

ŠTERNBERK HOSPITAL



Šternberk Hospital is a regional hospital disposing of 250 beds currently. Its Olomouc operational area covers over 100,000 inhabitants. However, some departments of this hospital provide care for other catchment areas in the Czech Republic and in some cases specialised medical examinations for the whole CR. Šternberk Hospital for instance houses the Department of Laboratory Medicine (DLM) (www.nemstbk.cz/olm) which employs 52 persons (12 physicians, 10 chemistry graduates, 20 laboratory technicians, 5 collection nurses, 1 dietary nurse, 2 administrative workers, 1 LIS administrator and 1 auxiliary worker).

At the DLM, a wide range of examinations in biochemistry, immunology, allergology, haematology, cytology and molecular biology is conducted for the operational area of Šternberk Hospital. Some specialised examinations are conducted for most districts within Olomouc, Brno, Zlín, Jihlava, Hradec Králové and Plzeň regions and partly also for the Moravskoslezský region and Prague.

DLM employees participate in scientific projects integrated within universities, clinical and laboratory departments in the Czech Republic as well as abroad (e.g. laboratory examination of patients with heart disorders, myocardial ischemia, determination of insulin sensitivity index and adipokines in high risk-individuals, presumption of new risk factors for atherogenesis, assessment of resistance to acetylsalicylic acid and other antiaggregation preparations, resistance to kumarines, determination of cystatine C in individuals with aneurysms of the abdominal aorta, determination of osteoprotegerine and its ligand, definition of oxidative stress products in patients with acute coronary syndrome and the impact potency of some medicines on oxidative markers, the setting of new diagnostic markers in patients with CNS disease, assessment of functional and morphological disorders by means of breath tests, utilization of newly discovered proteins in hypertension diagnosis, malignant diseases, etc.). Many of these projects are subsidized by the state (IGA MZ, GAČR, etc.) or supported by non-profit organizations.

Apropos the international activities, collaboration with the Clinic for Hemostaseology and Transfuziology

in Munich can be commended, where the main aspect of common research focuses on development of a unique *in vitro* method for the determination of resistance to aspirin administration, and co-operation with laboratories Speciality Labs in Santa Monica which focuses on validation and verification of a kit for determination of free nefrines in serum for the American FDA. Over the past few months, DLM has established close cooperation with German specialists in this particular treatment of diabetes mellitus (first installation of Glucostar system in the Czech Republic took place at the Internal department of the Šternberk Hospital).

Compared to other regular laboratory stations, DLM differs markedly in the following fields of laboratory medicine:

- a) Laboratory diagnostics of acute coronary syndromes (unstable angina pectoris, acute myocardial infarction, etc.) by screening newly discovered molecules that under certain conditions might help in the detection of patients at high risk or already endangered patients who however are symptom free (dealing with IMA-ischemia modified albumin, MLC-I – myosin light chains, etc.). We participate in research where we are able to detect patients already suffering from chronic ischemia of the heart muscle (patients are symptomatic but without EKG findings), or even latent patients (asymptomatic). We do examinations that are fairly inexpensive and this might cut down the actual costs of the hospital and pre-hospital care. In practise, this means that by a single or perhaps repeated blood examination, we are able within a few hours to decide with sufficient accuracy whether to admit the patient to a hospital, send him for further examination or classify him as a patient with low degree of risk, as the case may be. We are of course also able to determine the function of heart chambers (NT-proBNP, BNP, ANP – atrial and brain natriuretic peptide)
- b) Laboratory diagnostics of brain strokes by means of newly discovered molecules, where it is possible based on blood examination to recognize within few minutes the occurrence of brain damage (GFAP, S-100)
- c) Laboratory diagnostics of degenerative brain diseases (e.g. Alzheimer's disease) by means of cerebrospinal fluid examination, also blood and even urine examination
- d) Laboratory diagnostics in gastroenterology (breath tests for detection of pancreatic external secretion disorder, stomach motility disorder, liver function, occurrence of pathogens in stomach, intestine absorption disorder, etc.)
- e) Genetic consultancy (in cooperation with geneticists who perform examination of many inherent defects and disorders of embryos within I. and II. trimester of pregnancy), examination of polymorphisms and mutations leading to thrombotic condition (e.g. embolism, brain strokes or coronary thromboses)



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- f) Laboratory diagnostics applied in allergology and immunology
- g) Diagnostics of secondary hypertension (determination of free nefrins in serum such as aldosterone, progynone, antioxygens I and II) by means of serum analysis. This is a very important examination that we have been successfully performing at our department for several years now and it is quite unique for the whole Czech Republic (among our clients are for instance the Teaching Hospital Motol in Prague, IKEM Prague, and other centres in Pilsner, Hradec Králové, Moravskoslezský, Brno or Jihlava regions).

The DLM also participates in teaching medical students at the Institute of Medical Chemistry and Biochemistry of the Faculty of Medicine Palacký University in Olomouc and students of the Faculty of Physical Culture Palacký University Olomouc. Also very important is the DLM cooperation with the Internal Department of Šternberk Hospital. At the DLM, metabolic, haematological, endocrinologic, diabetological and osteological outpatients' departments are situated, and there is also room for nutritional and regime education of patients, and a collection room where three collection

nurses work. Altogether five physicians look after the patients at these departments and apart from common clinical and anthropometric examinations, an ultrasonic examination of blood vessels, punctures, evaluation of heart rate spectral variability and of course EKG examinations are performed here as well. Of all mentioned outpatient's departments, the diabetological department demonstrates rather interesting results, as the percentage of complications and mortality of patients are low. These statistical data are available on the website and demonstrate well-managed and -applied patient treatment. The physicians practising at these departments (particularly the diabetological, metabolic and osteological departments) enjoy a very good reputation, which is supported by the fact, that patients travel large distances from different catchment areas (practically from all over the Olomouc region) just to be examined and treated by these physicians. The reputation for erudition of the DLM physicians is well known, as they often give lectures, produce publications and expert monographs, and actively take part in international conferences and congresses.

Further info on www.nemstbk.cz/olm