of tumor epidemiology in the Czech population, an annual growth in 5-7 % of cases may also be expected in the future.

#### Operational data

Number of physicians	3
Number of general nurses	5
Number of newly admitted patients	618
Number of outpatient interventions	15,376
Number of chemotherapy administered	8,200



## Department of General Surgery

Head of Department: Jaroslav Verner, M.D.

### Activities of the Department

The Department carries out a clinical program for general medical care, including both outpatient and inpatient diagnostic and therapeutic care (including ICU) in the field of general surgery, orthopedic surgery and urology. The Department of General surgery treats patients from all over the country, foreign patients and clients of the Homolka Premium Care and H plus preventive programs. It provides consulting services for the hospital and organizes undergraduate and postgraduate courses for physicians.

#### General surgery program:

- Abdominal surgery (gastrointestinal tract surgery), thoracic surgery, thyroid surgery, hernia surgery, varicose vein surgery, breast surgery, and other surgical procedures
- Minimally invasive surgery in almost all fields of laparoscopic interventions (including hernia surgery, appendectomy, cholecystectomy, diaphragmatic hernia surgery, laparoscopic surgery of the small and large intestine)
- Oncological surgery in cooperation with the Gastroenterology unit of the Department of Internal Medicine and the Department of Oncology, Department of Pathology; particularly oncological surgery of the gastrointestinal tract, lungs and breast
- Extensive outpatient surgical activities for both on-duty and specialised consultancy units
- Minor outpatient interventions
- Ostomal consultancy - care of ostomy patients
- Robot-assisted interventions on rectum

#### Orthopedic program:

- Total replacement of hip and knee joints, including reimplantations, replacement of the shoulder joint, ankle joint and the first metatarsophalangeal joint using the Swanson endoprosthesis
- Modern osteotomy with the Stoffel method of metal-plate fixation in surgery of the foot - hallux rigidus; extended range of orthopedic and minimally invasive surgical procedures

- Extensive outpatient orthopedic treatment
- Arthroscopy (mainly of knee and shoulder joints)

### Urology program:

- Open, endoscopic and robot-assisted urinary tract surgery
- Urology surgical oncology
- Kidney surgery
- Minimally invasive laparoscopic, cystoscopic and ureterorenoscopic surgical procedures
- Ultrasound-guided puncture of the retroperitoneum
- Comprehensive diagnostics and treatment of erectile dysfunctions
- Wide range of outpatient orthopedic treatments
- Radiological procedures

## Organizational units of the Department

### Inpatient unit:

- Diagnostic, preoperative and postoperative care in all specializations
- Care of patients admitted to intensive and standard beds
- Two other units in addition to surgery, i.e. urology and orthopedic
- Intensive care unit - A + B units

### Outpatient unit:

- **On-duty outpatient surgery:** It provides daily surgical care for acute patients, including wound dressing changes in patients from other departments of the hospital. Also provides acute surgical care.
- **Surgical consulting clinic:** Consulting clinic for surgical diseases focuses on abdominal surgery, coloprocto-surgery, surgical oncology. It performs diagnostics, assessment and ordering of planned operations, postoperative monitoring, follow-up.

- **Thoracic surgical consulting clinic:** In cooperation with the respiratory consulting clinic and oncology clinic, it provides assessment and ordering of thoracic operations, postoperative monitoring and follow-up continuing care in patients with respiratory and thoracic diseases.
- **Mammology consulting clinic:** Provides examinations, comprehensive care, diagnostic services, preoperative evaluation and follow-up care to patients with breast disease, in close cooperation with the Department of Radiology, pathologists and oncologists.
- **Orthopedic outpatient unit:** Provides diagnostics, treatment and preoperative assessment of orthopedic patients with musculoskeletal diseases. Also provides consultancy services to other departments of the hospital.
- **Urology outpatient unit:** Provides care to urological patients, performs diagnostics, including ultrasound and outpatient treatment. The Department also provides preoperative assessment, postoperative monitoring, and comprehensive diagnostics and treatment of erectile dysfunction and a number of outpatient diagnostic and therapeutic procedures (cystoscopy, urethra probing for other departments, etc.).
- **Outpatient unit for minor surgical procedures:** Performs minor outpatient surgical procedures under local anesthesia at the request of general practitioners and physicians of the hospital's Department of Dermatology, and on patients from the surgical consulting clinics and on-duty surgery.
- **Ostomy consulting clinic (under separate management):** Provides comprehensive care (theoretic, pre-admission, preoperative, postoperative and follow-up) and education to ostomy patients. The activities of the consulting clinic involve identification and management of ostomy complications, management and drainage of all types of ostomies and complications, knowledge of all types of ostomy devices and their application, training of the hospital staff from other departments in the area of ostomy patient care.

#### Operating rooms:

- One "super-sterile" OR for orthopedic surgery
- One operating room for other surgeries, both open and laparoscopic
- Robotic operating room with Da Vinci Surgical System (used twice to three times a week)
- OR for urologic surgery

#### Operational data

Total number of physicians	25
Number of surgeons	16
Number of urologists	5
Number of orthopedists	4

Number of medical auxiliaries	63
Number of non-medical technicians	13
Number of attendants	2
Total number of beds	26
Number of standard beds	16
Number of ICU beds	5
Number of intermediate beds	5
Bed occupancy rate of the Department (in %)	99.67
Average treatment period (in days)	3.23
Number of treatment days	8,678
Number of admitted patients	2,684
Number of deaths	3

**Number of interventions**

Surgery	1,459
Urology	573
Orthopedics	549
Minor surgical procedures	515
<b>Total</b>	<b>3,096</b>

**Number of outpatient interventions**

Surgery	20,531
Orthopedics	13,707
Urology	8,455
Clinical oncology	465
<b>Total</b>	<b>43,158</b>

**Number of consultancy examinations**

Surgery	802
Orthopedics	85
Urology	167
<b>Total</b>	<b>1,054</b>

**Changes / new events in the previous year**

- **Technical equipment:** A partial reconstruction of the operating rooms was carried out, which required a two-month stop of operations in these operating rooms. Operations were performed in a restricted mode in the operating rooms at other departments. A new arthroscopic set has been purchased and put into service. A prostate fusion biopsy system has been purchased. The laparoscopic and surgical instruments have been partially replaced. A new oscillating saw, reamer and vaper have been purchased. New supports for the operating table (shauts) have been purchased. Printers and computer displays have been partly replaced with new ones at the Department.
- **Orthopedics:** Routine use of the orthopedics navigation system in the surgery of large joints and routine arthroscopic surgery (in particular, knee joint treatments and cruciate ligament-plasty), routine hallux surgery, the range of procedures has not been extended.
- **Surgery:** A multidisciplinary approach has been standardized (surgery, oncology, radiodiagnostics, pathology) in patients with malign alimentary tract diseases. The number of laparoscopic interventions has increased compared to the traditional method. We routinely performed procedures for anal prolapses and hemorrhoids using the Long method (PPH). The laparoscopic colorectal and gastrointestinal surgery has been standardized. Robot-assisted resection procedures on rectum have been again permitted in the Department.
- **Urology:** Endoscopic uretrotomy is used as a routine method, laparoscopic procedures have been standardized in renal surgeries (pyeloplasty), ureterorenoscopy is used as a routine method. There was an increase in the number of robot-assisted surgeries performed, in particular radical prostatectomy, pyeloplasty and kidney resection.

**Evaluation of clinical activities**

- The Department concentrates on the full operation of general surgery, orthopedics and urology, with a focus on elective procedures, and plans the further development of laparoscopic procedures in the abdominal surgery and thoracoscopic procedures in thoracic surgery.

- The Department closely cooperates with the Department of Internal Medicine, Departments of Radiodiagnostics, Pathology and Oncology in the care of oncological patients in regular joint workshops.
- Operating rooms are used for surgical treatment of the most severe surgical conditions (including acute interventions).
- The Department was actively involved in the development of recommended accreditation standards and optimization of postoperative pain management.
- Patient satisfaction was continuously assessed by the Department and the outputs were used for further improvements. An increased emphasis was put on maintaining the hygiene standard from the Department to the operating rooms, the condition has been continuously monitored in cooperation with the microbiological department and the team responsible for infection control. The number of patients with complications and nosocomial infections has not increased.

### Perspectives for the next year

- Social facilities in rooms and above-standard rooms should be refurbished in the inpatient ward.
- Due to a significant increase in the number of oncological patients in the Czech Republic, particularly in the colorectal area, the Department's activities will focus more on the development of the latest surgical procedures using minimally invasive approaches - laparoscopic as well as robot-assisted - within comprehensive therapy for these patients.
- Certain physicians will be involved in teaching medical students at the 1st School of Medicine.
- It is necessary to solve the emergency condition of operating lights in the urological operating room on the 7th floor.
- The training of physicians will continue in the form of regular educational seminars in the Department.
- The information system of the Department of Surgery will be further developed in coordination with the hospital information system.
- Extension of the cooperation with the Rehabilitation Department in orthopedic patients is planned.
- It is necessary to stabilize the state of paramedical staff, which significantly limits the operation and functioning of the department.

### Educational and other specialized activities

#### Educational and teaching activities

- Clinical educational seminars for the physicians regularly take place in the Department.
- The Department organized an undergraduate study visit for medical students (4th and 5th year of study) from the 1st, 2nd and 3rd School of Medicine, Charles University.

- Within postgraduate studies, physicians from other departments of our hospital completed study visits for Postgraduate Certificates.
- We participated in all-hospital seminars and regular common indication seminars together with oncologists, gastroenterologists, pathologists and radiologists.
- The general nursing staff from the Department of Surgery participated actively and passively in a number of training and lectures necessary to improve their professional knowledge and skills. 2 nurses continue their ARIP studies, 2 nurses are studying at the Nursing School, 1 nurse is studying at a higher vocational school, 3 members of paramedical staff are studying a course for attendants.
- We focused on providing training to nursing staff in the area of ostomy to ensure ostomy care for our patients. Thus, we have 1 ostomy nurse in total who provides consulting in the area of ostomy patient care for the entire hospital and trains another nurse, who will specialize in this area.

#### Specialized activities and membership of professional associations

Physicians from the Department participated actively in several domestic and international congresses, seminars and workshops. Our physicians are also members of a number of professional societies, such as:

- The Czech Medical Association of J. E. Purkyně
- The Czech Society of Hepatobiliary Surgery
- The Czech Surgical Society
- The Czech Society for Endoscopy
- The Endoscopic and Minimally Invasive Surgery Section of the Czech Surgical Society
- The Czech Society of Coloproctology
- The Czech Society of Gastroenterology
- The Czech Orthopedic Society
- The Thoracic Surgery Section of the Czech Society for Pneumology
- The Czech Association of Urology
- The European Association of Urology
- The Czech Society for Robot-Assisted Surgery of the Czech Medical Association of J. E. Purkyně

## Department of Gynecology and Minimally Invasive Therapy

Head of Department: Petr Popelka, M.D.

The activity of the Department focuses on the diagnostics and surgical treatment of gynecological diseases, with emphasis on minimally invasive approaches. The complete range of pelvic surgery concentrated on three main clinical programs in 2018: urogynecological program, comprehensive treatment of endometriosis, and general gynecological surgery. The Department has a specialized center for each program.

**Urogynecological program** covers diagnostics, surgical and conservative treatment of incontinence and pelvic floor disorders. Surgical procedures include the latest trends using special vaginal reticulate implants (nets) and put emphasis on the comprehensive treatment of a given issue while observing the rules of minimally invasive interventions. In total, 280 female patients with the above problems were operated on of which 56 interventions were performed with the use of implants.

**Program for comprehensive diagnostics and endometriosis surgery** offers comprehensive treatment to patients from the whole Czech Republic, including radical laparoscopic surgery and subsequent hormonal therapy with final verification of the outcome. The Department of Gynecology of Na Homolce Hospital is one of the most experienced centres in the Czech Republic in performing radical operations of retroperitoneal endometriosis. In 2018, the Department carried out 95 procedures, of which 10 procedures were radical surgeries for infiltrative retroperitoneal endometriosis.

**General gynecological surgery** deals with the surgical treatment of infertility, myomatosis, adnexal tumors and cysts, problems with postoperative adhesions, chronic pelvic pain, inflammations and congenital development disorders. Hysteroscopy operations include diagnostic and surgical endoscopy of the uterine cavity.

During 2018, after completing the necessary education and training, radical oncological surgery was put into operation again using the Da Vinci Xi robot-assisted system.

In 2018, a clinical study started to verify the feasibility of a newly developed robot-assisted system of the Israeli company Memic for vaginal surgeries was completed.

In 2018, 1,222 female patients were admitted for treatment to the Department.



The total number of surgical interventions in 2018 amounted to 1,247 surgeries, of which 92% were performed using minimally invasive methods.

### Basic data

Number of beds	14
- standard	10
- ICU	4
Number of physicians	7
Number of nursing staff	24
Number of outpatient interventions	17,112
Number of admissions	1,222
Number of treatment days	3,117
Number of interventions	1,247
Bed occupancy rate (in %)	68.69
Average treatment period (in days)	2.55

## Department of ENT / Head and Neck Surgeryt

Head of Department: Petr Jirák, M.D.

### Activities of the Department

The Department of ENT / Head and Neck Surgery specializes in diagnostics and conservative and surgical treatment of ear, nose and throat diseases.

Similarly to previous years, surgical procedures carried out in 2018 covered a whole range of head and neck surgery – surgeries of the nose and paranasal cavities (mostly as endoscopic procedures), comprehensive surgery of the thyroid and parathyroid glands, microsurgery of the vocal cords and larynx, cophosurgical interventions (ear surgeries), surgeries to treat sleep apnea syndrome and rhonchopathy, as well as corrective surgeries in the area of the head and neck, operations on the soft tissues of the head and neck, surgeries for injuries of facial bones and ENT surgical oncology. Skull base surgery was intensively developed in collaboration with the Department of Neurosurgery.

Within Na Homolce Hospital, the Department cooperates with neurologists in the treatment of balance disorders and has at its disposal a unit with state-of-the-art equipment – the Leksell Gamma Knife – for the treatment of auditory nerve tumors. In cooperation with dental surgeons and neurosurgeons, it performs demanding operations on the facial skeleton and skull base. We cooperate inter alia with experts in allergology and immunology, especially when dealing with chronic rhinitis or chronic sinusitis. One of the key areas is treatment of patients with cancer. The Department provides a detailed diagnostics, surgical treatment and follow-up care, in collaboration with oncologists.

The program of temporomandibular joint treatment has further continued. In 2018, the treatment of diseases of the temporomandibular joint was mainly conservative and minimally invasive (arthrocentesis under local anesthesia and arthroscopic surgeries).

Surgical treatment of rhonchopathy and sleep apnea syndrome is also very common, with the use of a radiofrequency method that reduces healing time and postoperative discomfort for patients. The success rate of the treatment is regularly monitored, feedback from patients is also obtained through questionnaires. We have established very close cooperation with the Center for Sleep Disorders which is part of the Department of Neurology of Na Homolce Hospital to treat patients with sleep breathing disorders.

In the field of thyroid surgery, the Harmonic scalpel has been increasingly used, which significantly reduces the length of surgical procedures. In indicated cases, minimally invasive procedures to remove thyroid tissue by the MIVAT method (minimally invasive video-assisted thyroidectomy) are used. At the same time, the Department carries out a whole range of surgeries, ranging from partial to extensive procedures, including removal of the entire gland and surrounding lymph nodes. It provides comprehensive postoperative care in cooperation with endocrinologists. In addition to that, the Department closely cooperates with the Department of Nuclear Medicine of the Teaching Hospital in Motol in the follow-up care of patients with thyroid cancer.

Close cooperation with dental surgery has continued. Together, we indicate and operate on patients for whom the combination procedure is an advantage.

**In 2018, the outpatient unit of the Department of ENT / Head and Neck Surgery provided comprehensive services**, including specialised consultancy services in oncology, otoneurology, cophosurgery and otoprosthesis, outpatient unit for treatment of rhonchopathy, outpatient unit for corrective head and neck surgery, phoniatri outpatient unit, joint outpatient unit (temporomandibular joint), and a specialised outpatient unit for the treatment of salivary glands using endoscopic techniques for diagnostics of salivary gland ducts (sialoendoscopy).

The outpatient center for sleep and snoring disorders (rhonchopathy) accounts for a large part of our outpatient care and cooperates with the Department of Neurology and the Laboratory for Sleep Disorders. The Department also has an ENT pediatric specialist working in the outpatient unit of the Department of Pediatrics. The Department continues to successfully develop an aesthetic program of corrective surgery of the head and neck which primarily includes procedures on auricles, eyelids and the external nose, and laser operations.

As a standard, we use an NBI diagnostic method (narrow band imaging) which allows us, both in the outpatient setting and during surgeries under general anesthesia, an earlier and more precise diagnostics of early stages of serious diseases of ENT mucosa, particularly disorders of the vocal cords and larynx.

We continue to carry out evaluation of patients with swallowing disorders, in particular in collaboration with the Department of Neurology, using the method of detailed evaluation of swallowing disorders FEES (fiberoptic endoscopic evaluation of swallowing), which has been further developed in cooperation with a clinical speech therapist.

## Operational data

Number of beds	11
Number of physicians (as at December 31, 2018)	12
Number of general nursing staff	25
Number of outpatient interventions	1,359
Number of consultations	1,407
Number of admissions	1,266
Number of treatment days (standard care)	2.5
Bed occupancy rate (in %)	92
Average treatment period for standard care (in days)	2.5

## Number of interventions

Surgeries under local anesthesia	623
Surgeries under general anesthesia	841
FESS surgeries	187
Thyroid gland surgeries	104
MLS (Microlaryngoscopy)	77
Oncology diagnoses	81
NBI	157
TMJ (temporomandibular joint) surgeries	32

## Outlook for 2019

- The Department will continue to provide comprehensive ENT diagnostics and treatment. The aim is to further improve the professional standard and quality of the healthcare provided, with a focus on procedures necessitating shorter hospital stays.
- The program of functional corrective surgery and rhonchopathy has an increasing trend.
- We have introduced drug-induced sleep endoscopy (DISE) in patients with sleep apnea syndrome.
- We will focus on further development of thyroid surgery - newly also under grant support.
- With the grant support, we continue the pH-metric research project.
- This year, the FESS operations research project is launched using navigation with grant support.
- We are going to introduce the so-called tuboplasty - a procedure for dilatation of the Eustachian tube.
- We will continue our close cooperation with dental surgery in performing combined ENT / dental surgical procedures.
- Within the neuroprogram, close cooperation will continue with the Department of Neurosurgery, particularly with regard to the skull base surgery.
- Within the cardiac program, the Department will continue to be involved in the preparation of patients for cardiac and vascular surgeries.
- As every year, the Department plans to organize a workshop on thyroid disorders, with a focus on operative techniques and thyroid surgery in 2019.

## Department of Anesthesiology and Reanimation

Head of Department: Zbyněk Fuksa, M.D.

### Activities of the Department

The Department of Anesthesiology and Reanimation provides two basic areas of health care:

- **Anesthesiology** provides comprehensive preoperative care, care during surgery and postoperative care for patients, including general anesthesia and more complex types of local anesthesia administration.
- **Reanimation** deals with complex diagnostics and treatment of patients whose general health condition and vital signs disorders are life-threatening and require the highest standard of health care. The majority of patients are patients with impaired consciousness, blood circulation and breathing, mostly after major surgeries at Na Homolce Hospital, or patients who have been reanimated by the emergency medical services. The Department has a hyperbaric chamber at its disposal with the possibility of artificial lung ventilation and other special methods of reanimation care.

A specialized **team for acute pain treatment** has been formed within the hospital, which is systematically involved in the monitoring and treatment of acute pain in the inpatients. **Chronic pain outpatient unit** then deals with patients suffering chronic pain.

### Operational data

Basic data

Number of FTE of physicians	200
Number of FTE of physicians	9,576
Number of beds	3,254
Bed occupancy rate (v %)	1,210
Average treatment period (in days)	4,821

### Organizational units of the Department

- 1 resuscitation station (8 beds)
- 2 postoperative units of vascular surgery (12 beds)
- 5 central operating rooms
- 3 surgical operating rooms
- 2 gynecological operating rooms
- 1 operating room for robot-assisted surgery
- 8 additional operating rooms and workplaces
- 1 hyperbaric chamber

### Performance overview, admissions and outpatient unit

Number of inpatients	190
Mortality (in %)	22.1
Total number of anesthetics	10,649
Number of anesthetics in patients older than 65 years	3,525
Number of anesthetics exceeding 2 hours	3,244
Number of regional anesthetics	722
Number of regional anesthetics	734
Number of acute CO poisonings	12
Number of patients in the chronic pain outpatient unit	668

### Educational and other specialized activities

Ivan Vrba, M.D. is a member of the senior management of the society for managing chronic pain and has been involved in lecturing and publication activities. All physicians regularly participate in educational events within the Czech Society of Anesthesiology, Reanimation and Intensive Medicine, some of them also in selected events abroad. The Department nursing staff has been attending events abroad organized by the ESPEN (European Society for Parenteral and Enteral Nutrition) for the second year.

## Department of Rehabilitation and Physical Medicine

Head of Department: Ivan Hadraba, M.D.

### Activities of the Department

The Department provides comprehensive diagnostic and therapeutic care to restore the maximum physical abilities of disabled patients within its basic specialization. Care is provided to inpatients of the Department, to inpatients of other specialized inpatient units and to outpatients.

Care is provided to inpatients of the Department, to inpatients of other specialized inpatient units and to outpatients. It is provided to all patients of the hospital by physicians of the Department in cooperation with external prosthetic and orthotic centres.

### Organizational units of the Department

The Department is part of the therapeutic and preventive care section. It has an outpatient unit and an inpatient ward with 10 beds. These are provided to the Department by other departments - Neurosurgery, Vascular Surgery, Neurology and Gynecology. The outpatient unit consists of surgeries of rehabilitation physicians, a hydrotherapy room, and rooms for physiotherapy and physical therapy.

### Staff (in terms of FTEs)

Physicians:	7
Head physiotherapist:	1
Physiotherapists:	28
Occupational therapists:	2
Nursing staff:	4
Paramedical staff:	3



Masseurs:	2
Administrative staff:	3

### Performance overview

Number of outpatient physician interventions:	26,700
Number of other staff interventions:	70,180
Number of other inpatient non-medical staff interventions:	114,790
Total	211,670
Number of patients admitted to the inpatient unit of the Department of Rehabilitation and Physical Medicine:	291

### Changes / new events in the previous year

- In March, a new physician without a specialization in rehabilitation and physical medicine took up a vacancy.
- In December, another physician of the Department successfully passed the postgraduate certificate examination in the field of rehabilitation and physical medicine.
- There have been partial modifications to user software to reduce the complexity associated with the need to use a four-software environment in parallel.
- New physiotherapeutic methods have been introduced into the outpatient and inpatient practice.
- The preparation of cardiorehabilitation programs has commenced.
- In the course of the year, expert seminars for physiotherapists and physicians were organized in cooperation with external lecturers.
- Professional experience has been repeatedly offered to both physiotherapy students of individual schools of medicine and professional internship has been newly offered also to orthopedic prosthetics students.
- In cooperation with the Departments of ENT, Surgery and Urology and with external workplaces, the Department continued to implement two major projects: 1) Treatment of urinary incontinence in women and treatment of urinary incontinence in men after prostatectomy; 2) Comprehensive rehabilitation treatment of voice disorders - voice rehabilitation and reeducation. Examination of the voice field by a device developed in the R&D laboratory of the Academy of Performing Arts in Prague, electrostimulation treatment of vocal cord disorders.

- Professional consultations were provided for physicians in the Department of Rehabilitation and Physical Medicine and physiotherapists from other departments in the area of rehabilitation diagnostics and therapy of urinary incontinence. The Department physiotherapists organized a workshop on this subject at the Beroun Rehabilitation Hospital.
- Professional consultations were provided to physiotherapists from hospitals outside Prague regarding rehabilitation treatment in cardiac surgery patients

### Development perspectives for 2019

- New physicians and physiotherapists will be recruited to vacant posts according to the personnel directive.
- Organization of the 8th conference of physicians and physiotherapists specialized in rehabilitation and physical medicine and other disciplines
- The Department organizes further workshops for physiotherapists and physicians in cooperation with external lecturers.
- The education of the Department physicians without specialization in the field and preparation for the postgraduate certificate examination will continue.
- Preparation of a communication system between individual offices and the nursing staff workplace will be initiated in order to facilitate and accelerate the care of outpatients.
- Monitoring system will be launched in the department's premises in order to increase patient safety and improve patient care.
- Floor coverings in the outpatient facilities will be repaired in order to increase the safety of employees and patients
- The Department will purchase a second thermophilic to shortwave diathermy so that this form of physical therapy can be applied to patients simultaneously at multiple locations of the musculoskeletal system.
- Extending the laser therapeutic spectrum when obtaining an application probe to the existing device is being considered.
- The non-functional hydrotherapeutic baths in the hydrotherapy area will be replaced with new ones.

## Department of Clinical Pharmacy

Head of Department: Milada Halačová, Pharm.D., Ph.D.

### Activities of the Department

The Department of Clinical Pharmacy was established at Na Homolce Hospital in August 2010 to ensure the safety of pharmacotherapy, which is one of the major priorities of the hospital management. In terms of its organisational structure, it falls within the competence of the Deputy Director for Therapeutic and Preventive Care. The working team of the Department consists of pharmacists specialized in clinical pharmacy or those who will be included in training for this specialization. The work of the clinical pharmacist is governed by the needs of Na Homolce Hospital, safety standards set by JCI and by staff availability within the Department. The activities in which the clinical pharmacist takes part are divided into several areas.

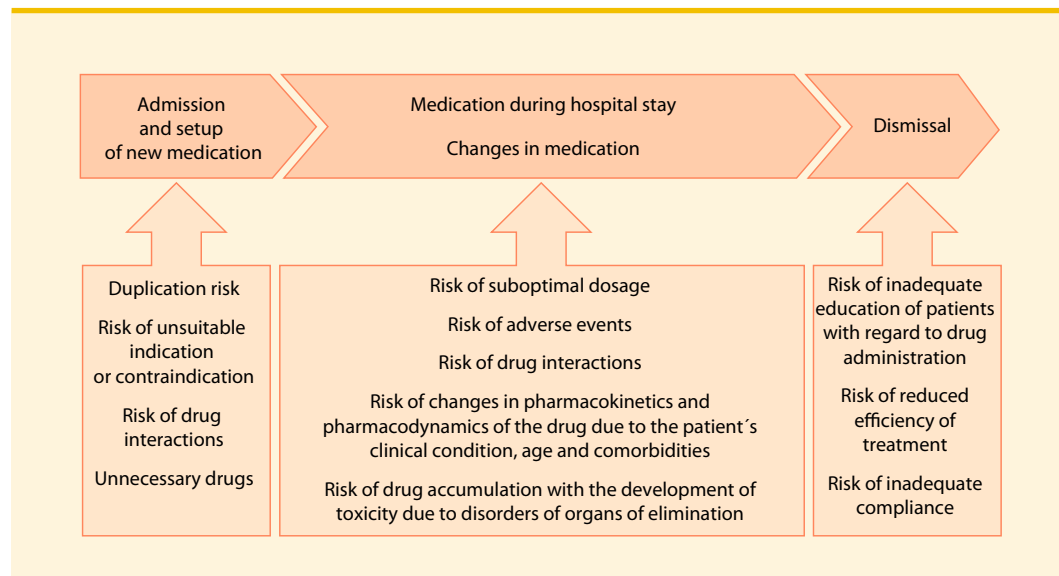
The major areas include **(1) the assessment of a newly admitted patient's medications**. This is a so-called signal check, i.e. a gross assessment of the patient's medication with respect to indications, contraindications, dosages and chosen route of administration. It reveals any duplication of medication and evaluates the clinical importance and risks of drug and food interactions. In this way, future problematic medications for the patient or high-risk pharmacotherapeutic regimes are identified and continuously monitored.

The key activity of the clinical pharmacist is **(2) everyday work in the assigned clinical department** and close cooperation with treating physicians and nurses. The clinical pharmacist monitors patient medications in detail and assesses any causal relationships between specific patient problems and their changes during illnesses, laboratory examinations and current medications, and adjusts drug dosages, especially of antibiotics for patients with various degrees of renal or hepatic damage and dialysed patients. They work with nurses on drug incompatibilities and the crushing of drugs for nasogastric and jejunal probes.

The clinical pharmacist provides an on-demand **(3) consulting service** within the hospital, takes part in **(4) the development of best practice**, reports adverse events to the State Institute or Drug Control and is responsible for preparing **expert reports** on dealing with exceptional events in the hospital related to medications. The Department of Clinical Pharmacy is working on a **list of high-risk drugs** and LASA (look alike-sound alike) drugs and is involved in preparing so-called proactive procedures and storage systems to minimise the number of errors in handling these drugs and the impact such errors might have on patients. The Department of Clinical Pharmacy is the creator of the **(5) generic positive sheet** for the inpatient unit of the Na Homolce Hospital.

Since 2012 the Department of Clinical Pharmacy has been involved in the national (6) **Senior project** implemented by Ústav lékového průvodce, z. ú. (Institute for Medical Drug Guidance). Clinical pharmacists at Na Homolce Hospital perform regular drug audits in social facilities throughout the Czech Republic. The project continues in the activities of outpatient clinical pharmacy departments where in 2017 we managed to open a **clinical pharmacists consulting service for the needs of outpatient physicians and patients** with the financial support of the Ministry of Health.

## Analysis of the operational processes related to the activities of the Department of Clinical Pharmacy



## Work records and activities of the Department

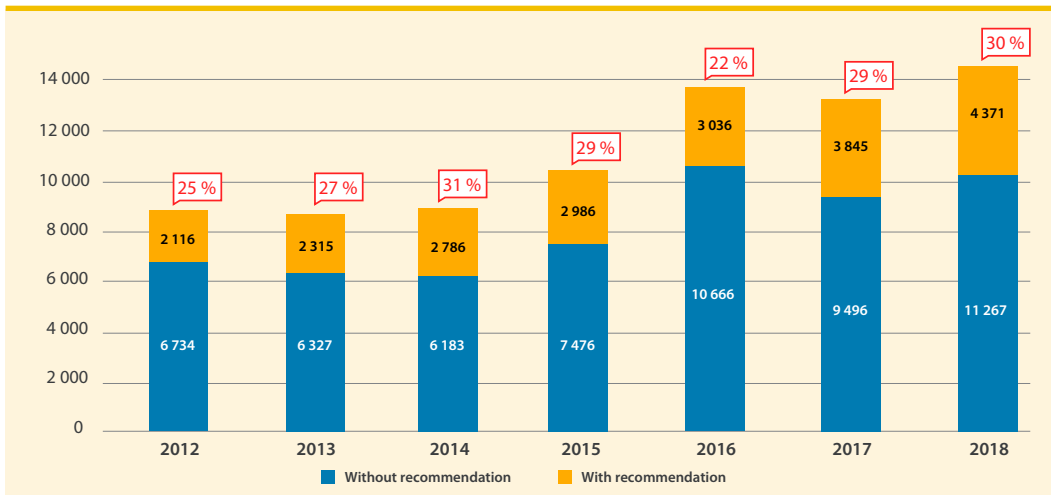
The Department provides care to all patients admitted in the hospital. The admission to our hospital represents the first screening point and separates young patients without medication who undergo a short-term, mostly ½-1 day hospital stay, and those who are treated in the Center for Sleep Disorders, who are indicated for Gamma Knife treatment, etc. The remaining approximately 50 % of inpatients require detailed revisions by

the clinical pharmacist, as many as several times during the hospital stay. Medication is adjusted on the basis of a clinical pharmacist’s intervention in about 3,000 patients annually (30 %). The highest percentage of interventions includes adjustments of medical drug dosage in the case of impaired function of the organ of elimination (risk of accumulation), clinically significant medical drug interactions, severe adverse events, incompatibilities, contraindications, unnecessary medical drugs, etc.

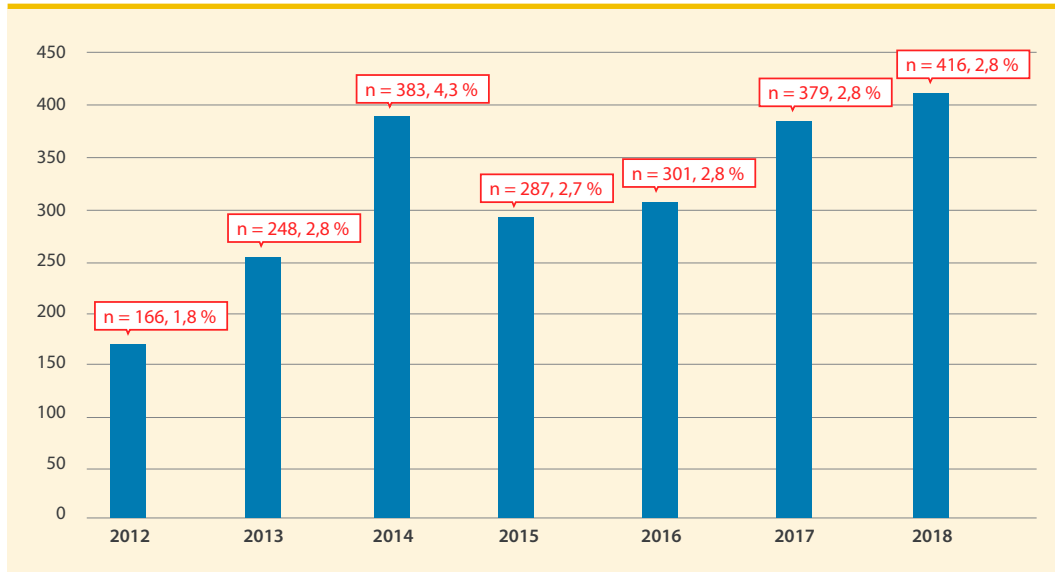
Numbers of inpatients revised by the clinical pharmacist and consultations requested by an outpatient pharmacist in 2018

Number of revised inpatients	14,668
Number of inpatients referred to by the Department of Clinical Pharmacy	4,371 (29.8%)
Number of inpatients with severe adverse effects	432 (2.8%)

Graph 1: Year-on-year comparison of the number of reviewed medications in the Na Homolce Hospital in 2012-2018



Graph 2: Year-on-year detection (2012-2018) of adverse effects expressed as a percentage of the total number of reviewed medications (n=14,668)



## Accreditation and specialist activities

- Status of an accredited facility of the Ministry of Health of the Czech Republic in the field of clinical pharmacy, membership of the Accreditation Commission of the Ministry of Health of the Czech Republic in the field of clinical pharmacy
- Membership of the Board of the Clinical Pharmacy Section of the Czech Pharmaceutical Society of J. E. Purkyně
- Membership of the main Board of the Czech Pharmaceutical Society of the Czech Medical Association of J. E. Purkyně
- Educational activities in the field of pharmacology at schools of medicine and pharmacology in Prague and Brno
- Membership of the Scientific Council of the Institute for Medical Drug Guide.
- Professional guarantor of the national "Senior" pilot project implemented by the Institute for Medical Drug Guide.

- Close cooperation with the State Health Institute (hospital antibiotic program and infection prevention and control)
- Membership of the Subcommittee on Antibiotic Policy of the Czech Medical Association of JEP
- Publishing and lecturing in national and transnational professional activities
- Implementation of two grant projects

## Staff data

Number of clinical pharmacists:

5.8 FTE

## Conclusion

A high standard of clinical pharmaceutical care was confirmed by the JCI international audit of the quality and safety of care which Na Homolce Hospital received again in 2017. The clinical pharmaceutical care provided by the hospital has become a common standard ensuring a high level and safety of pharmacotherapy for all its inpatients. The global set-up of the clinical pharmacological care in Na Homolce Hospital, guaranteed by the JCI independent international accreditation, is at present unique in our country. The project was awarded several times in the national competition "A Safe Hospital" (in 2013 it was the winner).

# OUTPATIENT UNIT



## Center for Allergy and Clinical Immunology

Senior physician: Assoc. Prof. Petr Čáp, M.D., Ph.D.

### Activities of the Department

- The Center provides therapeutic and preventive specialised outpatient care to adult and pediatric patients with allergic diseases, immunity disorders and recurrent respiratory infections.
- In 2018, the Center for Allergy and Clinical Immunology performed comprehensive diagnostic and treatment procedures, including preventive and consulting care, to both child and adult patients with allergies, asthma and other immunopathological conditions (immunodeficiency and autoimmune conditions).

### Operational data

**Outpatient units:** 4 surgeries, 3 prep rooms and 1 functional diagnostics laboratory

**Number of physicians:** 4 (3.0 FTE) + 2 external physicians from the Department of Clinical Biochemistry, Hematology and Immunology (0.4 FTE each)

**Number of nursing staff:** 5 (a total of 5.0 FTE)

#### Outpatient unit:

Number of patients	5,003
Number of interventions	9,020
Number of skin tests	29,626
Number of spirometries	6,778
Number of bronchomotor tests	1,214
Number of rhinomanometries	510
Number of allergen-containing vaccine administrations (treatment initiation)	338

## Educational and other specialized activities

- **Postgraduate training courses** provided to physicians and nurses in the field of allergy and clinical immunology for which the Department has received an updated and valid official accreditation by the Czech Ministry of Health
- **Undergraduate courses** provided to students of the 1st and 2nd School of Medicine, Charles University, in cooperation with the Institute of Immunology at the Motol Teaching Hospital
- **Organization of educational activities** within life-long learning on the national basis, a number of specialized conferences and symposiums: Conference of the Czech Society for Allergy and Clinical Immunology, interdisciplinary meeting in March 2018
- **Membership of the editorial board of "Alergies"** - a journal for postgraduate training - and **Zdravotnické noviny**, a health weekly
- **Educational activities** - radio and television program, newspaper and journal articles
- **Membership of professional associations:** Czech Society for Allergy and Clinical Immunology of J. E. Purkyně, Czech Pneumology and Phthi-zeology Society of J. E. Purkyně (Assoc. Čáp), Czech Society of Internal Medicine of J. E. Purkyně (Assoc. Čáp), European Academy of Allergy and Clinical Immunology (Assoc. Čáp, Ms. Pončáková, M.D., Ms. Herknerová, M.D.), European Respiratory Society (Assoc. Čáp); **active participation in workshops, conferences** and foreign congresses in the field of allergy and clinical immunology

## Department of Pediatric and Adolescent Medicine

Senior Physician: Tibor Savel, M.D.

### Activities of the Department

- Therapeutic and preventive care provided to children and adolescents up to 19 years
- Consulting services for the hospital and outside the hospital in the field of pediatric care
- Specialised care in the field of pediatric neurology, endocrinology, gastroenterology, psychology, orthopedics, pneumology, nephrology and speech therapy
- Therapeutic and preventive care provided to foreign nationals
- Consulting services provided to children of foreign nationals
- Healthcare stipulated by international treaties of the Czech Republic
- Emergency services at the hospital

### Organizational units of the Department

- Outpatient unit with 5 offices and 1 room for laboratory sample collection and also for emergency reanimation and possible isolation of infectious patients
- 7 pediatricians (1 full-time pediatrician, 6 part-time pediatricians or pediatricians with work performance agreement)
- 1 full-time non-medical university graduate (clinical speech therapy)
- 7 consulting specialists
- 5 pediatric nurses

### Performance overview

Number of registered children (payment per capita)	1,474
Number of foreign nationals receiving permanent care	151
Number of children registered in consulting unit	321
Number of registered newborns	60

### Economic results for 2018

Total number of procedures	20,258
Number of pediatric procedures	13,852
Number of procedures performed by consultants	1,377
Points per year	3,626,453

### Changes in 2018

Since January 2018, the management of the department has been changed and Tibor Savel, M.D., has been appointed the Senior physician of the Department. Ms. Dodovová M.D., has increased her FTE to 0.8, Ms. Bajová, M.D. to 0.2.. Ms. Michalová, M.D., has reduced her FTE to 0.2, Mr. Šedivý, M.D., has started working under an agreement to complete work. The Department has started to perform sports check-ups of children and adolescents, the nurse Macháčková has started to use canistherapy for therapy of both registered and non-registered patients. Since August, the reception desk at the Department of Pediatrics has been canceled, the central reception desk of the hospital and partly also our Department took over its activities.

## Development perspective for 2019

Economic activity will be carried out within the hospital flat rate and payment per capita for specialisation 002. The Department will still accept new patients up to the age of 19 for registration. Gradually, a generational exchange of medical staff will occur and working hours will be adapted so that physicians and nursing staff work full time.

## Department of Dermatology and Venerology

Senior Physician: Richard Šuraň, M.D.

### Activities of the Department

The Department provides outpatient therapeutic and preventive care of clients of commercial services (Homolka Premium Care, Comfort Care and paying foreign nationals), the staff of embassies in the Czech Republic, the staff of Na Homolce Hospital, and consulting services for hospital outpatients and inpatients. Treatment of other patients from the Czech Republic and abroad is provided only based on the immediate availability of physicians in the Department.

In case of suspected venereal diseases, the Department makes basic examinations. Patients with a confirmed diagnosis of gonorrhoea, syphilis or chlamydia infection are referred to the respective consulting specialists in dermatovenerology.

The Department performs examinations of suspected skin tumors and in the case of histological confirmation of the diagnosis, the patients are treated and followed up by the Department. Patients with malignant melanoma and lymphoma cutis are referred to the Department of Oncology of Na Homolce Hospital (and the Department of Dermatology is then involved in their follow-up), or to the outpatient dermato-oncology units of other dermatology departments.

In addition to the basic specialised examination, the Department performs electrocauterization, cryotherapy, sclerotherapy of varicose veins, examination of pigment formations by dermatoscope, epicutaneous tests, dermatosurgical and aesthetic dermatology interventions.

### Operational data

The staff of the Department include 1 senior physician (1.0 FTE), 1 independent physician (0.5 FTE) and 2 nurses (1.0 and 0.8 FTE).

### Development perspectives for 2019

Physicians and nurses of the Department are involved in postgraduate training courses and regularly read professional journals. The task of the Department for 2019 is to maintain the quality of the provided therapeutic and preventive care, strengthen epicutaneous testing and increase the range of aesthetic dermatology interventions.

## Department of Ophthalmology

Senior Physician: Petr Novák, M.D.

### Activities of the Department

- Outpatient therapeutic and preventive ophthalmological care of patients of H plus and Homolka Premium Care programs, foreign nationals, employees and other patients
- Consulting services provided to both outpatients and inpatients from different hospital departments (primarily neurology, neurosurgery, cardiology, anesthesiology and reanimation and internal medicine)
- Specialized examinations of patients referred from external ophthalmologists and other specialists
- Outpatient surgery - cataract surgery, anterior eye segment and glaucoma surgery, eyelid surgery and surgery of surrounding tissues (currently more than 99 % of cataract surgeries are done in an outpatient setting)
- Inpatient surgical procedures are performed for corneal transplantation and certain cataract surgeries (in patients from remote regions and in severely ill patients); for this purpose, the Department uses beds in the ENT Department and the Department of Internal Medicine

### Organizational units of the Department

The Department of Ophthalmology has an outpatient unit and operating room; it has no inpatient ward. If need be, the patients stay in the ENT Department or the Department of Internal Medicine. The Department is managed by the senior physician and independently working physicians in a total of four medical offices.

### Procedures

Number of outpatient interventions	14,354
Number of treated patients in individual outpatient units	5,535
Total number of interventions	1,328

Number of cataract surgeries	1,270
Number of corneal transplantations	26
Number of surgical corrections of astigmatism	32

## Staff data

Number of physicians	5
Number of physician FTEs	4.3
Number of general nursing staff	7
Number of general nursing staff (FTE)	6.0
Number of auxiliary medical staff	1
Number of auxiliary medical staff (FTE)	1.0
Number of technical staff	1
Number of technical staff (FTE)	1.0
Total number of employees	14
Total number of FTEs	12.3

## Changes in 2018

- In February, the purchase of an ocular tomograph (OCT) worth CZK 1.5 million was made for the purpose of early diagnostics of retinal pathologies.
- The Department managed to maintain the trend of long-term stabilization of cataract surgeries and the number of transplantations.
- Commercial refractive surgeries – lens extraction and implantation of monofocal or multifocal implants – are unequivocally on the decrease. Patients were still interested in the possibility to pay an additional fee for the implantation of an above-standard lens within the “economically more demanding treatment option” (implantation of toric and multifocal lenses within cataract surgery covered by health insurance companies) that was cancelled in 2013.



## Educational and other specialized activities

Physicians of the Department are members of the Ophthalmological Society and the Czech Society of Refractive and Cataract Surgery and participate both actively and passively in workshops, congresses and other events of the Societies. In 2016, the physicians participated in post-graduate courses both at home and abroad (the Lion's Club Educational Center, international cataract surgery course) and gave a number of presentations at ophthalmological congresses and specialised ophthalmological workshops.

## Development perspective for 2019

- Specialists will be provided information on treatment possibilities in the Department of Ophthalmology, either covered by health insurance companies or provided in the form of commercial care.
- We need to cope with competitive conditions in the medical market within so-called economically more demanding options of healthcare.
- We will raise awareness about procedures performed in the Department of Ophthalmology and strengthen its position among other ophthalmology facilities.
- Further extension of the range and increase of the overall number of commercial intraocular interventions is planned.
- The Department of Ophthalmology has so far complied with the highest standards of surgical treatment of the anterior eye segment; however, it is imperative that medical equipment be gradually replaced.
- Continued cooperation with clinical ophthalmological facilities in Prague will be maintained.
- We will participate in workshops under the auspices of the Department of Ophthalmology, workshops organised by the Association of Nurses, the Lion's Club Educational Center in the Czech Republic and the Czech Society of Refractive and Cataract Surgery.
- It will be necessary to address the lack of space in the Department and supplement the physicians in the near future.

## Department of Psychiatry

Senior Physician: Jaroslava Skopová, M.D.

### Activities of the Department

The Department provides diagnostic, therapeutic and preventive psychiatric care to the patients of the polyclinic, patients of the department for foreign nationals, patients using other hospital programs, and consulting services in the hospital. The Department cooperates with physicians in all fields, inter alia within the program of comprehensive pain management, it assesses patients with severe forms of obsessive-compulsive disorder at the Department of Stereotactic and Radiation Neurosurgery which is the only facility performing stereotactic neurosurgical procedures with such patients.

### Operational data

- 1 outpatient unit
- 1 physician - from January to March 2018 one full-time physician with I. and II. postgraduate certification in psychiatry and functional specialization in systemic psychotherapy; since April 1, 2018 two full time physicians with FTE 0.6 and 0.4
- 1 nurse (1.0 FTE)
- Total number of examinations - 2,814, of which 170 were new patients for whom initial examinations were performed, telephonic consulting provided to 233 patients
- Number of consultations 71

### Evaluation of clinical activities

Given the limited capacity represented only by one psychiatric position (1 FTE), the clinical activities of the Department remained the same. The focus is on comprehensive diagnostic, therapeutic and preventive psychiatric care, respecting hospital priorities. The patients who cannot be admitted for treatment due to the lack of capacity are referred to the care of other departments of psychiatry. The physicians cooperate with other inpatient departments in Prague where patients indicated for hospitalization are referred to, as well as with community service centres which receive patients with severe mental disorders and impaired functional abilities. In some cases, the indicated patients are referred to the psychotherapeutic care.

## Membership of professional associations and educational activities

The physicians are members of the Psychiatric Society of J. E. Purkyně, the Czech Society of Neuropsychopharmacology and the Society of Biological Psychiatry. They are also members of the specialization committee of the Scientific Council of the Czech Medical Chamber for psychiatry. The physician with the FTE 0.4 works as an assistant professor at the Department of Psychiatry of the 1st School of Medicine, Charles University, and the General Teaching Hospital. She also has a postgraduate certification in pediatric and adolescent psychiatry and is a Chairwoman of the gerontopsychiatry section of the Czech Psychiatric Society. In the Department, she applies herself in research, participates in securing numerous grants, actively participates in national and international conferences.

## Development perspectives for 2019

Na Homolce Hospital is a highly specialised hospital where psychiatry, as one of the basic fields of current medicine, is only a complementary discipline ensuring a comprehensive range of provided healthcare services. No further development is possible under the current staffing conditions, i.e. with only one physician FTE. Therefore, the aim is to maintain the current high quality of care provided and economic results, while the demands for psychiatric services and increase in the number of patients generally increase.

## Department of Clinical Psychology

Head of Department: Assoc. PhDr. Lenka Krámská, Ph.D.

### Activities of the Department

The Department of Clinical Psychology has no inpatient ward. The psychologists work in three outpatient units where they examine patients and provide psychotherapy in compliance with the respective specialization of a given program and in cooperation with individual target departments (in particular, with neurosurgery, neurology, stereotactic and radiation neurosurgery, internal medicine, surgery, etc.) according to the requests of treating physicians. They also provide consulting services to other departments of Na Homolce hospital. Mgr. L. Chválová, provides psychodiagnostic and psychotherapeutic care for outpatient children at the children's department in the office of consultants.

Specialised psychological care includes preoperative psychological preparation before complicated procedures, help in coping with the impact of serious diseases, and neuropsychological diagnostics aimed at the identification of intellectual and cognitive abilities or assessment of personality psychopathology. Neuropsychological diagnostics can rule out some medical interventions or refer the patient for special procedures, such as epilepsy surgery, neurostimulator implants etc., for which special psychological or neuropsychological assessment is required by health insurance companies.

Due to the maternity leave of the Head of the Department with the effect from July 21, 2018 to February 4, 2019, PhDr. Martin Kořán, Ph.D. has been appointed Head of the Department of Clinical Psychology.

### Main services

- **Neuroprogram** - Specialized neuropsychological diagnostics and psychotherapy in patients with neurological diseases (epilepsy surgery program, neurosurgical treatment of tumors, cerebrovascular diseases, cognitive rehabilitation, cooperation with the Department of Neurosurgery, e.g. in awake brain surgeries, cognitive rehabilitation of patients with neurocognitive deficit, cooperation with the Department of Stereotactic and Radiation Neurosurgery in the examination of patients with epilepsy, obsessive-compulsive disorder before and after interventions, etc.)

- **Cardiac program** – Specialised psychological diagnostics and psychotherapy in patients with cardiovascular diseases (cardiac surgery, demanding vascular reconstructions, acute myocardial infarction, neurostimulator implantation for refractory angina pectoris, etc.)
- **Internal medicine program** – Specialised psychodiagnostic and psychotherapeutic care in the field of obesitology, diabetology, endocrinology, oncology, pneumology and gastroenterology; other activities include psychosomatic and obesity consultations
- **Crisis intervention** in acute responses to unfavourable diagnosis, psychological preparation for demanding procedures, assistance in coping with psychological impacts of diseases (Leksell Gamma Knife, oncology, etc.)
- **Pain management consulting center** – Psychological examination and subsequent supporting psychological care provided to patients with long-term or chronic pain
- **Psychosomatic consulting center** – Psychological treatment of patients with psychosomatic disorders (e.g. high blood pressure, ulcer disease, diabetes, various functional disorders, etc.) requiring a professional psychological intervention
- **Psychodiagnostics and psychotherapy in children** with various psychosomatic and educational problems within comprehensive care provided to pediatric patients
- **Psychological examination of patients required by different directives and regulations of the Ministry of Health and General Health Insurance Company** – prior to implantation of neurostimulator, programmable pumps, before providing a patient with an electric wheelchair, C-leg prosthesis (microprocessor controlled joint), before returning driving license to patients, etc.

### Complementary services

- Psychological examination of drivers pursuant to Act No. 361/2000 Coll. performed by a psychologist accredited by the Ministry of Transport, often required by the hospital personnel

### Research activities

- Research follow-up of patients (e.g. with epilepsy, after ischemic stroke, etc.) in cooperation with the Epilepsy Center and Departments of Neurology, Neurosurgery and Vascular Surgery
- Cooperation with the Department of Radiodiagnostics in developing medical memory examination paradigm by means of functional MRI with a focus on higher mental functions (memory, speech, etc.)
- Cooperation with the Department of Stereotactic and Radiation Neurosurgery in examination of patients with epilepsy, obsessive-compulsive disorder, etc. before and after surgery

- Cooperation with the Department of Neurosurgery in awake brain surgeries, monitoring of patients with EC-IC bypasses, elective aneurysm, etc. before and after surgery
- Preparation of Neuropsychological Assessment Battery (NAB) in the Czech language for Testcentrum
- Development of research cooperation with the Faculty of Arts, Charles University - differential diagnosis and methodology research issues

## Operational data

### Number of Psychologists

With postgraduate certificate	3
Without postgraduate certificate	2

### Number of psychological interventions performed in inpatients

Individual systemic psychotherapy (30 min.)	10
Specific psychological intervention (30 min.)	841
Targeted psychological assessment (60 min.)	951
Follow-up psychological assessment (30 min.)	92
Psychodiagnostics with a complicated psychotherapeutic intervention (90 min.)	6
Crisis intervention (30 min.)	11

### Number of outpatient interventions

Individual systemic psychotherapy (30 min.)	282
Comprehensive pediatric psychological assessment (60 min.)	64
Targeted pediatric psychological assessment (60 min.)	82
Follow-up pediatric psychological assessment	31

Targeted psychological assessment (60 min.)	926
Follow-up psychological assessment (30 min.)	258
Specific psychological intervention (30 min.)	56
Psychodiagnostics with a complicated psychotherapeutic intervention (90 min.)	32
Crisis intervention (30 min.)	1,034

**Number of points achieved**

Total	2,037,253
Of which outpatient points	1,213,542

Behind these figures, one must see specific human beings and fates that would, without the psychological intervention, tolerate hospitalization, surgical procedures and other major life events with significantly more difficulties.

**Educational activities and membership of professional associations**

- There are specialized study visits as part of the undergraduate study programs organized in the Department (for the Faculty of Arts and Teaching School, Charles University - 15 students), supervision of diploma and master's degree theses, as well as postgraduate study (3 Ph.D. students). In 2018, training of psychologists in undergraduate preparation was carried out in the Department. Two internal trainees and 5 external trainees from other healthcare facilities are involved in undergraduate preparation at the Department.
- Assoc. PhDr. L. Krámská, Ph.D., develops the activities of the Czech Neuropsychological Society which she founded with her colleagues in 2011 and obtained accreditation by the Czech Ministry of Health for a certified course in clinical neuropsychology. She is a member of the subject-area board of the postgraduate study program in the field of clinical psychology at the Faculty of Arts, Charles University, Prague. She teaches at the University of New York in Prague and the Subdepartment of Clinical Psychology of the Institute of Postgraduate Studies in Healthcare. She is a member of the international ILC (International Liaison Committee) of the International Neuropsychological Society (INS) and the committee of the European Neuropsychological Society for the Czech Republic and organised an international neuropsychological congress (Mid Year Meeting) held in Prague from July 18 to July 20, 2018 in the Prague Congress Center. In 2015-2017, she was a member of the Clinical NeuroPsychology Task Force of the European Federation of Psychological Societies in Brussels, to represent the Czech Republic.

- PhDr. M. Kořán, Ph.D., is a long-term member of the committee of the Czech Union of Psychological Societies. M. Kořán, Ph.D., is a lecturer for postgraduate courses on transport psychology at the Faculty of Arts, Palacký University in Olomouc, Masaryk University Brno and Faculty of Arts, Charles University, Prague. He provides lectures at workshops within specialized education in clinical psychology at Na Homolce Hospital. He is a media commenter in the field of transport psychology in the public media.
- PhDr. Lenka Chválová joined the Department of Clinical Psychology in September 2017 and actively participated in the children's department. She lectures at specialist workshops and conferences.
- Mgr. Lucia Hrešková participated under the supervision of Assoc. PhDr. L. Krámská, Ph.D., in the most demanding psychodiagnostic examinations in patients from the Department of Neurology and Neurosurgery. She also continued her postgraduate study and postgraduate certificate education in clinical psychology and actively participated in two international conferences.
- Mgr. Zuzana Dvořáková, after returning from maternity leave in April 2018, has been involved in the care of outpatients, especially in the outpatient unit of the Department of Internal Medicine, and continued her psychotherapy education and doctoral studies. She actively participated in a foreign conference.
- In 2018, employees of the Department presented a total of 5 posters at international congresses, 8 presentations at national conferences, as well as 7 presentations at specialist workshops of the Department of Clinical Psychology. In addition, they published several articles in peer-reviewed journals and with an impact factor.

### Development perspectives for 2019

As in previous years, the Department will continue to provide high-quality psychodiagnostic and psychotherapeutic care to both inpatients and outpatients at Na Homolce Hospital (where necessary also to hospital employees) and to other healthcare facilities. Further, it will continue to participate in training within the postgraduate track (theoretical-practical and practical programs in clinical psychology) and cooperate with the Faculty of Arts and Teaching School of Charles University and the University of New York in Prague in undergraduate and postgraduate education, to organise study visits within postgraduate education in clinical psychology. The Department will continue to work on the standardization of neuropsychological methods and procedures for the Na Homolce Hospital neuroprogram (application for an internal project grant Diagnostics and treatment of patients with PNES diagnosis - psychogenic non-epileptic seizures) and develop psychotherapeutic care and cognitive rehabilitation in patients with neurocognitive deficits, including collaboration on the development of a psychoeducational handbook for PNES patients. We will continue to develop international cooperation and activities with professional associations and institutions in clinical psychology and neuropsychology.



## Dental outpatient unit

Senior physician: Petr Kolčava, M.D.

### Activities of the Department

- Provision of outpatient dental care
- Provision of preventive outpatient dental care
- Provision of acute outpatient dental care on duty
- Provision of consulting services to patients from other departments of the hospital

### Operational data

- The above given range of outpatient dental care was provided by one full-time physician and one physician with a contract for work and FTE 0.2 in 2018. The care was provided to outpatients and inpatients of polyclinics, foreign nationals, contractual partners of Na Homolce Hospital, and hospitalised patients.
- In 2018, the Department had two dental offices. One dental office is used by the dentist and a nurse, the other by a physician with reduced working hours without a nurse.
- In 2018, a total of 6,019 patients were examined and treated.

### Evaluation of clinical activities

The number of examined and treated patients was similar to 2017. However, the number of interventions is still rather high which was achieved particularly due to highly efficient organization of work, immediate phone contact with patients and filling of time slots vacated by absent or late patients and, partially, extension of working hours, i.e. by treating painful conditions before the official working hours.

## Changes and events in 2018

In the field of therapeutic care, the Department continued to cooperate with the Department of Dental Surgery in the treatment of patients with dental implants. An increased number of patients with Class I defects according to Voldřich were treated with adhesive fixed replacements, the so-called Maryland bridge and inlay bridge. The number of patient treated with conditionally removable replacements and all-ceramic restorations increased as well. The use of so-called locators has been extended to increase the retention of lower total replacements. Mr. Kolčava, M.D., has received the extension of the so-called practical medicine certificate. Since July 1, 2018, the Department has complied with the EU Regulation on reducing the use of amalgam without doses in selected patients, and as of December 31, 2018, we stopped using it completely.

## Development perspectives for 2019

A priority in 2019 will be to increase the part-time FTE of the physician to the full-time and accept a dental hygienist. The Department will continue to cooperate with the Department of Dental Surgery in the application of new types of dental bone implants. Vanini's stratification technique will be used more widely in composite treatment. In cooperation with the prosthetic laboratory, the use of the Silensor anti-snoring system will be increased in selected patients, as well as dental guards to prevent bruxism. Indications will be extended for all-ceramic replacements of veneer-type and the capacity will be increased for the production of full artificial dentures using locators in order to increase their retention, the production of removable replacements made of flexible resin will be increased. A tender for the purchase of a dental set which has been approved by the investment committee will be completed and a tender for a portable turbine will be announced. Although dental care is a complementary service in the system of Na Homolce Hospital, the Department of Dentistry will make every effort to maintain the comprehensive range and high quality of the services provided as far as possible.

# SUMMARY OF ACTIVITIES OF DEPARTMENTS PROVIDING COMPLEMENTARY SERVICES

### Department of Radiodiagnostics

Head of Department: Prof. Josef Vymazal, M.D., D.Sc.

#### Activities of the Department

In 2018, the Department continued to provide services both to hospital and to other healthcare facilities, including 24-hour support. The activities included the whole range of radiodiagnostic examinations, with a special focus on diseases of the nervous, locomotor and cardiovascular systems, as well as on vascular and non-vascular interventions.

##### Vascular methods

In the past year, the Department further developed the program of stent graft implantation in aneurysms of the abdominal and thoracic aorta and pelvic vascular system, in cooperation with vascular surgeons and cardiac surgeons.

Non-invasive treatment of brain aneurysms by means of detachable spirals, with a possible use of remodeling techniques by means of stents, continued in the comprehensive cerebrovascular center. The decision made on this or an alternative treatment – in particular, an open neurosurgical procedure – is made during common workshops organised between the Departments of Neurosurgery, Neurology and Radiodiagnostics.

A new, two-component adhesive Onyx continued to be used on a regular basis that provides further possibilities for the treatment of intracranial arteriovenous malformations and malformations in the area of the spinal canal. Onyx was also used for malformations in other locations.

In addition to using intra-arterial thrombolysis, the revascularization treatment of acute ischemic stroke caused by occlusion of some of the main cerebral arteries was carried out by a method involving the mechanical removal of the thrombus using various types of extraction equipment, mostly combining mechanical destruction and evacuation of the thrombus. Further development in recanalization methods has been achieved by a special fully-retractable stent used for cerebral arteries to withdraw a thrombus from the artery which means that it can also be retracted after it is fully uncoiled. This enables the thrombus to be captured after its partial deployment and withdrawn in the stent from the vascular system. Na Homolce Hospital continues to be a fully active accredited comprehensive cerebrovascular center where CT, MRI and endovascular interventions are available around the clock.

Our Department follows the latest technological trends in this field and reasonably chooses new technologies and materials for its own application.

### **Non-vascular methods**

The area of non-vascular methods was further dominated by CT-guided nerve root injections and vertebroplasty. In this segment of care, our hospital has been traditionally one of the most active centres in our country. In 2018, a unique hybrid imaging device was installed in the hospital, combining CT and angiography, both of which are capable of working both independently and mutually connected. The device is unique not only in the Czech Republic, but also from the European perspective.

An epiduroscopy technique was further developed in our hospital in 2018 as the only center in the Czech Republic on the basis of an internal grant.

Since December 2010, two-source Somatom Flash CT equipment has been used for diagnostics, which led to a significant advancement in CT diagnostics. In 2012, the device was retrofitted with an interactive reconstruction system (SAPHIRE) which has contributed to a further considerable reduction of radiation exposure during CT examinations, since CT scans are still among the most significant sources of radiation in humans. In agreement with global trends, we tend to replace a CT scan with MRI in indicated cases, where there is no radiation exposure at all.

A significant number of cardiac CT examinations, including CT scans of heart, were performed at the Department in the past year. We are also able to significantly reduce radiation exposure for these examinations thanks to state-of-the-art equipment. The number of examined patients with a congenital heart defect using CT has been increasing. CT perfusion examination of the entire brain was carried out in acute strokes in indicated cases.

The system of dual energy scanning allows for a better separation of the skeleton and iodine-containing contrast agent from other tissues, which is helpful particularly in CT angiography. The Department also uses this technology to determine the chemical composition of certain structures, for instance urinary stones.

### **Magnetic resonance imaging (MRI)**

For several years now, examination by perioperative magnetic resonance imaging (IMRI) has been performed on a regular basis, using the equipment installed in the neurosurgery operating room. Our hospital belongs to the very few in the Czech Republic which are able to perform such examinations. On MR devices, in the building K, the Department continues to routinely use advanced MRI methods, i.e. MRI spectroscopic examinations, by both SVS and CSI, (both of the brain and other parts of the body, the prostate in particular), diffusion imaging, including the technique of

diffusion tensor imaging for white matter tractography. Functional MRI BOLD imaging for preoperative planning, neuronavigation and deep brain stimulation have been further developed. In addition to routine clinical use, research using these techniques has been conducted with prestigious publication outputs. These examinations have become faster and more precise after the implementation of new software.

In 2018, the functional MRI BOLD imaging method was further developed, in particular, after the introduction of new examination methods. Post-processing of functional BOLD sequences was considerably simplified and accelerated.

The program of MRI heart examinations has continued, including, as a standard, phase contrast sequences for imaging and quantifying blood flow, which is important mainly for the assessment of valvular and short-circuit defects of the heart. The total number of CT and MRI examinations of congenital heart defects has further increased, in particular, in adult patients who had been operated on in childhood.

Since 2012, the Department has used MRI angiography of renal arteries with no contrast agent, which was made possible by retrofitting the Magnetom Avanto MRI scanner with more specific sequences (NATIVE). In addition to saving financial means, this examination is also important for patients with impaired renal functions when contrast agent administration could be dangerous.

### **Mammography**

The mammography unit of Na Homolce Hospital belongs to a network of accredited clinics and is equipped with a Planmed Nuance Clarity system with direct digitization.

Patients with unclear mammography and ultrasound findings are referred for an MRI breast examination in indicated cases, which are also performed in the Department. The second reading of images continues to be a matter of routine.

The mammography unit of Na Homolce Hospital was again among the five best clinics out of the 60 centres in the Czech Republic that were assessed for the quality of mammography screening.

All radioscopic image documentation is digitally stored in the hospital's information system and is immediately available to physicians. All operations of the Department of Radiodiagnostics have been fully digitalised, i.e. no films have been used since 2009. The hospital also uses a well-proven ePACS system, interconnecting imaging records of most hospitals in the country.

Since 2011, the Department has been using only electronic request forms on a regular basis and external request forms are also transferred to electronic format. The system of electronic request forms for all types of radiodiagnostic examinations has been in use in the hospital for several years now.

The SOU standards and SOPs of the Department of Radiodiagnostics are available on its website.

## Operational data

### Technical equipment

- Angiography unit: 1x Artis Q biplane, 1x Siemens Axiom Artis biplane
- CT unit: 1x Siemens Somatom Flash (2x128), 1x Siemens Somatom Definition AS Plus
- MR unit: 1x Magnetom Avanto 1.5 T, 1x Magnetom Symphony 1.5 T, 1x Siemens Skyra 3 T, 1x GE Signa HDx (neurosurgery operating rooms) 1.5 T
- Ultrasound unit: 2x Toshiba Aplio, 1x Toshiba Eccocee, 1x GE Logiq 9, 1x GE Logiq E9
- Mammography: 1x Planmed Nuance Clarity
- Basic equipment: 1 fluoroscopic and fluorographic unit, mobile X-ray equipment, orthopantomograph, PACS workstations, scanners, printers, data archives

### Basic staff data

Number of physicians	27
Number of radiodiagnostic laboratory technicians	31
Number of general nursing staff	9
Number of administrative staff	10
Number of auxiliary medical staff	2

## Specialized intervention and treatment procedures

PTA (with or without stent implantation)	563 PTA, 176 stents
Endovascular treatment of cerebral aneurysms (coils, stents)	34
Recanalization of cerebral arteries in acute stroke	110
PTA/stent of extracranial arteries	42
PTA/stent of intracranial arteries	16
Embolization in neurological area (cerebral, spinal AVM)	9
Tumor embolization	11
<hr/>	
CT guided intervention in total	2,498
Of which: targeted CT guided nerve root and facet injections	2,181
CT guided vertebroplasty + kyfoplasty	154
CT guided radiofrequency ablation	10
CT guided biopsies and drainages	153

## Overview of selected radiodiagnostic examinations

Computed tomography	13 124
Magnetic resonance imaging	13,593
Angiography	2,846
Ultrasound examinations	14,068
Mammography in total	13,560



Of which screening	11,421
Ultrasound examination within mamma diagnostics	2,288
Breast node biopsy	166
Fluorography, fluoroscopy + dental X-ray	36,315
Total number of radiodiagnostic examinations	98,462

## Plans for 2019

- Our 3T MRI scanner will be used to develop new state-of-the-art techniques, such as functional MRI BOLD imaging, MR tractography and diffusion tensor imaging. Furthermore, research activities supported by grant projects, namely accumulation of gadolinium and diffusion in patients with Optune treatment.
- Examination sequences will be further optimized in order to ensure the maximum use of the device's potential. In addition to the clinical routine, the new device will also partly be used for scientific applications. We plan to simplify and speed up demanding post-processing, especially in functional BOLD and DTI examinations. The 3T device will solve grant projects funded by the Health Research Agency which have been assigned to our Department.
- The method of epiduroscopy should be further used for non-vascular interventions in our hospital, which is the only facility in the country to use it. This technique should help patients who had undergone repeated lumbar spine surgeries and suffer from postoperative adhesions. Basic experience in using this method has already been gained since 2016.
- The department will actively participate in the planning of the new NIS and PACS systems for the hospital.

## Department of Nuclear Medicine - PET Center

Head of Department: Assoc. Prof. Otakar Bělohávek, M.D., CSc.

### Activities of the Department

- PET/CT diagnostics
- scintigraphic imaging including SPECT
- immunoanalytical laboratory testing methods

### Organizational units of the Department

- Nuclear Medicine outpatient unit
- Immunoanalytical laboratory
- Radiopharmaceutical laboratory

### Basic data

The outpatient Department provides complementary services not only within the hospital, but also for hundreds of departments of health care providers.

#### Staff (as of 31 December)

Position	Number of persons	Number of FTEs
Assistant (technical-administrative employee)	1	1.0
Pharmaceutical technologist	1	1.0
Physician	10	7.8
Specialist laboratory technician, preparation of radiopharmaceuticals	2	2.0
Radiological technologist	7	7.0

Paramedical staff	1	1.0
General nursing staff	5	5.0
Medical laboratory technologist	5	5.0

The services of the radiological physicist are provided by the Department of Medical Physics.

## Performance overview

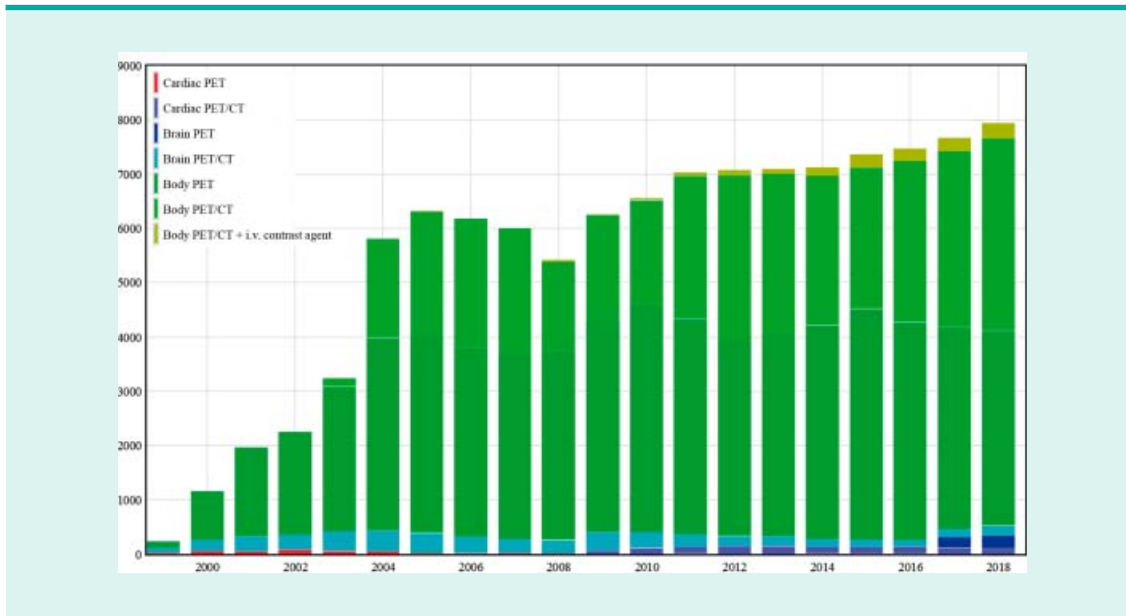
### Scintigraphy

Number of examinations: 393 (decrease by 24.2% compared to the previous year). All examinations are performed using a dual-detector camera Siemens E. CAM.



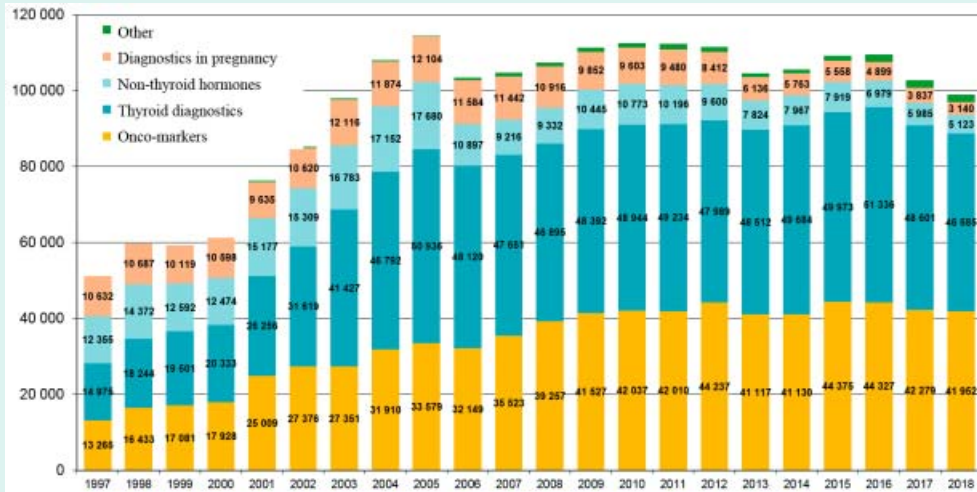
## Positron emission tomography

Number of examinations: 7,942 (an increase of 3.6 % as compared to the preceding year). All examinations were performed using two hybrid Siemens Biograph PET/CT scanners.



## Laboratory tests

Number of interventions: 130,891 (a decrease of 3.2 % as compared to the preceding year). Number of detections: 98,939 (a decrease of 3.7 % as compared to the preceding year). Tests are performed by means of RIA (5.1 %), IRMA (36.6 %) and chemoluminescence (58.3 %) methods.



## Activity evaluation

- In 2018, the work productivity in the field of PET diagnostics was again quite high compared to other domestic and foreign centres. Thanks to the trouble-free operation of both PET/CT scanners, uninterrupted deliveries of radiopharmaceuticals, full staffing and financing of part of the examinations outside of the limiting health insurance system, the historical maximum number of examinations from the previous year was slightly overcome and the number of examinations approached 8,000. The increase in the number of examinations over the past 2 years was partially due to the increasing number of examinations for clinical studies mainly in the diagnostics of beta-amyloid in the brain of dementia patients. In this diagnostics, the Department also became known internationally and published the original data processing method in the most prestigious international journal.

- The decline in the interest in examinations in the conventional scintigraphic diagnostics further continued after a temporary 3-year period of stagnation. The largest portion of the decrease is due to myocardial perfusion scintigraphy, which could not be performed in the first quarter due to failure of the ergometer.
- The decline in interest in immunoassay detections slowed down slightly, but continued. This was due to the ongoing restructuring of the provision of prenatal diagnostics in the Prague agglomeration with a negative impact on the diagnostics of congenital malformations, the activity of private laboratory chains and the more rational prescription of the examination by our hospital physicians. The results of regular independent interlaboratory inspection and accreditation by the Czech Accreditation Institute (ISO 15189:2013) document the traditionally high quality of the laboratory over the long term.
- Personnel situation in the workplace has been stabilized; the FTE reduction of a physician in the retirement age was compensated by the return of another physician from the maternity leave; the departure of another physician for maternity leave was compensated by the acceptance of another specialist.
- Tender procedures for the the supply of kits with analyzers for the immunoanalysis laboratory were not completed last year due to personnel changes and overload of the Procurement Department. In the third quarter, it was agreed that the laboratory would be under the management of the Department of Clinical Biochemistry, Hematology and Immunology, and this Department will procure a tender integrally for the entire laboratory complement with the prospect of more efficient use of analyzers and cheaper tender.
- The Department as a whole has a certified system of quality management pursuant to ISO 9001 and a supervisory audit was successfully completed in the middle of the year. The Department, as part of the hospital, follows international JCI accreditation standards.
- At the end of the year, changes were made to the documentation of the Department in order to maintain the accreditation of the immunoassay laboratory even after its transfer to the Department of Clinical Biochemistry, Hematology and Immunology. At the same time, the scope of certification of the Department of Nuclear Medicine according to ISO 9001 was reduced accordingly.

### Educational and other specialized activities

- Study visits for a number of experts are organized in the Department and consultation services are provided as part of the model project of the International Atomic Energy Agency (AIEA).
- The research project IG 184401 “Reproducibility of assessment of amyloid PET/CT in dementia” has been successfully funded by institutional support.

## Development perspectives for 2019

- Since January 1, 2019, the immunoassay laboratory has been under the management of the Department of Clinical Biochemistry, Hematology and Immunology.
- The plan is to make use of all technologies installed in the Department in the scope defined by the reimbursements received from healthcare insurance companies. Above the framework of this assignment, examinations for numerous clinical studies will be further carried out; however, it is assumed that their number will decrease, as the recruitment of patients in a number of studies has already been closed. Emphasis will be put on the quality and efficiency of the services provided. It is expected that waiting times for PET/CT will be slightly prolonged in some parts of the year due to the gradual extension of indications for examinations.
- Introduction of a new radiopharmaceutical (fluciclovine) for the so far unsatisfactorily solved PET/CT diagnostics of recurrence of prostate cancer is planned.
- Given the renewed interest of neurologists in the ictal examination of brain perfusion in several patients every year, this SPECT examination will be renewed.
- The tender for the supply of technetium generators, radionuclide sources, radiopharmaceuticals (flutemetamol, fluciclovine and FDG) and for companies for the certification according to ISO 9001 for which the public contracts will expire this year should be completed.
- A suitable non-medical technician is actively sought to compensate the state after the planned retirement of a specialist nurse.
- A recertification audit of the Department in accordance with ISO 9001:2015 is planned for the middle of the year.

## Department of Clinical Biochemistry, Hematology and Immunology

Head of Department: Luděk Táborský, M.D.

### Sections of the Department

Clinical Biochemistry  
Hematology  
Transfusion unit and blood bank  
Immunology  
Laboratory of molecular diagnostics

### Staff

Number of physicians	10
Number of other graduate staff	15
Number of general nursing staff	54
Number of other staff	11
Total number of employees (full time and contract for work)	90

### Activities of the Department

- Routine measuring and consultation activities within Na Homolce Hospital and the catchment area (Prague 5, 6 and 7) in the following specialisations: clinical biochemistry, clinical haematology, clinical immunology and allergology, blood transfusion, clinical pharmacology, and molecular genetic diagnostics.
- Outpatient unit activities in the field of lipid metabolism disorders (3 units + Club for parents and children who suffer from hypercholesterolemia) and hematology outpatient units.



### Clinical Biochemistry

The section provides routine biochemical services for clinical units of the hospital concentrating on the diagnostics and treatment of critically ill patients from all departments. Bedside examination (POCT – point of care testing) of pH balance, selected minerals and glycemia are carried out for inpatients in a critical condition. Analysis of minerals, enzyme activity, substrate concentrations, cardiomarker levels, amino acids, selected pro-hormones, vitamins, full range of lipids, levels of drugs and their metabolites, including pharmacokinetic analysis of concentrations measured, is performed for all patients. The Department also provides services for physicians in the catchment area (Prague 5 and 6) within material delivery.

### Hematology

Similarly to the clinical biochemistry section, the hematology section provides routine services to clinical departments. It performs specialized examinations of coagulation parameters for hospital departments. The laboratory was involved in tender procedures and their implementation into the current work system in 2018.

### Transfusion unit and blood bank

The unit ensures the supply of blood and blood derivatives to hospital clinical departments. In 2016, the unit was involved in tender procedures and announcement of tenders and their implementation into the current work system.

### Immunology

The immunology laboratory carries out a wide range of examination methods for both humoral and cellular immunity, autoimmune status of organs and systems, and for allergies. It specialises in the diagnosis of sepsis in patients in a critical condition. The Allergy and Clinical Immunology outpatient unit takes care of patients with allergies, immunodeficiencies and immunopathological conditions. It performs the modern outpatient examination method of asthma control in patients who suffer from bronchial asthma, using a non-invasive method where the patient's exhaling function is tested for bronchial hyperactivity. The physicians provide consulting services to hospital inpatient wards in the field of allergy and clinical immunology.

A new flow cytometer has been put into operation and the accreditation by the Czech Accreditation Institute was retained with the addition of specific IgE allergens determined by the FEIA method. A specification for tenders to determine remaining allergens, antiphospholipid autoantibodies and faecal calprotectin was prepared. Consultation activities with regard to drug allergies continued to be performed for all regions of

the country, as did cooperation with the Department of Cardiology (within the IGA grant agency of the Czech Ministry of Health), Department of Vascular Surgery (the BATAPPA study under an internal grant), Clinic of Anesthesiology and Resuscitation of the 1st School of Medicine (clinical study on sepsis), and participation in the educational activities of the Institute of the 2nd School of Medicine, Charles University.

### Laboratory of molecular diagnostics

The Laboratory of Molecular Diagnostics uses molecular genetics to diagnose hereditary diseases and genetic predisposition to common and serious diseases. Within the hospital, it specialises in issues according to the interest of individual hospital departments and according to the development plan. In addition to routine diagnostics, the laboratory also participates in clinical research projects. Successful external quality audits of molecular diagnostics of selected diseases were performed in the laboratory.

In 2018, there were changes in accounting and reimbursement for health insurance companies. This year, the Laboratory of Molecular Diagnostics introduced the diagnostics of respiratory virus infections in collaboration with the Department of Clinical Microbiology (21-plex; Biovendor).

### Changes in 2018

Based on the decision of the hospital management, the laboratories were consolidated and an immunoanalytic laboratory was added to the Department of Clinical Biochemistry, Hematology and Immunology, which was a part of the Department of Nuclear Medicine until 2018. During 2018, five internal audits were performed at the Department, no non-conformity card was issued in these audits. During the same period, 3 internal audits were performed in the immunoanalytical laboratory out of the 5 originally planned ones. The cancellation of two audits was related to organizational change - the incorporation of the immunoanalytical laboratory into the Department of Clinical Biochemistry, Hematology and Immunology. No non-conformity card was issued in the performed audits. All recommendations based on the internal audits were accepted and have been gradually implemented.

### Biochemistry - changes in medical equipment

- 21/2018 - ABL 800 Flex radiometer for the Cardiac Center
- 2/21/2018 - ABL 800 Flex radiometer for the Department of Anesthesiology and Reanimation
- Fridge Arctiko DAI 6040 - E418
- September 2018 - Return of Advia Centaur XP analyzer, conversion of vancomycin, gentamicin, carbamazepine, digoxin, phenobarbital, phenytoin, theophylline and valproic acid methods to the Architect i2000SR, Abbott, analyzer

## Hematology - changes in the medical equipment

- 2/6/2018 Sysmex XN3100 hematology line and Sysmex XN550 analyzer installed - their use for the performance of accredited methods approved by a special audit on January 9, 2019
- 10/22/2018 sedimentation device TEST1 BCL installed; by ALI-FAX
- 10/29/2018 two new coagulation analyzers STA-R MAX 3 installed; by STAGO

## Immunology - changes in medical equipment

- 2/2/2018 - BriCyte E6 flow cytometer by Shenzhen Mindray Bio-Medical - no accredited methods performed there

## Blood bank - changes in medical equipment

- January 2018, Ortho Vision analyzer engaged in full operation - this allowed for a completely automated work on the blood bank, thus almost completely eliminating human error

## Immunoanalytical laboratory

- Cancellation of the examination of 17-OH-progesterone and androstenedione due to the lack of interest by practitioners - any requirements for this examination will be sent to the General Teaching Hospital

## Outlook for 2019

- Introduction of a new laboratory information system
- Introduction of a new diagnostic line (Atellica Solution - Siemens) within the biochemical laboratory
- Continuation of fulfilling research projects within research and science support at Na Homolce Hospital
- Retaining the accreditation granted by the Czech Accreditation Institute
- Expanding the diagnostic spectrum of examinations with an emphasis on molecular genetics
- Implementation and unification of diagnostic methods and documentation within the framework of consolidation of the immunoanalytical laboratory and Department of Clinical Biochemistry, Hematology and Immunology

## Economic results for 2018

The year 2018 was significantly marked by the change in the accounting of medical service for specialists 816 - molecular genetics. This fact was reflected in a significant drop in the points charged and a significant change in the profitability of the Department.

Year	2011	2012	2013	2014	2015	2016	2017	2018
Points	157,969,950	160,290,520	162,277,868	164,727,853	171,305,865	168,126,647	166,632,870	143,032,635

The Department will attempt to reverse this trend in 2019 by saving costs in the biochemical laboratory by introducing a new analyzer. The planned savings should amount to 1/3 of the current costs.

## Educational and other specialized activities

- Nationwide training and reference activities:** Training center of the subdepartment of the Institute for Further Training in Healthcare for clinical immunology and allergy; training centre of the Department of Clinical Biochemistry of the Institute for Further Training in Healthcare for automated urine sediment analysis systems; center for further training in the field of hereditary metabolic disorders and lipid metabolism disorders; Ph.D. training center; participation in the training provided at the Immunology Institute of the 2nd School of Medicine, Charles University
- Membership of professional associations:** Czech Medical Association of J. E. Purkyně, Czech Society of Clinical Biochemistry, Czech Society for Atherosclerosis, Czech Society of Allergology and Clinical Immunology, Czech Immunological Society, Czech Neurological Society, Czech Society for Clinical Cytology, Czech Society for Liquorology and Neuroimmunology, Czech Pediatric Society, European Atherosclerotic Society, Immunocompromised Host Society, EFNS Scientific Panel for CSF, European CSF Consensus Group, Society for Study of Inborn Errors of Metabolism, American Association of Clinical Chemistry, American Heart Association, International Federation of Clinical Chemistry, International Society for Newborn Screening, European Society for Newborn Screening

## Department of Clinical Microbiology and Antibiotic Center

Head of Department: Václav Vaniš, M.D.

### Clients

- Na Homolce Hospital
- External clients

Number of external healthcare facilities and surgeries

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Number of facilities	217	177	163	141	132	107	101	103	95	97	89	76	77	74

### Laboratory diagnostics

Requests for microbiology examinations for Na Homolce Hospital

Year	Bacteriology	Serology	Total
2005	51,582	15,506	67,088
2006	54,726	16,511	71,237
2007	65,033	18,485	83,518
2008	68,559	18,014	86,573
2009	58,770	10,884	69,654
2010	55,507	10,507	66,014
2011	55,648	11,835	67,483

## SUMMARY OF ACTIVITIES OF DEPARTMENTS PROVIDING COMPLEMENTARY SERVICES

2012	68,246	13,973	82,219
2013	71,966	14,169	86,135
2014	57,130	11,474	68,604
2015	55,921	10,949	66,870
2016	57,478	10,368	67,846
2017	59,250	10,754	70,004
2018	59,358	13,031	72,389

### Requests for Microbiology Examinations for External Clients

Year	Bacteriology	Serology	Total	Number of practices
2005	49,001	10,290	59,291	217
2006	35,680	6,460	42,140	177
2007	36,687	6,631	43,318	163
2008	40,086	7,595	47,681	141
2009	33,564	4,705	38,269	132
2010	18,876	3,624	22,500	107
2011	17,804	3,409	21,213	101
2012	25,144	3,381	28,525	103
2013	23,218	3,261	26,479	95
2014	17,353	2,376	19,729	97
2015	15,738	2,447	18,185	89
2016	15,509	2,391	17,900	76
2017	13,012	2,216	15,228	77
2018	11,631	1,964	13,595	74

Requests for Microbiological Examinations - total

Year	Bacteriology	Serology	Total
2005	100,583	25,796	126,379
2006	90,406	22,971	113,377
2007	101,722	25,122	126,844
2008	108,646	25,613	134,259
2009	92,341	15,591	107,932
2010	74,387	14,141	88,528
2011	73,453	15,257	88,710
2012	93,396	17,373	110,769
2013	95,189	17,451	112,640
2014	74,502	13,935	88,437
2015	71,659	13,403	85,062
2016	72,994	12,770	85,764
2017	72,263	12,772	85,232
2018	71,010	15,024	86,034

## Antibiotic Center

Consultations provided for inpatients of Na Homolce Hospital

Year	Number of consultations	Number of patients consulted (total number)
2005	8,493	1,833
2006	7,922	1,870
2007	8,122	1,964
2008	7,847	2,006
2009	8,026	1,936
2010	8,049	2,051
2011	8,837	2,266
2012	9,280	2,782
2013	10,021	3,004
2014	10,215	2,478
2015	10,599	2,654
2016	11,388	2,798
2017	10,885	2,879
2018	11,027	2,971

## Public activities

- **Working group for antibiotic resistance monitoring:** The Department is part of the group of laboratories monitoring resistance to antibiotics in the Czech Republic. The Head of Department is a member of the working group for antibiotics resistance monitoring.
- **The National Reference Center for Infections Associated with Healthcare of the National Institute of Public Health:** The department collaborates with the center.



- **Society for Medical Microbiology of the Czech Medical Association of J. E. Purkyně:** The Head of Department is a member of the committee of the Society.

## Comments

- **Laboratory diagnostics:** In 2018, there was a slight increase in laboratory microbiological requirements compared to the previous year. The number of cooperating healthcare facilities (surgeries) and the number of examinations performed for external clients slightly decreased.
- **Antibiotic Center:** The number of consultations provided and patients in 2018 slightly increased as compared to the previous year. No significant epidemiological changes in the resistance of infection originators were recorded. The exception is the occurrence of vancomycin-resistant enterococci, where there has been a sharp increase in the number of colonized patients compared to previous years. Most of these patients were imported from other health care facilities or from a community service center.
- **Infection prevention and control:** In 2018, the overall incidence of nosocomial bloodstream infections slightly decreased. Trends are regularly reported to the appropriate departments and our Department implements appropriate measures. The number of secondary nosocomial bloodstream infections relatively increased, especially in the segment of surgical infections. The number of patients colonised or infected by MRSA slightly decreased as compared to the previous year, while the number of MRSA transmissions during hospitalisation in Na Homolce Hospital is comparable to the previous year and generally low. The number of Clostridium difficile infections decreased compared to last year.
- **Operational and economic parameters:** The operation and economic parameters of activities of the Department were stable and comparable with 2017.
- **Certification and accreditation:** The Department received accreditation under the requirements of the ČSN EN ISO 15189:2013 standard and holds an accreditation certificate for examinations in the field of clinical microbiology.
- **External activities:** The Department has cooperated with the National Reference Center for Infections Associated with Healthcare within the National Institute of Public Health. The Department is involved in teaching nurses and physicians in the field of infection control organised by the National Reference Centre for Infections Associated with Healthcare, which is part of the State Healthcare Institute. The Department participated in the EARS-Net (European Antimicrobial Resistance Surveillance Network) and HAI-Net (Healthcare-Associated Infections Network) programs, which are organised by the European Center for Disease Prevention and Control (ECDC, Stockholm). The Department participates in the Euro-GASP program, as well as in the surveillance program for Gonococcus antimicrobial resistance organised by the European Center for Disease Prevention and Control (ECDC, Stockholm). The Department cooperates with the Higher Nursing School in Prague at Alšovo nábřeží in providing training to laboratory technicians.

## Department of Pathology

Head of Department: Martin Syrůček, M.D.

### Activities of the Department

The Department carries out all bioptic and cytological diagnostics within Na Homolce Hospital and, in cooperation with other laboratories providing complementary services, provides some bioptic and cytological diagnoses to selected private and state healthcare facilities in Prague. Recently, consultations (second reading) of diagnostically difficult neuropathological biopsies for departments of pathology in the entire country have been provided. In addition, the Department is in charge of necroptic activity (autopsies), including organizational services when delivering bodies to the funeral service. The Department organizes clinical pathology workshops with the analysis of selected autopsies and biopsies for individual clinical departments in order to increase the quality of the medical care provided.

### Organizational units of the Department

The Department performs its activities as a whole and is not comprised of individual organizational units or cost centers. The newly reconstructed premises are, however, divided into a histology and cytology laboratory and a special methods laboratory (immunohistochemistry).

### Basic data

#### Staff

- 5 independent physicians working full-time
- 8 lab technicians working full-time, one member of paramedical staff and one laboratory technician working part-time (0.5 FTE based on a contract for work)
- 1 autopsy technician working full-time
- 2 secretaries (assistants) working full-time and one retired person working part-time (0.5 FTE based on a contract for work)
- 1 quality manager in charge of the requirements of the Department in connection with JCI accreditation processes and ISO 15189

## Premises

Since 2009, the Department has had newly reconstructed premises at its disposal, the arrangement and equipment of which comply with the standard ISO 15189. They include:

- administrative section with 5 offices for physicians, one office for the senior laboratory technician and quality manager, administrative offices, rooms for employees, changing rooms, storerooms for preparations and workshop rooms,
- the autopsy unit with a dissection room, preparation rooms and cooling equipment with 20 units for the deceased (these premises are separated by a sanitary filter),
- laboratory premises (also separated by a sanitary filter) with 6 rooms - histology laboratory, cytology laboratory, special methods laboratory, laboratory for cutting materials fixed in formol-saline, laboratory for cutting materials using microtomes, and a cytology screening room.

## Performance overview

### Biopsy diagnostics

	2005	2009	2011	2012	2014	2015	2016	2017	2018
Number of examinations	19,546	21,831	22,670	21,643	20,817	22,525	20,970	21,329	21,153
Number of slides	49,290	58,429	61,631	65,890	63,972	65,489	61,401	64,155	62,658

### Cytological diagnostics

	2005	2009	2011	2012	2014	2015	2016	2017	2018
Number of examinations	5,349	2,738	2,153	2,205	1,993	1,992	2,249	2,249	2,203
Number of slides	11,744	6,214	5,092	4,932	4,365	4,392	5,191	5,191	4,464
BAL (bronchoalveolar lavage)			187	162	121	107	114	114	150

There was a slight increase in the number of biopsy examinations in 2018, while the number of cytological examinations insignificantly decreased. In 2018, the Department laboratory increased the number of immunohistochemistry examinations, due to the complicated diagnostics of the tested samples and the necessity to increase the accuracy of tumor lesion classification.

## Autopsy activities

	2005	2009	2011	2012	2014	2015	2016	2017	2018
Number of deceased	286	270	226	216	225	196	233	226	239
Number of autopsies	248	154	136	122	123	122	136	121	122

The autopsy rate for 2018 amounts to 53%!

## Workshops

In 2018, the physicians of the Department attended 139 clinical pathological conferences, where 18 autopsy and 901 biopsy cases were discussed.

	2005	2009	2010	2012	2014	2015	2016	2017	2018
Number of workshops	127	85	98	88	102	95	94	114	139
Number of autopsy cases	65	82	27	20	22	21	19	26	18
Number of biopsy cases	377	684	612	843	837	753	701	692	901

Since 2002 the Department has organized, in addition to clinical and pathological workshops, regular weekly multidisciplinary mammology workshops with the attendance of a surgeon, radiologist and oncologist, focused on the analysis of biopsy examinations based on the clinical picture, together with analysis of therapeutic and prognostic outlooks. Workshops are also organized once a week or once every two weeks in cooperation with the ENT Department and clinical and pathological workshops with the Center for Pulmonary Endoscopy, according to the needs of clinicians. Regularly once a week, the staff participate in neuro-oncological workshops with physicians from neurosciences, oncologists from the Teaching Hospital in Motol and physicians from the Department of Radiodiagnostics, to discuss all biopsy cases from the preceding period. Since the second half of 2017, our physicians have participated in surgical-oncological workshops once a week. Workshops with other specializations are organized as needed, approximately twice a year, clinical pathological workshops together with the Department of Cardiac Surgery are organized once a month. These workshops are part of the further training program of clinical departments, aimed at increasing the quality required under the accreditation standards.

## Significant changes and events

- ČIA ISO accreditation: In February 2018, a supervision procedure from the Czech Accreditation Institute (ČIA) was successfully performed.
- JCI accreditation: The Department of Pathology as part of Na Homolce Hospital participated in successful JCI reaccreditation in May 2017.
- External quality assessment: Since 2011, the pathology laboratory has participated in external quality assessment in cooperation with the contractual company, SEKK spol. s.r.o. The Department of Pathology obtained the certificate. Further assessment is performed by means of sent consultations and interlaboratory comparisons.
- As part of the Center for Neuro-Oncology section of the Czech Society for Oncology of the Czech Medical Association of J. E. Purkyně, the Department performs biobanking of brain tumors for research purposes.
- Since 2016, examinations have been performed of the sentinel lymph node in selected patients with breast cancer in cooperation with the Department of General Surgery, Department of Nuclear Medicine and PET Center).
- On March 27, 2017 the department obtained accreditation for the teaching program of medical specialities in the field of pathology from the Czech Ministry of Health.

## Development perspectives for 2019

- We will maintain and further improve the standard of diagnostics and clinical and pathological workshops.
- The range of immunohistochemical antibodies has been extended according to the needs of individual hospital departments.
- The Department expects the ČIA ISO re-accreditation this year.
- An automated device for immunohistochemical staining is being introduced into the every day practice to improve and accelerate the diagnostics, especially of tumor lesions.

## Department of Biomedical Engineering

Head of Department: Ing. Miroslav Halíř

The main task of the Department is to ensure the operation and servicing of medical equipment and measuring instruments at Na Homolce Hospital. Other activities include monitoring new trends in biomedicine and of technical documents for tenders for new medical device equipment. The Department also prepares applications to commission for the assessment of the deployment of medical instrument funds from the Czech Ministry of Health and applications for grants.

The Department of Biomedical Engineering at Na Homolce Hospital is an accredited facility of the Czech Ministry of Health for postgraduate teaching of the Institute for Further Training in Healthcare, including specializations in biomedical engineering in the Czech Republic.

In 2018, new software for management of property has been contracted by tender for the Department of Biomedical Engineering and the Operation Section. Its implementation will also continue in the following year, when it will be gradually deployed throughout the entire hospital.

### Prevention and Maintenance Section

It carries out preventive safety inspections of medical devices as stipulated by Act No. 268/2014 Coll., on Medical Devices, as amended, as well as by JCI standards. It carries out regular internal maintenance, ensures timely prevention and servicing by external equipment providers and keeps documentation on all medical devices. It also ensures the preparation and use of diagnostic, therapeutic and laboratory equipment and provides technical help for the implementation of new medical equipment. It follows new developments in the field of medical equipment and devices, and covers navigation systems in neurosurgery, auto-transfusion for cardiac and vascular surgery, and the calibration of anesthesia equipment. In addition, it cooperates with clinical departments in preparing technical specifications for public tenders. Furthermore, it takes over the obtained medical equipment devices. The head of the section is Ing. Luděk Ruffer.

## Metrology Section

This section makes sure that the metrology standards at Na Homolce Hospital comply with Act No. 505/1990 Coll., on Metrology, as amended, and the related metrology regulations. The above legislation requirements are an essential part of the Metrology Order directive, which stipulates the responsibilities, rights and obligations of employees in the use of measuring instruments and metrology safety with regard to the accuracy and reliability of the measurements of all measuring instruments in all activities of the hospital. The Metrology Section carries out general maintenance and internal calibration of instruments measuring temperature and pressure and ensures the external benchmark calibration of working instruments measuring weight, length and time. It also organizes external official verification of the measuring devices of temperature and weight and eye tonometers. The Authorized Metrology Center is an essential part of the Metrology Section and provides official verification of the measuring instruments for indirect measurement of pressure - tonometers, within the scope of Decision No. 61/2000 of the Office for Standards, Metrology and Testing. The head of the section is Zdeněk Malý.

# SCIENCE AND RESEARCH



Na Homolce Hospital has fulfilled the definition of an organization for research and knowledge dissemination according to Commission Regulation (EU) No. 651/2014, Art. 2(83), and has been included on the list of research organizations kept by the Ministry of Education, Youth and Sport on the basis of Section 33a of Act No. 130/2002 Coll., on Research and Development Support.

Research and development at Na Homolce Hospital are supported by means of combined financing - institutional support from the Czech Ministry of Health and targeted support grants which are provided to projects carried out both by individual departments of the hospital and in cooperation with a number of excellent research facilities across the entire country. The majority of research teams have also been involved in clinical studies over a long period of time, with the Cardiac Center having the largest share in these studies.

The organization is managed by the Science and Research department which covers the fields of grant projects, clinical studies and the medical library. The medical library obtains and provides information especially in the main disciplines of the hospital. Its fund includes 11,000 library units, of which 35 are Czech and 20 foreign professional periodicals in any year.

## Grant projects

In 2018, Na Homolce Hospital managed a total of 56 grant projects, of which 47 were supported by the institutional support of the Czech Ministry of Health, and 9 targeted support grants were supported by the Agency for Medical Research of the Czech Ministry of Health and the Czech Grant Agency.

### Grants from the Czech Ministry of Health

- In 2018, Na Homolce Hospital received institutional support for the long-term conceptual development of the research organization, based on the decision of the Czech Ministry of Health (Decision No. 2 RVO-NNH/2018). The support was used and distributed based on the functional system of internal grants, their assessment by a specialized commission and approval by the Scientific Board and the hospital Director.
- In line with the guidelines of the Czech Ministry of Health, 5 research projects which started in 2014, 10 research projects initiated in 2015, 9 projects initiated in 2016, 13 projects initiated in 2017 and 10 new projects were supported in 2018 by the institutional support of the Czech Ministry of Health for 2018. Na Homolce Hospital again supported a large spectrum of research projects in order to maintain the plan of a broader research basis for the coming years which fully corresponds with the Methodology for Evaluating Research Organisations used for providing grants. The implementation of new research projects started in May 2018 and continues at present.

## Targeted support grants from the Czech Health Research Council and Czech Science Foundation

Department	Project title	Allocated number	Grant provider (main beneficiary)
Neurosurgery	Novel concepts for the therapeutic targeting of tumor microenvironment in human glioblastomas	15-31379A	AZV ČR (Military University Hospital Prague)
Cardiology	Interventional left atrial appendage closure vs. novel anticoagulation agents in high-risk patients with atrial fibrillation (PRAGUE-17 study)	15-29565A	AZV ČR (Third Faculty of Medicine, Charles University)
Cardiology	ExtraCorporeal Membrane Oxygenation in the therapy of Cardiogenic Shock (the ECMO-CS trial)	15-27994A	AZV ČR (Na Homolce Hospital)
Stereotactic and Radiation Neurosurgery	Micro and Macro Connectomics of the Subthalamic nucleus in humans: impact of neuromodulation and dopamine depletion	16-13323S	GA ČR (First Faculty of Medicine, Charles University)
Radiodiagnosics	Diagnostic neurophysiological and laboratory markers and pathophysiological mechanisms of functional movement disorders	16-29651A	GA ČR (First Faculty of Medicine, Charles University)
Neurology	Carotid artery atherosclerotic plaque characteristics associated with a plaque progression and a risk of stroke	17-31016A	AZV ČR (General Military Hospital in Prague and General Teaching Hospital)
Radiodiagnosics	Detection of the dynamic of gadolinium retention in the brain after application of MR contrast agents using alteration of T1 and T2 relaxation times. Prospective study.	NV18-04-00457	AZV ČR (Na Homolce Hospital)
Radiodiagnosics	Primary progressive aphasia - clinical, MRI and structural correlations. A prospective multicenter study	NV18-04-00346	AZV ČR (First Faculty of Medicine, Charles University)
Vascular Surgery	Amniotic membrane in the treatment of non-healing wounds.	NV18-08-00106	AZV ČR (First Faculty of Medicine, Charles University)

## Clinical studies

In 2018, a total of 135 active clinical studies were recorded, of which 25 clinical studies were completed during 2018.

Number of studies performed in 2018 - by subject and department:

Clinical studies	Medical devices	Medicines	Partial health services	Total number	%
Internal medicine	0	1	0	1	1
Cardiology	65	7	0	72	53
Cardiac surgery	6	2	0	8	6
Neurosurgery	1	0	0	1	1
Neurology	0	2	0	2	1
Gynecology	1	0	0	1	1
Oncology	0	5	0	5	4
Radiodiagnosics	1	1	6	8	6
Nuclear medicine / PET	0	0	31	31	23
Pharmacy	0	0	4	4	3
Allergy	0	1	0	1	1
Clinical biochemistry...	1	0	0	1	1
Total	75	19	41	135	100

### Performed Audits of Clinical Studies

In 2018, 4 audits of clinical studies were performed by the State Institute for Drug Control – SÚKL:

01/2018	SÚKL audit	Clinical study AB08026	Pending
03/2018	SÚKL audit	Clinical study OCALA	Insufficiencies corrected
09/2018	SÚKL audit	Clinical study BAY59-7939	Pending
11/2018	SÚKL audit	Clinical study CAPTURE	Pending

### Summary

Basic breakdown of research projects in Na Homolce Hospital in 2018:

Scientific project type	Subject	Number
Clinical studies	Medical devices	75
	Medicines	19
	Partial health services for external investigators	41
Research grants	Institutional support (internal grants)	47
	Special Targeted support (external grants)	9
<b>Research projects - total</b>		<b>191</b>

# PUBLICATIONS IN 2018

## Publications Co-Authored by the Staff of Na Homolce Hospital

### Foreign

#### Articles from Journals with IF

- 1) ANDREASOVÁ T. - VONDRÁKOVÁ D. - SEDLÁČKOVÁ L. - DVOŘÁK J. - TÁBORSKÝ L. - NEUŽIL P. - MÁLEK F. Evaluation of ceruloplasmin - a potential biomarker in chronic heart failure. *Journal of Clinical & Experimental Cardiology*. 2018, 9(8). ISSN 2155-9880.
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# QUALITY AND SAFETY

## International JCI accreditation

The long-term quality of healthcare, the safety of patients and the staff working at Na Homolce Hospital are the main pillars of its stability. Striving to provide quality healthcare in compliance with clearly defined standards, Na Homolce Hospital has been encouraged to maintain its international accreditation of healthcare facilities Joint Commission International (JCI).

Na Homolce Hospital has had the status of “world quality brand” since 2005, when it passed its first accreditation audit. In May 2017 the hospital successfully renewed this accreditation from JCI for the fifth time, which is a proof of the top healthcare provided to patients, as well as the high quality of the other processes within the entire hospital. The employees of the hospital can be justly proud of the results of the audit and especially the excellent results in the everyday care provided to our patients, which is to everybody’s credit.

Na Homolce Hospital has held the JCI accreditation certificate for the longest period in the Czech Republic. Accreditation is granted for a period of three years. In order to retain the certificate, the hospital will have to renew it again in 2020 and document improvement and optimization of procedures, particularly in the field of risk management, HR management, drug policy and the continuous development of professional standards.



Joint Commission International is a worldwide organization with a more than one-hundred-year tradition of accrediting healthcare facilities. The accreditation it provides is a guarantee of safety for patients and demonstrates that the hospital continuously monitors, analyzes and improves qualitative indicators in all its operations. The JCI accreditation system is based on a set of accreditation standards that cover all important activities of a healthcare facility and cover both the immediate care of patients (monitoring e.g. accessibility and continuity of care, rights of patients and their family members, diagnostic and therapeutic care, storing and administration of drugs, education of patients and their family members, quality of care and safety of patients, prevention and checks on hospital infections) and also the management of the hospital (as regards management effectiveness, ensuring the safety of the hospital environment, qualifications and education of staff, information management and communication). Each standard is further divided into individual indicators that describe what the hospital must do to comply with the given standard. There are more than 1,000 indicators in the JCI system, the adherence to which is assessed by an international team of auditors during their one-week audit. The final decision on the provision or non-provision of accreditation is made by an international accreditation committee at the JCI headquarters in Chicago, based on the report of the team of auditors.



## Quality systems at Na Homolce Hospital

### ISO 15189

The following laboratories: Department of Clinical Biochemistry, Hematology and Immunology, Immunoanalytical Laboratory, Biopsy Laboratory of the Department of Pathology and Clinical Microbiology and Antibiotic Center of Na Homolce Hospital have had a quality management system in place since 2011 (awarded by the Czech Institute for Accreditation) that was accredited in accordance with ISO 15189. ISO 15189 (Medical laboratories - special requirements for quality and competence) focusing on the professional management of laboratories such as the process flow of sample examination, conditions for blood taking, collection of biological material, interpretation and provision of results and the safety and ethics of laboratory work. The accreditation of the quality management system in laboratories in accordance with ISO 15189 implies an increased confidence in compliance with the required level of services provided.

### ISO 9001

Since 2004, a system of quality management in accordance with ISO 9001 has been in place in the Department of Nuclear Medicine for the provision of diagnostic services using immunoanalysis laboratory methods and imaging methods such as scintigraphy, computing, single photon and positron emission tomography (CT, SPECT, and PET/CT), including the preparation of radiopharmaceutical drugs. All services are provided according to an approved Quality policy. This type of certification covers work organization, including process management, management of resources, monitoring, and assessment of procedure efficiency.

### ISO 13485

Since 2014, the Department of Central Sterilization has held certification for the system of quality management of medical devices in accordance with the international standard ISO 13485. The Department of Central Sterilization is a workplace that ensures disinfection, preparation before sterilization and material sterilization for all facilities at Na Homolce Hospital, as well as the provision of contractual services for the offices of general and specialist practitioners.

## Risk Management - Stop Pressure Ulcers Campaign

Na Homolce Hospital has taken part in the World Stop Pressure Ulcers Day. On November 16, 2018, it organized an awareness-raising event for employees, patients and visitors of the hospital focused on the presentation of means for the prevention and treatment of pressure sores. The event was held on the publicly accessible premises of the hospital.

### What do we do to prevent pressure sores:

- Comprehensive treatment of the underlying disease.
- Pain monitoring, assessment and management.
- Physiotherapy and early mobilization of patients with the use of physiotherapeutic devices.
- Individual assessment of the risk of pressure sores in each patient.

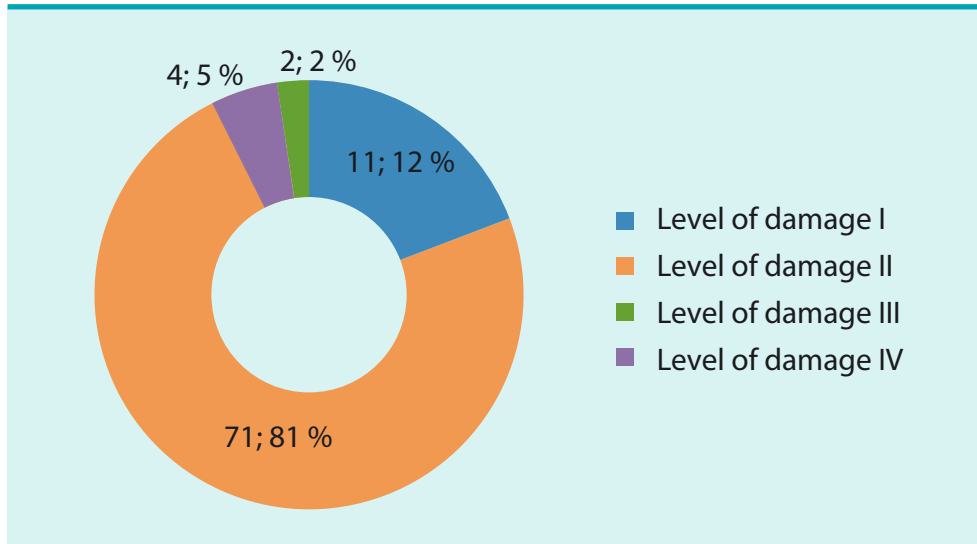
### Preventive measures taken in all patients at risk:

- Elimination of any source of pressure on tissues.
- Careful treatment and regular repositioning of immobile patients.
- Professional hygiene using the best cosmetic preparations and aids.
- Emphasis on clean and dry sheets and clothing.
- Use of the best anti-decubitus bed pads and mattresses, positioning devices and beds with special equipment (bars, side rails, etc.).
- Skin treatment using special protective cosmetic products.
- Application of film dressings on at-risk sites.
- Providing a nutritionally balanced diet, cooperation with a nutritional therapist.



Our results

We have been monitoring the results of our work in this field since 2003. Our achievements are excellent in the long run. Na Homolce Hospital treats a total of 20,000 inpatients annually, including patients in a critical condition and after long and complicated surgical interventions. The incidence of pressure sores is at 2%. Most cases concern the first or second degree pressure sore. All these cases are examined in detail in order to find out what can be done even better.



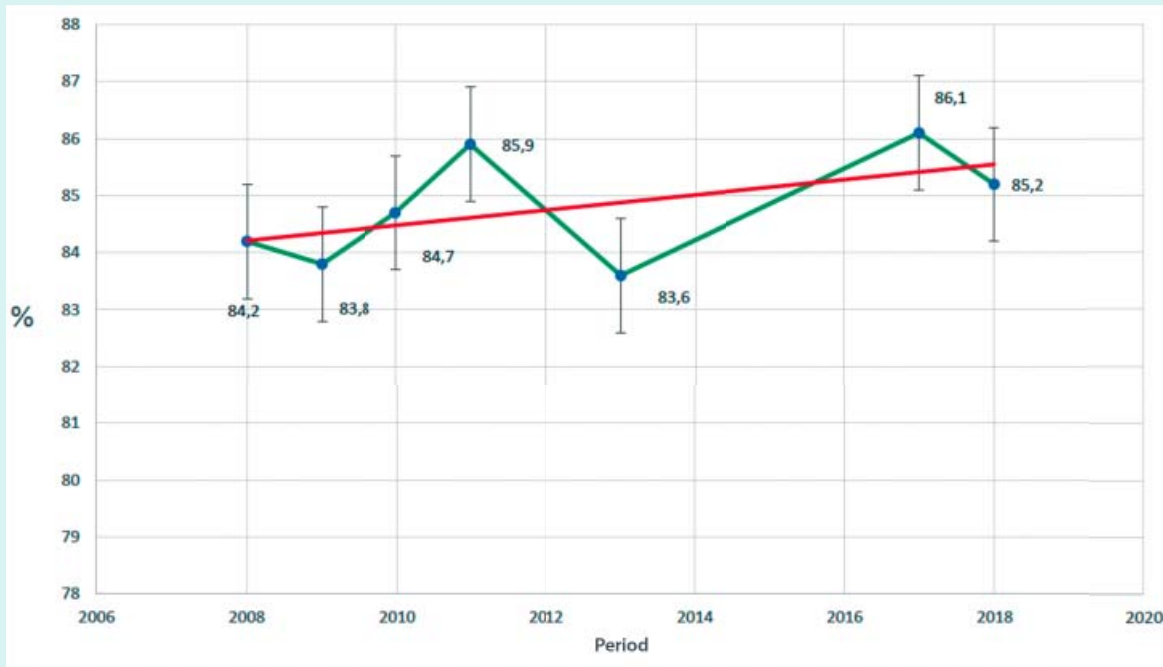
## Monitoring of Patient Satisfaction

### Quality as seen by patients

In 2018, Na Homolce Hospital participated for the seventh time in a survey monitoring satisfaction of patients called Kvalita očima pacientů (Quality as seen by patients, KOP). The aim of the project is to measure healthcare quality and patient satisfaction in healthcare facilities throughout the Czech Republic. The survey proved that the quality of care provided at Na Homolce Hospital is at a high level in the long term. The hospital defended the highest quality rating, i.e. A+, and received the Satisfied Patient Certificate. The survey was implemented from the end of November until the beginning of December 2018. Patients completed questionnaires to assess 50 factors influencing the quality of care in 8 areas (dimensions):

1. patient's admission to the hospital
2. respect and consideration given to the patient
3. patient care coordination and integration
4. Information, education and communication with the patient
5. bodily comfort of the patient
6. emotional support and alleviation of the patient's fear and anxiety
7. involvement of family and loved ones in the patient's care
8. release of the patient and the follow-up care

Satisfaction in the individual dimensions influences overall satisfaction. The overall satisfaction for the entire hospital again exceeded 85% (85.2%), and the hospital defended the highest quality rating "A+".



Satisfaction survey performed by means of Na Homolce Hospital form

Patients also have the possibility to express their satisfaction or dissatisfaction with our services by means of Na Homolce Hospital form. Collection boxes have been installed for this purpose on all floors of the hospital. It is also possible to provide praise and comments to the hospital electronically, using the hospital website. In 2018, 189 patients chose this method of giving their feedback, most of which were positive feedback (173) on the provided care.





## Adverse Event Reporting

Na Homolce Hospital has been involved in the central Adverse Events Reporting System aiming at monitoring the incidence of adverse events in clinical practice, central reporting and provision of reporting guidelines in accordance with a single terminology and application of preventive measures, i.e. effective proactive protective strategies. Data are transferred once every 6 months to the Czech Institute of Medical Information and Statistics. The Quality Department is a member of the working group for the creation of national methodologies for adverse event reporting systems, see <http://shnu.uzis.cz/>.

# ECONOMIC STABILITY

## Costs and revenues

Medical costs	2018 (in CZK million)	2017 (in CZK million)	Increase/decrease 2018/2017 (in CZK million)	2018/2017 in %
Medicines	85	82	4	105
Separately accounted medicines	74	75	-2	98
Blood and blood derivatives purchase	42	45	-2	95
Special medical materials	195	212	-16	92
Separately accounted materials	783	752	30	104
Personnel costs	2018 (in CZK million)	2017 (in CZK million)	Increase/decrease 2018/2017 (in CZK million)	2018/2017 in %
Wages	1 161	1 081	79	107
Obligatory payments	388	361	27	107
Other costs	2018 (in CZK million)	2017 (in CZK million)	Increase/decrease 2018/2017 (in CZK million)	2018/2017 in %
Other consumables (including low-value fixed assets)	75	81	-6	92
Energy consumption	42	46	-4	92
Sale of goods	127	127	-0	100
Repair and maintenance	68	70	-1	98
Travel expenses and education	9	9	0	101

Services	108	121	-13	89
Other costs	153	131	22	117
Depreciation	140	130	10	108
Total costs	3 455	3 325	130	104
Costs before taxes	3 435	3 321	114	103

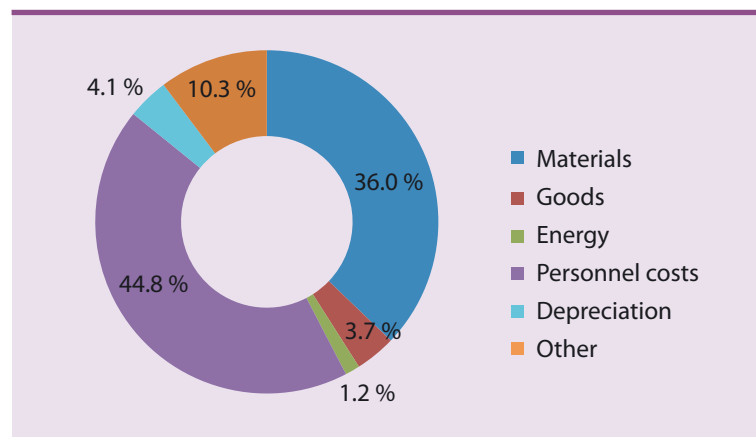
Revenues	2018 (in CZK million)	2017 (in CZK million)	Increase/decrease 2018/2017 (in CZK million)	2018/2017 in %
Revenues from own goods and services	3 196	3 003	193	106
- of which revenues from health insurance companies	3 136	2 932	204	107
Sale of goods	174	176	-2	99
Financial and other revenues	0	0	0	103
Total revenues	3 533	3 337	195	106

Profit (loss)	2018 (in CZK million)	2017 (in CZK million)	Increase/decrease 2018/2017 (in CZK million)	2018/2017 in %
Profit (loss) before taxes	98	17	81	579
Profit (loss) in the accounting period	77	12	65	644

## Costs structure by types

<b>Total</b>	<b>100 %</b>
Materials	36.0 %
Goods	3.7 %
Energy	1.2 %
Personnel costs	44.8 %
Depreciation	4.1 %
Other	10.3 %

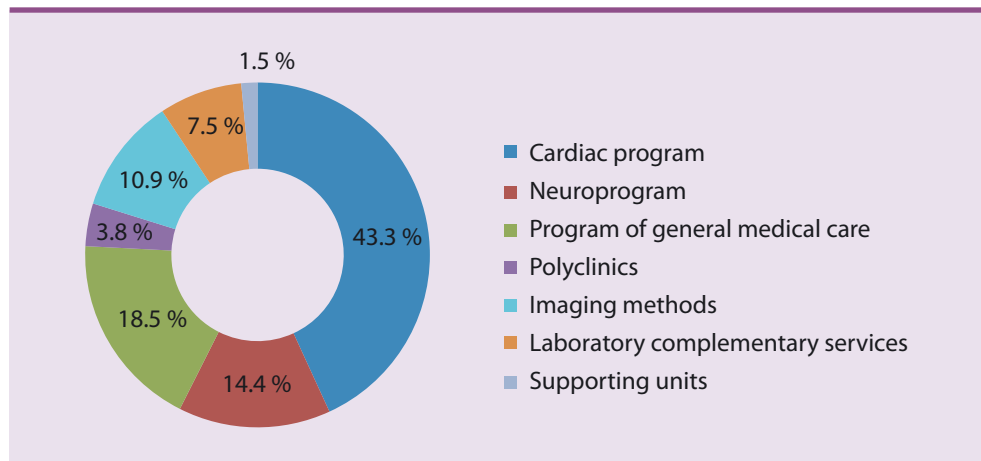
## Costs structure by types



### Medical costs structure by programs

	2017 (in CZK million)	2018 (in CZK million)	2018 in %
Section for Treatment and Preventive Care	2,553	2,694	100
Cardiac program	1,101	1,168	43.3
Neuroprogram	365	388	14.4
Program of general medical care	469	499	18.5
Polyclinics	102	103	3.8
Imaging methods	277	293	10.9
Laboratory complementary services	199	203	7.5
Supporting units	39	40	1.5

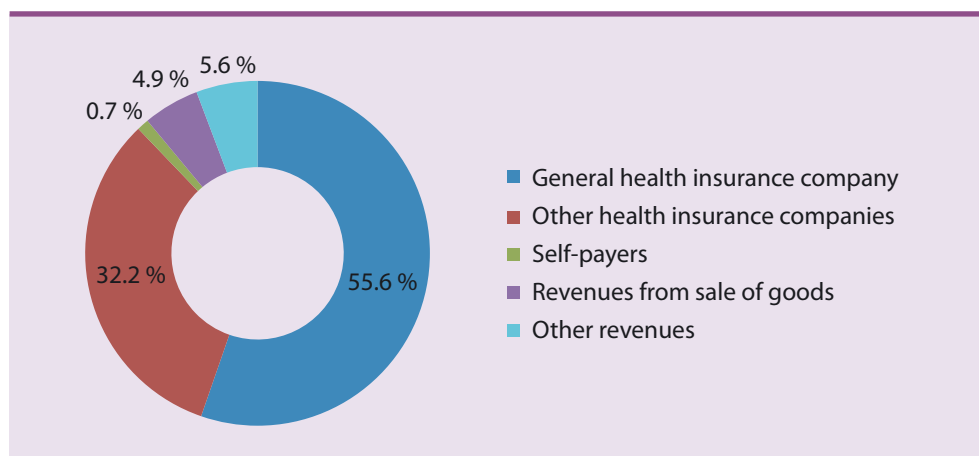
### Medical costs structure in 2018 by programs



## Structure of revenues

<b>Total</b>	<b>100 %</b>
General health insurance company	55.6 %
Other health insurance companies	32.2 %
Self-payers	0.7 %
Revenues from sale of goods	4.9 %
Other revenues	5.6 %
Number of points per physician	6,312,570
Number of outpatient points per physician	2,259,964

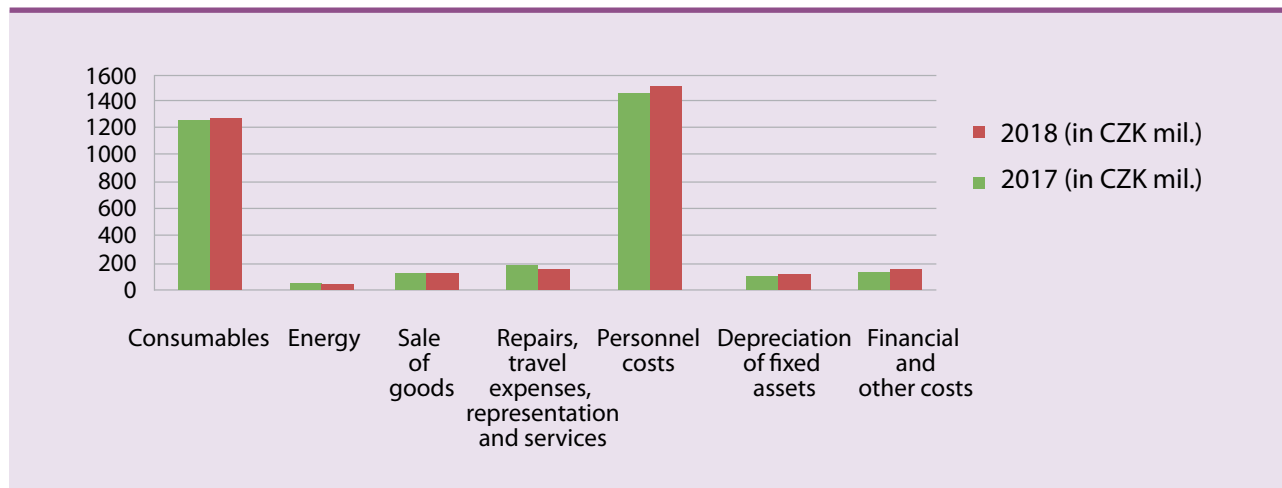
## Structure of revenues in 2018



## Total costs and revenues (in CZK mil.)

Costs	2017 (in CZK mil.)	2018 (in CZK mil.)
Consumables	1,233	1,242
Energy	46	42
Sale of goods	127	127
Repairs, travel expenses, representation and services	200	176
Personnel costs	1,443	1,549
Depreciation of fixed assets	130	140
Financial and other costs	142	179
Total cost before taxes	3,321	3,455

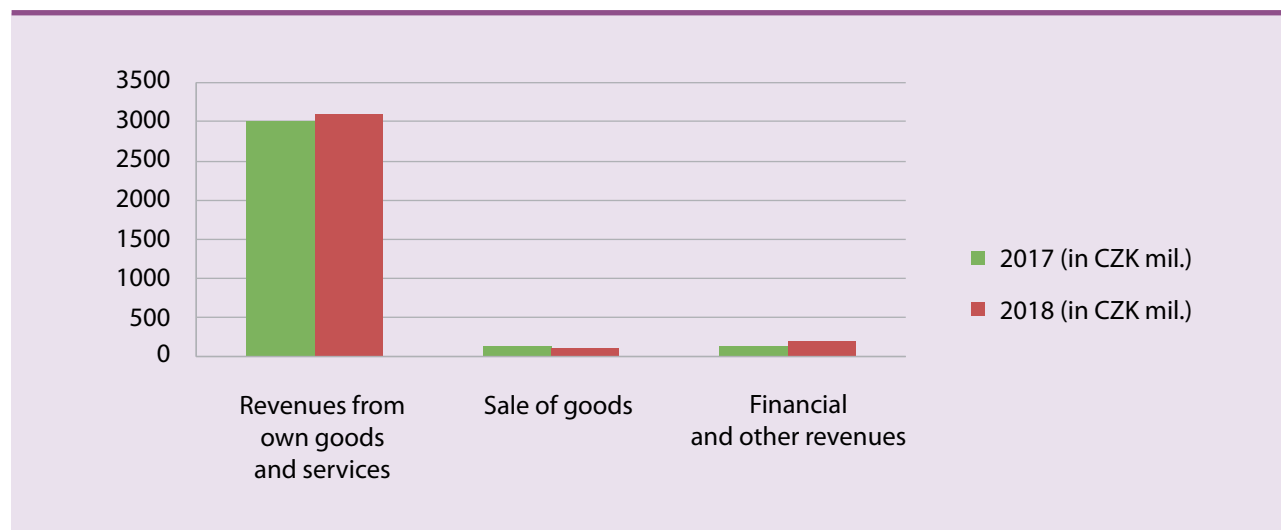
Comparison of costs in years





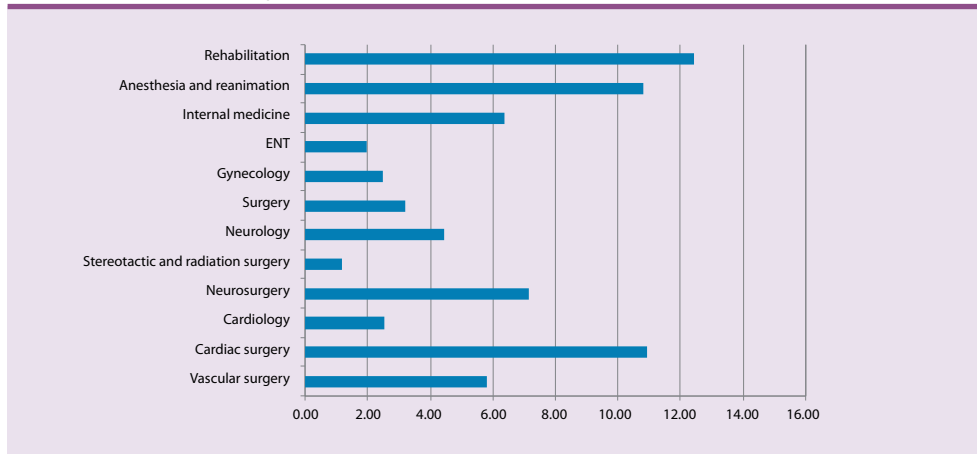
Revenues	2017 (in CZK mil.)	2018 (in CZK mil.)
Revenues from own goods and services	3,003	3,196
Sale of goods	176	174
Financial and other revenues	159	163
Total revenues	3,337	3,533
Profit (loss) before taxes	17	98

#### Comparison of revenues in years

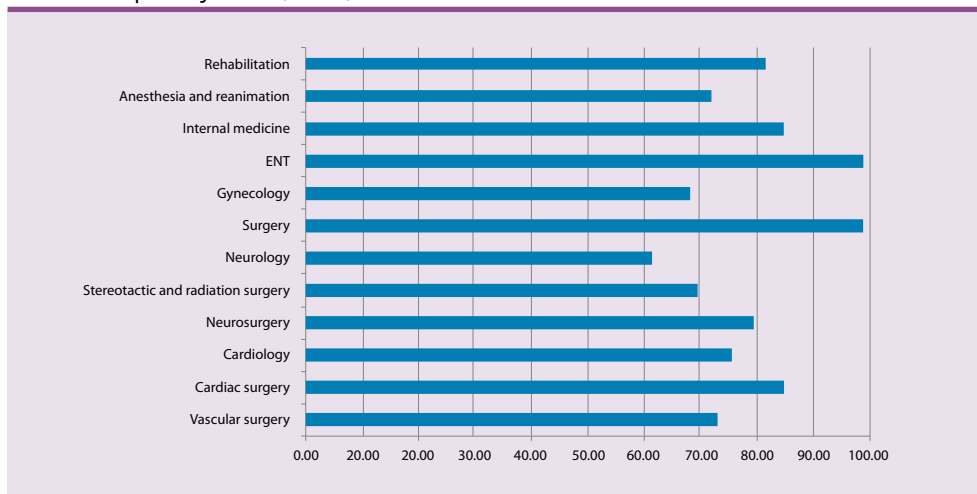


			2018		
Cost unit	Title	Mortality	Average treatment period	Number of treatment days	Bed occupancy rate (in %)
01	Vascular surgery	0.9	5.87	15,309	74.08
02	Cardiac surgery	1.5	11.05	10,065	84.68
05	Cardiology	0.8	2.63	13,996	76.03
11	Neurosurgery	0.7	7.23	17,294	79.82
12	Stereotactic and radiation surgery	0.0	1.21	1,206	70.73
15	Neurology	2.9	4.40	7,977	61.99
21	Surgery	0.1	3.23	8,678	99.67
22	Gynecology	0.0	2.55	3,117	68.69
23	ENT	0.0	2.17	2,798	99.64
25	Internal medicine	2.9	6.62	8,830	85.74
26	Anesthesia and reanimation	23.2	11.01	2,092	73.04
31	Physiotherapy	0.0	12.71	2,732	81.99
<b>NNH</b>	<b>NNH</b>	<b>1.2</b>	<b>4.73</b>	<b>94,094</b>	<b>78.58</b>


Average treatment period




Bed occupancy rate (in %)



## Statutory audit of the annual financial report for 2018





EKONOMIKA • PORADENSTVÍ • AUDIT • DAŇOVÉ PORADENSTVÍ

**Zpráva nezávislého auditora o přezkoumání hospodaření  
státní příspěvkové organizace  
Nemocnice Na Homolce  
za rok 2018**

7. 2. 2019

**Auditorská společnost**

FIZA, a.s. se sídlem Hrožňatova 3, 615 00 Brno, IČ 26252325, číslo oprávnění 377.

**Auditor**

Ing. Jiří Fiebauer, CSc., MBA, číslo oprávnění 0431

**Název, sídlo a IČ státní příspěvkové organizace**

Název: Nemocnice Na Homolce  
Sídlo: Roentgenova 2, PSC 150 30 Praha 5  
IČ: 00023884

**Období, za které bylo provedeno přezkoumání**

Ověřovaným účetním obdobím je rok 2018. Toto účetní období bylo uzavřeno dnem 31. 12. 2018.


**Vymezení odpovědnosti**

Za vedení účetnictví, za jeho úplnost, přikaznost a správnost odpovídá ředitel státní příspěvkové organizace. Naším úkolem je, na základě provedeného ověření, zpracovat zprávu a vyjádřit názor na účetní závěrku a hospodaření státní příspěvkové organizace.

**Rozsah přezkoumání**

Předmětem přezkoumání je účetní závěrka státní příspěvkové organizace za rok 2018. Přezkoumání hospodaření také zahrnovalo ověření údajů:

- v účetní závěrce za rok 2018;
- o dodržení zásad hospodaření státní příspěvkové organizace v roce 2018;



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- o plnění příjmů a výdajů rozpočtu;
- o ostatních peněžních operacích;
- o tvorbě a použití peněžních fondů;
- o nákladech a výnosech hlavních a hospodářské činnosti.

Předmětem přezkoumání bylo rovněž nakládání s majetkem ve vlastnictví státní příspěvkové organizace, zadávání a uskutečňování veřejných zakázek, stav pohledávek a nakládání s nimi, ručení za závazky fyzických a právnických osob, zastavování movitých a nemovitých věcí ve prospěch třetích osob a zřizování věcných břemen k majetku.

Přezkoumání hospodaření bylo naplánováno a provedeno výběrovým způsobem s ohledem na významnost jednotlivých skutečností tak, aby auditor získal přiměřenou jistotu pro své vyjádření.

Přezkoumání bylo provedeno v souladu se zákonem č. 93/2009 Sb., o auditorech a o změně některých zákonů (zákon o auditorech). Dále bylo provedeno v souladu se standardem ISAE 3000 „Ověřovací zakázky, které nejsou auditem ani prověrkami historických finančních informací“, přičemž byla současně přiměřeně aplikována i ustanovení dalších standardů ISA. Dále byl proveden s přihlédnutím zejména k:

- zákonu č. 563/1991 Sb., o účetnictví, ve znění pozdějších předpisů,
- zákonem č. 218/2000 Sb., o rozpočtových pravidlech a o změně některých souvisejících zákonů (rozpočtová pravidla), ve znění pozdějších předpisů;
- vyhláškou č. 410/2009 Sb., kterou se provádějí některá ustanovení zákona č. 563/1991 Sb., o účetnictví, ve znění pozdějších předpisů, pro některé vybrané účetní jednotky, (dále také jen „vyhláška č. 410/2009 Sb.);
- Českými účetními standardy pro některé vybrané účetní jednotky, které vedou účetnictví podle vyhlášky č. 410/2009 Sb. (účinným od 1. 1. 2010);
- Zákonu č. 134/2016 Sb., o zadávání veřejných zakázek, ve znění pozdějších předpisů a
- dalším navazujícím normám, předpisům, zákonným ustanovením a obvyklým postupům.

Rozsah provedených prací na přezkoumání hospodaření státní příspěvkové organizace nespĺňuje požadavky pro vydání auditorského výroku, a proto tato zpráva není zprávou auditorskou, ale je zprávou ověřovací.

#### **Výrok auditora**

Při provedení přezkoumání hospodaření státní příspěvkové organizace byl prověřen stav účetnictví, účetních výkazů a ostatní skutečnosti ověřující správnost hospodaření, a nebyly zjištěny žádné významné nedostatky.

Auditor je toho názoru, že hospodaření státní příspěvkové organizace a její účetní závěrka podává ve všech významných ohledech věrný a poctivý obraz aktiv, závazků, vlastních zdrojů krytí stálých a oběžných aktiv, cizích zdrojů a finanční situace státní příspěvkové organizace k 31. prosinci 2018 a výsledku hospodaření za rok 2018 v souladu se zákonem o účetnictví a příslušnými předpisy České republiky.

Při provádění přezkoumání hospodaření státní příspěvkové organizace nebyly zjištěny významné nedostatky ani rozpory se závaznými právními předpisy, a proto vyslovuje auditor výsledek přezkoumání státní příspěvkové organizace

**bez nedostatků**

  
Ing. Jiří Fichauer, CSc., MBA  
auditor  
číslo oprávnění 0431

  
FIZA, s.r.o.  
auditorská společnost  
číslo oprávnění 377

# INFORMATION DISCLOSURE

## Information disclosure pursuant to Act No. 106/1999 Coll., on Free Access to Information

Pursuant to the provision of Section 18 of Act No. 106/1999 Coll., on Free Access to Information (hereinafter referred to as the "Act"), Na Homolce Hospital (hereinafter referred to as "NHH") presents the following annual report for 2018, related to its activities in the field of information disclosure:

- a) The number of submitted requests for information and the number of decisions issued on the denial of a request: NHH received a total of 4 requests for information disclosure. One decision on the denial of a request was issued.
- b) The number of appeals filed against the decision: None.
- c) A copy of substantial parts of every court judgement on the review of the legitimacy of the decision by a legally bound person to deny information and the list of all the expenses of the legally bound person in connection with the legal proceedings on the rights and obligations under this Act, including the costs related to the legally bound person's employees and legal representation: There is one legal proceeding underway to review the decision of the Na Homolce Hospital to refuse a request for information.
- d) A list of exclusive licenses granted, including justification of the necessity to grant an exclusive license: No exclusive licenses were provided.
- e) The number of complaints filed under Section 16a, reasons for filing and a brief description of the manner of their settlement: None.
- f) Other information related to the implementation of the Act: No more information.

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E-mail: [hospital@homolka.cz](mailto:hospital@homolka.cz)  
[www.homolka.cz](http://www.homolka.cz)