

The University Hospital has close working relationship with the University and is an institution that is well suited for the transition to insurance medicine.

Among the main objectives of the University Hospital are the organisation of specialized medical care for the population of Ternopil region coupled with training, re-education and advanced training of University's medical personnel.

Complete enactment of Regulations on the University Hospital will establish uniform and transparent rules for the state supervisory authorities and the institution, resulting in a clear mechanism of organization and implementation of medical practical training in accordance with international and European requirements.

World practice shows that university hospitals have significant advantages over ordinary hospitals because of better facilities, equipment, and highly professional personnel, allowing them to offer the population effective medical care in all fields of medicine.



Professor M. M. Korda, Rector of SIHE I. Horbachevsky Ternopil State Medical University of Ministry of Health of Ukraine

REGIONAL INSTITUTION TERNOPIL UNIVERSITY HOSPITAL

Difficult economic conditions in Ukraine necessitate transition of its public health care system to new underpinnings based on the principles of family medicine (general practitioner). The criterion for assessing effectiveness of the primary care unit (family doctor) is the health of the citizens in our country, while the criterion for assessing the third level of health care is the quality of technological specialized medical care.

Typically, specialized medical care is delivered in medical institutions of regional and national level, and in many cases, these have the status of so-called clinical hospitals, which means that they can combine the services of a hospital with the education of medical students and with medical research.

Working together, medical scientists and health care institutions become more effective in introducing new medical approaches and technologies is more effective.

For this reason, the proposed program of health care reform in Ukraine envisions the creation of university hospitals.



Chief Physician of Ternopil University Hospital, V. Y. Blikhar

The board of Ternopil University Hospital and Ternopil State Medical University had been working together to study best practice policies (including legislative procedures) of the operation of university hospitals. They have created a concept methodology of the university hospital and shared it with Ministry of Health of Ukraine, Ternopil Regional Council, Ternopil Regional State Administration, the Department of Health, and public.

Since the establishment of the University Hospital two years ago, it became evident that while the institution has tremendous promise, it also faces specific problems patient care as well as financial and economic aspects of the business.

Despite the challenges, expansion of university hospitals will encourage introduction of new medical technologies and provide highly effective specialized medical care to the population of Ukraine.

GENERAL INFORMATION ABOUT THE HOSPITAL

Ternopil regional hospital has been working since 1958. On January 1, 2010, it was reorganized into the Community Institution of Ternopil Regional Council Ternopil University Hospital (Ternopil University Hospital, or University Hospital).

University Hospital employs 1100 staff, including 221 physicians, and 402 mid-level health professionals. The Hospital has 665 beds. There are 19 specialized inpatient departments and 13 clinical-diagnostic departments, including the regional consultative outpatient clinic admitting 200 patients per day, and offering consultations in 24 medical specialties.

Seven specialized centres provide inpatient and diagnostic care for adult population: centres of eye microsurgery; minimally invasive surgery; cardiology; kidney dialysis; arthroplasty; gastroenterology and hepatology; clinical immunology and allergy.

More than 20,000 patients receive highly specialized inpatient care every year, and 75,000 patients get diagnostic consultations. Each year, surgical departments conduct around 7,800 surgical operations.

In recent years, several parts of the hospital were upgraded. A surgical complex with 240 beds was built, clinical centre № 4 and education museum were opened, consultative outpatient clinic, ophthalmic department, and treatment building were renovated.

Measures aimed at improving the quality of health care, reducing morbidity, disability and hospital mortality have been expanded.

Ownership

Communal institution of Ternopil Regional Council.

Main activities

Delivering highly specialized inpatient and diagnostic care to the population, and providing organizational and methodological guidance to other medical institutions of the region.

Main structural subdivisions

The University Hospital encompasses 6 subdivisions (Centres) and a services department. The Centres include 19 specialized inpatient departments, 13 paraclinical departments, and 4 service units:

- Internal Medicine Centre with 300 beds;
- Surgery Centre with 365 beds;
- Consultative Diagnostic Centre for 200 visits per day offering consultations in 24 specialties;
- Junior Medical Staff Centre;
- Centre of Temporary Disability Assessment and Quality Control;
- Centre of Personnel Service and Legal Support;
- Department of Finances and General Services

TASKS AND FUNCTIONS OF THE UNIVERSITY HOSPITAL

University Hospital is a principal medical institution delivering highly specialized inpatient and outpatient (consultative) medical care; providing organizational and methodological support to medical institutions of the region. It accommodates clinical departments of Ternopil State Medical University, and is a training facility of professional development of nurses, doctors, residents and medical students.

The main tasks of the University Hospital are the following:

- to provide population with highly-specialized inpatient and outpatient medical care;
- to provide village, town, city, and district level medical institutions with organizational and methodological assistance in order to improve quality of health care;
- to improve quality of medical personnel training;
- to assist in training of medical students the latest advancements of medical science and technology;
- to promote theoretical and applied clinical;
- to offer continuous education opportunities to medical personnel, and serve as for a base for practical training of medical students and professional development nursing personnel for village, town, city, district level medical institutions;
- to develop public health measures aimed at increasing the quality of health care, reducing hospital mortality and disability;
- to ensure acquisition, storage, transportation, dispensing, use, and destruction of narcotic drugs, psychotropic substances and their precursors.

Structure of the University Hospital Centres

University Hospital consists of 10 clinics, 19 specialized inpatient departments, 13 paraclinical departments, 4 service units and 1 sector.

Internal Medicine Centre

300 beds

Internal Medicine Clinic №1

1. Cardiology department and intensive care unit for MI patients	75
2. Endocrinology Department	50
3. Gastroenterology Department	40

Internal Medicine Clinic №2	
1. Rheumatology Department	45
2. Nephrology Unit	30
3. Dialysis Department (number of dialysis procedures per shift)	16
Internal Medicine Clinic №3	
1. Cardiology department for MI patients	30
2. Pulmonary Care Department	30
Clinic of Immunology, Allergy and General Patient Care	
1. Gastroenterology Department of Regional Centre of Gastroenterology and Hepatology	40
2. Gastroenterology (5 beds) and Pulmonology (5 beds) Departments of Regional Centre of Clinical Immunology and Allergy	10
3. Haematology Department	30
Clinic of functional and laboratory diagnostics	
Paraclinical Departments	
1. Functional Diagnostics Department	
2. Radiology Department	
3. Electric and Manual Therapy Department	
4. Physical Therapy Department	
Surgery Centre	
365 beds	
L. Y. Kovalchuk Clinic of Surgery and Urology № 1	
1. Surgical Department,	45
including proctology beds	15
2. Thoracic Department	
3. Urology departments	25
Clinic of Anaesthesiology and Resuscitation № 2	
1. Anaesthesiology and Intensive Care Department	9
2. Department of Vascular Surgery	30
Clinic of General and Minimally Invasive Surgery	
1. Department of Minimally Invasive Surgery	15
2. Orthopaedic Traumatology Department	50
3. Endoscopy Department	
Clinic of Otorhinolaryngology, Ophthalmology, and Neurosurgery	
1. Otorhinolaryngology Department	40
2. Ophthalmology Department	55
3. Neurosurgery Department	30
Clinic of Dental Surgery	
1. Dentistry Department	30
Paraclinical Departments	
1. Admissions Department.	
2. Surgery Department.	

3. Surgical Radiology Unit.
4. X-ray Department.
5. Department of Hyperbaric Oxygenation.
6. Laboratory of Contact Lens Vision Correction.
7. Ultrasound Diagnostics Department.
8. Dentistry Department.
9. Endoscopy Department.

Consultative Diagnostic Centre (administered by the deputy chief for outpatient work)

1. Regional Consultative Outpatient Clinic
2. Regional Outpatient Cardiology Department
3. Regional Outpatient Endocrinology Department
4. Regional Outpatient Department of Radiation Exposure Prevention and Management
5. Mobile Laboratory and Diagnostics Complex

Junior Medical Staff Centre

1. Nursing council of Ternopil University Hospital
2. Institute of nursing of SIHE I. Horbachevsky Ternopil State Medical University of Ministry of Health of Ukraine
3. Regional advanced training school for mid-level health professionals at Ternopil University Hospital
4. Teaching and methodological complex

Centre for Assessment of Temporary Disability and Quality Control (administered by deputy chief for temporary disability assessment)

1. Medical Consultative Committee
2. Department of Medical Statistics and Methodological Work
3. Administrative Body of Inpatient Departments

Centre of Personnel Service and Legal Support (administered by the head of HR department)

1. Human Resources Department.
2. Legal Adviser.

Department of Finances and General Services (administered by deputy chief for economics)

1. Centralized bookkeeping office.
2. Economics service.
3. Catering facilities.
4. Medicines Storage.

INTERNAL MEDICINE CENTRE

Dr I. M. Herasymets is the head of Internal Medicine Centre and general medicine departments. She holds a PhD in medicine, the highest qualification category in the fields of Organization of Health Care and Cardiology, and is a chief consulting specialist for inpatient care of Ternopil Regional State Administration. Dr. Herasymets began her professional career in a district hospital of Kyiv region, after which she continued her studies in clinical residency and defended her thesis in Cardiology. Working as a Cardiology resident in Ternopil Regional Clinical Hospital, she studied the principles of organization of health care system.

Centre of Internal Medicine is focused on the issues of expanding the range of functional, ultrasound, and laboratory diagnostic procedures.

Currently, University Hospital laboratory department is one of the first in western Ukraine equipped with the latest semi-automatic and automatic biochemical, haematological, and immunological analysers, allowing to achieve European standards in laboratory diagnosis.



Head of Internal Medicine Centre I. M. Herasymets, MD, PhD

Centre of Internal Medicine delivers highly specialized medical inpatient care in the field of general medicine and in accordance with the protocols and standards approved by the Ministry of Health of Ukraine. The Centre also provides methodological and consultative assistance to the healthcare facilities of the region, and serves as a medical facility for training of physicians, nurses and TSMU students,.

Internal Medicine Centre includes Internal Medicine Clinics №1, 2, and 3, Clinic of Emergency Care, Clinic of Immunology, Allergy and General Patient Care, Clinic of Clinical-Medical and Laboratory Diagnostics. There are seven inpatient general care departments with 300 beds and 4 paraclinical units.

Each year, about 9,000 patients receive highly specialized medical assistance in the departments of Internal Medicine Centre. Fifty-five to sixty new methods of diagnostics and treatment are being implemented annually. Among the most significant are transesophageal electrocardiostimulation, daily monitoring of ECG and blood pressure, two-dimensional and transesophageal echocardiography, assessment of heart rhythm variability, assessment of D-dimer for early diagnosis of thromboembolism, pharmacological and electric cardioversion, implantation of one- and two-chamber permanent pacemakers, hourly monitoring of glucose with CGM, use of insulin pumps in patients with brittle diabetes, pulse therapy and plasmapheresis, haemodialysis and peritoneal dialysis, computer tomography, ultrasound diagnostics of pleural cavities, computer intragastric pH monitoring, and multi-moment duodenal intubation. Working together with TSMU specialists, doctors of the Centre determine changes in bone mineral density using X-ray densitometer LUNAR DPX-A.

Diagnostic and treatment procedures are delivered by the leading specialists of Ternopil University Hospital and professors of Ternopil State Medical University.

INTERNAL MEDICINE CLINIC №1

Internal Medicine Clinic №1 was founded on July 1, 2011. The staff of the Clinic provides specialized medical care in cardiology, endocrinology, gastroenterology, pulmonology and haematology. The Clinic includes 39 beds in the cardiology department, and 50 beds in endocrinology department.



Head of Internal Medicine Clinic №1, professor N. W. Pasiechko

Clinic staff includes two professors, five associate professors, and two assistant professors. All doctors have taken specialization courses and have the highest qualification category.

The endocrinology department is headed by I. V. Holyk, endocrinologist holding the highest qualification category.

Each year, the department delivers highly specialized inpatient care to 1,500-1,600 patients with endocrine disorders requiring tertiary level of medical care.



I. V. Holyk, Head of endocrinology department, performs patient's examination

The department has three doctors with the highest qualification category. The medical and diagnostic procedures are carried out according to modern protocols and standards for providing medical care to patients with endocrine system disorders.

For instance, in 2015 the department introduced procedures such as assessment of C-peptide levels, of antibodies to TTH-receptors, insulin, and of blood testosterone, improving the management of patients with endocrine pathology. Patients with brittle diabetes mellitus and pregnant women have an option of hourly glycaemia control using CGM.

Cardiology department and intensive care unit for MI patients is headed by N. M. Vivchar, PhD, cardiologist with the highest qualification category.



N. M. Vivchar, PhD, Head of Cardiology Department for MI Patients, Chief Consulting Physician of the Department of Healthcare at Ternopil Regional Council, Cardiologist with the Highest Qualification Category

Six doctors holding the first and highest qualification categories provide medical and diagnostic services in the Department. The main tasks of the department is to deliver highly specialized inpatient care to patients with cardiologic disorders, round-the-clock emergency care for patients with acute coronary insufficiency, myocardial infarction, life threatening heart arrhythmia and cardiac conduction disorders.

Head of the department N. M. Vivchar works together with senior resident L. V. Sadlii to ensure the best possible environment for successful recovery.



Head of X-ray surgical unit P. Y. Vivchar and surgeon I. A. Nenashko perform pacemaker implantation

A standard procedure of specialized care for patients with acute myocardial infarction includes prompt blood clot treatment. Having successfully implemented this method in Ternopil University Hospital, the faculty of Internal Medicine Clinic № 1 together with intensive care unit residents now coordinate its introduction in other the medical institutions of the region.



Head of Gastroenterology Department V. V. Kulish performs pH analysis



Testing glucose level

Internal Medicine Clinic № 1 is involved in medical research. In the last year, faculty of the Clinic together with the physicians and resident doctors of other departments prepared 28 scientific papers, 2 newsletters and 2 guidelines instructions. This research resulted in one successful PhD defence, a number of ongoing Master's projects and participation in a large interdepartmental project.



Dr. N. V. Pasiechko does cilinical rounds

One of the studies done in the Clinic involved changes in mineral bone density, calcium metabolism and lipid metabolism and the features of atherosclerosis and postmenopausal osteoporosis changes in women with essential hypertension. Predictors of osteoporosis changes in patients with essential hypertension were determined and their features defined in relation to gender. Another study resulted in recommendations to use of alpha-lipoic acid in the treatment of severe diffuse toxic goitre in patients from iodine-deficient regions. The Clinic specialists introduced direct rennin inhibitor Rasilez in the treatment protocol for Type 2 diabetes and hypertension.



Assistant Professors I. V. Smachylo and M. Y. Havryliuk perform clinical rounds

The Clinic serves the base for training of fourth and sixth year students of Ternopil State Medical University Faculty of Medicine. Students can acquire practical skills of bedside diagnostics and treatment of endocrine, cardiological, pulmonary, hematological and gastrointestinal disorders.

Further development of specialized diagnostic and treatment care in the Clinic is focused on the introduction of interventional procedures for patients:

- with cardio-vascular diseases (coronarography, primary angioplasty, planned and urgent stenting of coronary vessels, modern non-invasive and invasive methods of diagnostics and treatment of complex heart rhythm and conduction disorders);
- with endocrine diseases (the use of insulin pumps in patients with brittle diabetes and pregnant women, the introduction of computer tomography diagnosis of the hypothalamic-pituitary area);
- with gastrointestinal diseases (identification of pancreatic elastase-1 in stool to evaluate exocrine dysfunction of the pancreas);
- with pulmonary diseases (the use of nebulizer therapy in patients with bronchial obstructive syndrome and oxygen concentrators in patients with respiratory insufficiency).

INTERNAL MEDICINE CLINIC № 2

TSMU Department of Internal Medicine № 2 is located in the Rheumatology Department of Ternopil University Hospital and Department of Urgent Care of Ternopil City Hospital of Emergency Medicine. Department faculty (one professor, five associate professors, and four assistant professors) provide treatment, diagnosis and consultation services in the Clinic as well as in Gastroenterology, Endocrinology and Cardiology Departments of Ternopil University Hospital. Medical staff of the Department specializes in General Medicine (with three doctors holding the highest qualification category and three first qualification category), Rheumatology, Cardiology, Endocrinology, Gastroenterology, and Pulmonology.

Head of the Department and of the Rheumatology Clinic is Professor S. I. Smiiian. Dr. Smiiian holds a State Title of Merit for the Achievements in Applied and Fundamental Sciences, and is a Head of Ternopil Regional Association of General Physicians.



Head of the Department of Internal Medicine № 2, professor S. I. Smiiian, DSc

Medical personnel of the department conducts ward rounds, delivers emergency and planned consultative and diagnostic care. They carry out research in the fields of pathogenesis, diagnosis and treatment of osteoporosis, primary osteoarthritis, gout, systemic disorders of connective tissue, and systemic vasculitis.



Professors S. I. Smiian, O. S. Makhovska, and L. V. Zadorozhna perform medical rounds

Dr. O. S. Makhovska is the head of Rheumatology Department. Each year department delivers highly specialized inpatient care to 1,400 – 1,500 patients. Associate professor U. S. Slaba, three doctors holding the highest qualification category, postgraduates, and resident doctors offer diagnostic and treatment in accordance with modern protocols and standards of medical care. In the last 5 years the Department staff organized 15 research and practical conferences, 55 clinical and 12 anatomical meetings, annotated 96, and presented 42 medical cases. Department staff performs planned and urgent consultations, including consultative visits to the district hospitals, and urgent calls to Ternopil and regional medical institutions as dispatched by the Centre of Emergency Medical Care.



Dr O. S. Makhovska is the head of Rheumatology Department and consulting rheumatologist of the Health Care Department of Ternopil Regional Administration

Staff of the Rheumatology Department, Professor S.I. Smiian carried out an innovative study and created the database of bone mineral density in healthy people of Ternopil region. Another large-scale study involved systematic analysis of the pathogenic links of bone marrow disorders to blood and kidney pathologies, bronchial asthma and COPD. Other research projects addressed the role and prevalence of cardiovascular risk, metabolic changes, effects of gout and osteoarthritis on liver and kidneys. These studies helped to develop and implement new treatment schemes for rheumatoid and comorbid diseases. Professor S.I. Smiian served a supervisor of four research projects leading to the degree of Doctor of Medical Sciences, and 14 leading to the degree of Candidate of Medical Sciences. Among the researchers awarded the degrees were TSMU postgraduate students as well as practicing doctors of the University Hospital.

In recent years, the Department has developed new methods of study, treatment and diagnosis of cardiopulmonary manifestations in ankylosing spondylitis; ranking of the risk factors for developing gouty nephropathy and nonalcoholic steatohepatitis; and cardiovascular risks in gout patients.



A nurse administers immunobiological treatment

The department introduced FRAX technique used to determine the probability of fractures caused by osteoporosis over a 10-year period. Ongoing clinical work and research of the Internal Medicine Clinic № 2 include a study of cardiovascular risk markers in rheumatology patients, their role in progression of cardiovascular events, and effective treatment programs; creating a registry of the patients receiving or in the need of treatment with biological agents; a study of the effectiveness of immunobiological therapy for clinical and laboratory diagnosis of functional liver disorders in the patients with the long-term use of methotrexate; and a study of cardiovascular risks in patients with osteoarthritis and goat.



Staff of the Department of Internal Medicine №2

Over the last 5 years, research findings of the department resulted in ten papers published professional journals, three papers in international publications European Journal of Rheumatology, Annals of the Rheumatic Diseases, and Echocardiography, as well as an English language manual on internal medicine for the 4th and 5th year medical students edited by Professor S. I. Smiian.



Associate professor H. V. Lykhatska, MD, PhD demonstrates EFGDS method



Assistant professor I.I. Svystun gives practical class in endocrinology



Associate professor R. R. Komorovsky MD, PhD teaches a practical class



Associate professor R. R. Komorovsky and international students in the Cardiology Department



Assistant professor I. I. Svystun demonstrates blood glucose test

INTERNAL MEDICINE CLINIC № 3

Professor L. P. Martyniuk is the head of Internal Medicine Clinic № 3. She oversees Nephrology and Pulmonary Departments of the municipal Ternopil University Hospital, each with 30 beds. Staff of the clinic: one professor, five associate professors, four assistant professors, and six doctors of the highest qualification category, offer treatment, diagnosis and consultation services.



Head of the Internal Medicine Clinic №3 professor L. P. Martyniuk

The clinic delivers highly specialized nephrology and pulmonary care to the patients in the city and region. Head of the Clinic, professor L.P. Martyniuk, MD, together with heads of the departments, provide quality control according to the standards for delivery of highly specialized inpatient medical care to nephrology and pulmonology patients, the use of modern diagnostic methods, and the provision of organisational, methodological and consultative assistance to other health-care institutions of the region.

The head of Nephrology Department is G. B. Symko, a nephrologist holding the highest qualification category. Each year more than a thousand patients receive consultations and treatment in the Department.

Doctors of the Nephrology Department are constantly involved in specialized professional development courses, give seminars to regional general practitioners, take part in national and regional scientific nephrology conferences, and are actively involved in research.

Treatment protocols used in the Department are in accordance with approved standards stemming from the latest recommendations of the Ukrainian Association of Nephrologists. Staff of the Department introduce new methods of treatment according to the approved plan. They create provisions to carry out scientific and practical research, and implement up-to-date recommendations of the Ministry of Health and the latest diagnostic and treatment approaches.

Teaching staff of the Internal Medicine Clinic №3 and residents of the Nephrology Department promote healthy lifestyles on the local television and radio programmes, through media publications and newsletters.

A number of new methods has been implemented in the Department to provision modern diagnostic methods of nephrology diseases. These methods include: the use of an active vitamin D3 metabolite in patients with secondary hyperthyroidism; use of erythropoietin alpha in patients with chronic renal insufficiency; use of densitometer to establish BMD in patients with III-IV stages of chronic kidney disease (CKD); use of non-calcium phosphate binders in CKD patients undergoing

haemodialysis; and use of alfacalcidol to correct secondary hyperparathyroidism in patients with CKD.



Head of Internal Medicine Clinic №3 professor L. P. Martyniuk and Head of the Nephrology Department H. B. Symko

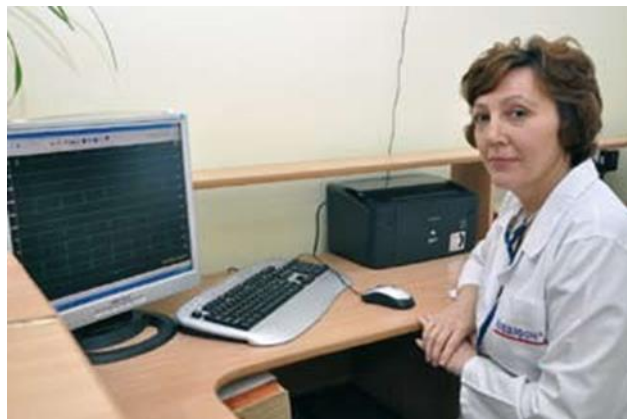
The Department has completed a long-term research “Efficiency of the complex treatment of mineral metabolism disorder and bone remodelling in patients with chronic kidney disease. Another study addressed theoretical synthesis and new approaches to the key problems in nephrology. In particular, it determined the clinical and pathogenetic characteristics of mineral metabolism disorders and bone remodelling, depending on the functional state of the kidneys improving diagnosis and developing methods for the effective correction of calcium-phosphorus metabolism disruptions and remodelling of the cells under chronic kidney disease using phosphate binders of different groups, alphacalcidol and strontium ranelate, aimed at reducing the risk of fractures, improving the quality of life and survival rates.



Professor L. P. Martyniuk performs ward rounds in the Nephrology Department

Internal Medicine Clinic №3 and Nephrology Department are the organizational methodological centres for the provision of highly skilled specialized care to the nephrology patients in the region, as well as centres for clinical training of nephrologists and nursing staff. Staff of the clinic has developed and implemented new updated protocols for rehabilitation of the patients with chronic kidney disease.

Head of the Department, residents, Ternopil State Medical University staff provide highly qualified scheduled and emergency medical and consultative care to patients with concomitant kidney pathology in the inpatient health care units of Ternopil University Hospital. They also work in the Emergency Medical Centre to provide highly specialized care to the patients in health-care institutions of the region.



Associate professor T.O Palamar carries out online consultation and EKG review

To bring the specialized medical care closer to the population of the region, staff of the Internal Medicine Clinic №3 and residents of the Nephrology Department carry out consultative visits to the health care institutions of the region every month.



Dr I. B. Levytskyi performs 2D echocardiogram

Another subdivision of Internal Medicine Clinic №3 is the Pulmonary Care Department headed by L. F. Shvedova, a pulmonologist holding the highest qualification category. Each year more than a thousand patients receive consultations and treatment in the Pulmonary Care Department.

Head of the Pulmonary Care Department L. F. Shvedova together with head of TSMU Department Clinic of Internal Medicine №3 Professor L. P. Martyniuk, and supervisor of the department, associate professor L.P. Bodnar deliver modern level of diagnostic and treatment processes in the Pulmonary Care Department.



Head of Pulmonary Care Department L. F. Shvedova reviews x-ray images

In addition to serving as a specialized treatment and diagnostic unit, the Department is a methodological and consultative centre for patients with bronchial, pulmonary and allergic pathologies for the entire region. Therefore, the main objectives of the Department are: providing specialized pulmonary and allergy aid to the population of the region; organizing work in health care institutions of the region to implement protocols and treatment standards for patients with pulmonary pathology; and introduction of new diagnostic and pulmonary techniques, recommended by the leading national and international pulmonologists into the Primary Care units of the region.



Assistant professor I. H. Yakubshyna carries out clinical rounds

The largest proportion of the patients (80%) seen in the Department are those suffering from bronchial asthma, chronic obstructive pulmonary disease (COPD), and pneumonia. These diseases require tertiary level of medical care. Treatment and diagnosis of pulmonary and allergic diseases are carried out in accordance with the protocols and standards of treatment approved by the Ministry of Health of Ukraine, and recommendations of the European Association of Pulmonologists and Thoracic Surgeons.



Nebulizer therapy

The following instrumental and laboratory are used to ascertain and verify diagnosis: computed tomography scans of the lungs, nuclear magnetic resonance (NMR), ultrasound diagnostics of pleural cavities, digital fluorography of the lungs, fibrobronchoscopy and the study of biopsy materials, spirometry; immunological studies: cryoglobulins detection, cold antibodies titre, defining the IgE levels specific to different allergens, agglomeration reactions, and detection of autoimmune markers.

To treat patients with bronchial asthma and COPD the Department has introduced nebulizer therapy and oxygen therapy using oxygen concentrator located in the patient's room. In addition, the Department is equipped with ecosystem HYL A, which allows creating the most optimal environment in the ward and significantly reduces the concentration of household allergens, a requirement for patients with atopic asthma and allergic bronchitis. The patients with pathology of the lungs receive continuous monitoring of their blood oxygenation using pulse oximetry.

DEPARTMENT OF EMERGENCY AND URGENT MEDICAL CARE

Department of Emergency and Urgent Medical Care was established Ternopil Univeristy Hospital in May 2012. Its head, professor Mykola Shved is holds an honorary title of Merited professional of Science and Technology of Ukraine. Dr. Shved's main research interests are urgent states, cardiology, nephrology, and endocrinology.



Head of the Department of Emergency and Urgent Medical Care, professor Mykola Shved, Merited Professional of Science and Technology of Ukraine

In 2012, the staff of the department has developed and approved in the CMC of Ministry of Health of Ukraine a representative curriculum for the discipline Emergency Medical Care. They have also produced 10 methodological works and prepared more than 12 thousand control test questions for students. The department teaches 4th and 6th year Faculty of Medicine students, 5th year students Faculty of Dentistry, as well as interns, professional development and nurse students. In 2013 staff of the department prepared and published in the Ukrmedknyha publishing house a textbook Fundamentals of Internal Medicine, which presents protocols and algorithms of urgent and emergency medical aid, and in 2015 a textbook Emergency Medical Care, which is now recommended for use in other Ukrainian medical schools.

In 2015, the Department has created a training centre outfitted with teaching aids allowing TSMU students perfect their knowledge of cardiopulmonary resuscitation, endotracheal intubation, assessment of cardiac rhythm, and defibrillation according to the latest international protocols of emergency medicine.



Head of the Centre of Internal Medicine I. M. Herasymets, professor M.I. Shved, and head of the Cardiology Department N.M. Vivchar discuss a clinical case

Department staff, together with the specialists from TSMU Faculty of Postgraduate Education have developed and introduced in the curriculum 18 updated emergency medicine protocols, including the elements of ITLS system (International Trauma Life Support) for emergency medical care. New

approaches for emergency and urgent medical care in mass casualty situations were implemented in the teaching process, in particular the standards of ALS (Advanced Life Support - skilled resuscitation measures) of the European Resuscitation Council. Associate Professor L. P. Martyniuk and Associate Professor R.M. Liakhovych took a course of ALS in Krakow and received certificates of the Council.



Associate professor O.L. Sydorenko performs cardiac stress test

Areas of research of the department's staff are cardiology, endocrinology, rheumatology and nephrology. In particular, researchers of the Department explore the issues of arterial hypertension, ischemic heart disease and myocardial infarction, osteoporosis and diabetes mellitus. In 2013-2016 department staff worked on an integrated interdepartmental research project on the problems of comorbidity in internal medicine.



Professor M.I. Shved performs clinical rounds

Medical facilities of department include intensive care unit of the Cardiology Department (9 beds), Cardiology Department (15 beds), Endocrinology Department (50 beds) and Haemodialysis Department (16 HD units) of Ternopil University Hospital, and 2 posts of Ternopil EMC. Six employees of the Department hold the highest qualification medical category and three employees – qualification of the first level. To ensure effective diagnosis and treatment of renal diseases, cardiovascular diseases and diseases of the respiratory system, department staff introduced such approaches as the daily monitoring of heart rate and blood pressure, tests with quantified physical activity, transesophageal echoscopy, and algorithms of intensive treatment of nephrotic syndrome (pulse therapy, plasmapheresis, haemodiafiltration). They also developed algorithms for diagnosis and treatment of heart rhythm and conduction disorders and other acute cardiological conditions: temporary and permanent electrocardiostimulation, cardiac stress test, echocardiography in 2-dimensional mode and via esophageal EchoCS.



Associate professor O.B. Susla demonstrates the use of haemodialysis equipment

Department staff offers online consultations to the primary health care clinics in villages Zarubyntsi, Hnylytsi, Hovyliv, Uvysla and Kokoshyntsi. To bring the specialized medical care closer to the population, staff of the department carries out consultative visits to the health care institutions and clinics of Ternopil region.

CLINIC OF IMMUNOLOGY, ALLERGY AND GENERAL PATIENT CARE



Head of the Clinic of Immunology, Allergy, and General Patient Care, Professor I. Hospodarskyi

Professors of TSMU Department of Clinical Immunology, Allergy, and General Patient Care see patients admitted to the Hospital's departments of Gastroenterology (professor I. Hospodarskyi) and Hematology (associate professor B. Lokai). They follow-up with patients in the Gastroenterology, Hematology, Pulmonology, Endocrinology and Vascular Surgery Departments (Associate professors N. Reha, V. Horodetskyi, O. Zarudna, O. Usynska, assistant professors L. Mazur, S. Konovalenko, and K. Volynets).

Department research is focused on several subjects. Research into immunopathogenesis of the extrahepatic manifestations in chronic hepatitis B and C resulted in doctoral dissertation of I. Hospodarskyi, as well as guidelines for medical care delivery to the patients with mixed cryoglobulinemia, approved by Ministry of Health of Ukraine; a number of methodological instructions, clinical bulletins, 5 patents, and more than 50 journal papers. The study of immunotropic effects of intravenous monoclonal antibodies and their clinical trials resulted in recommendations on clinical use of the medication for in Ternopil region and Ukraine and in pre-defense thesis. Other topics include innovative research of the new types of specific allergy therapy, studies of the efficiency and immune effects of new interferons, non-specific and specific intravenous immunoglobulins, etc.



Head of the Gastroenterology Department V. Kulish reviews an irrigography image

Research results were presented at numerous international meetings in Ukraine and abroad (Warsaw, Prague, Paris Berlin, Moscow, St. Petersburg, Belgrade, Budapest, and others).

During 2010 - 2015, department staff organized four international conferences *Immunopathology of Respiratory Diseases*, which drew participants from Ukraine, Poland, Belarus, Russia, the USA and Bulgaria; as well as 6 regional and more than 20 clinical and pathanatomy meetings.



Clinical rounds in the Gastroenterology Department

Over the last 3 years University immunologists have taken part in 6 international multicenter clinical trials in clinical immunology and allergy, 2 of them jointly with the Surgery Department and 1 with the Department of Otorhinolaryngology. These studies were performed together with the doctors of the University Hospital, who in most cases served as the coordinators and principal investigators.



Prof. I. Hospodarskyi leads clinical discussion

Haematology Department was created in then Regional Clinical Hospital in the 1960s, and has spurred the development of haematology as a clinical and research area in Ternopil.

Out of 70 beds of the Clinic, 35 are for gastroenterology patients, 30 for haematology, and 5 for immunology patients. The clinic staff provides highly skilled specialized care to gastroenterology, haematology and immunology patients.

Dr. V. Kulish, chief consulting gastroenterologist of Ternopil Regional State Administration Department of Health and a doctor holding the highest qualification category, heads the Gastroenterology Department.



Digital intragastric pH monitoring

Clinical work in the department is focused on the treatment of patients with chronic pancreatitis and diseases of the hepatobiliary area, including patients with chronic viral and autoimmune hepatitis. The main functions of the Unit are the introduction of modern methods of diagnostics, treatment and prevention of diseases of the digestive system; professional development of gastroenterology doctors and nursing staff from other regional healthcare institutions; analysis of the incidence of digestive organs diseases, short-term disability, permanent disability and mortality; and development of effective means for their decrease and prevention. Medical staff of the department includes professors I. Hospodarskyi and V. Vasyliuk, assistant professors M. Havryliuk, I. Smachylo, O. Usynska, resident physicians holding the highest qualification category T. Ovechkina and L. Nehoda, as well as clinical residents of Ternopil State Medical University.

The Gastroenterology Department includes two regional centers: 1. The Regional Center of Gastroenterology and Hepatology (headed by Prof. I. Hospodarskyi). The Center has 35 beds of the Gastroenterology Department (treating gastroenterology patients) and an outpatient clinical gastroenterologist's office. 2. The Regional Center of Clinical Immunology and Allergy (headed by Prof. I. Hospodarskyi). The Center has 5 beds of the Gastroenterology Department (treating patients with immune system diseases), 5 beds of the Pulmonology Department (treating allergy patients), an outpatient clinical immunologist/allergist office and an immunology laboratory.

The Department recently implemented a number of new diagnostic techniques. It developed and tested a method cryoglobulinemia types differentiation; verification of 29 antigens and virus genetic material in cryoprecipitates; definition of populations and subpopulations of lymphocytes with the help of monoclonal antibodies; and intragastric pH monitoring.



Patient with chronic hepatitis C receives pegylated interferon treatment

The Department also introduced new treatment approaches. Its specialists proposed and tested a combination of pegylated interferons and selective thymomimetics to treat chronic viral hepatitis; and the use of intravenous immunoglobulins to treat viral pneumonia and autoimmune syndromes and diseases. They also developed the use of immunotherapy drugs in patients with antiviral drug resistant hepatitis. A pioneering treatment for Ternopil region was the use of intravenous monoclonal antibodies for autoimmune diseases. These diagnostic and treatment techniques developed by the Clinic's staff had received a number of patents.

Dr. H. Kmita, regional consulting haematologist of Ternopil Regional State Administration Department of Health and a doctor holding the highest qualification category supervises the Haematology Department. Chief Physician of the Department is associate professor B. Lokai. Haematology Department medical staff includes Drs. L. Kramar and R. Vybyran, holding, respectively, the highest and first qualification categories. The main function of the Department is to provide highly qualified counseling, diagnostic and specialized medical assistance to the patients with the diseases of the blood system.



Clinical case analysis in the Haematology Department

In 2014, 842 patients were treated in the Department, 231 of them newly diagnosed. Patients were treated for the following ailments: acute myeloid lymphoblastic leukemia; chronic myeloid and lymphoid leukemia; multiple myeloma; myelodysplastic syndrome; idiopathic myelofibrosis; true polycythemia; essential thrombocythemia; acute and chronic immune thrombocytopenic purpura; moderate to severe anemia of different genesis; haemophilia A and B; and symptomatic erythrocytosis, thrombocytosis, thrombocytopenia, hemostasis disorders.



Head of the hematological unit H. Kmita reviews a myelogram

Staff of the Department has developed close cooperation with the leading research and clinical laboratories of Ukraine, allowing them to conduct cytogenetic, molecular genetic research and phenotyping of immune and bone marrow cells in order to verify the diagnosis and improve the

quality of treatment. They have developed improved treatment protocols for polychemotherapy of blood cancers in accordance with the standards approved by the Ministry of Health.

Clinic personnel is involved in an ongoing study of changes in bone mineral density patients with chronic leukemia using two-photon densitometer LUNAR DPX-A. In 2007-2011, the clinic staff took part in the Ukrainian-Dutch project supported through the MATRA program Support and Improvement of Community-Based Care for the Elderly. In addition to medical professionals, the project involved authorities, public, Dutch experts and the media.

The project included a series of interconnected steps, namely: caring for elderly in risk groups and in need of assistance; introduction of family medicine with emphasis on the work of nurses; cooperation and coordination of the efforts of various institutions to ensure continuous care. Ternopil State Medical University Institute of Nursing served as coordinator of the project in Ukraine.



Attending physician assoc. prof. B. Lokai performs sternal puncture

In recent years, profs. I. Hospodarskyi and Y. Slyvka led five grant-funded research projects carried out in the Clinic. Today, its staff is involved in four international clinical trials. The main subjects of research are immunopathology of chronic viral hepatitis and other infectious diseases; immunopathology of reactive and rheumatoid arthritis and other autoimmune diseases; allergic diseases and bronchial asthma.



Clinical rounds conducted by attending and resident physicians of the Haematology Department

Together with TSMU Department of Propaedeutics of Internal Medicine, Clinic staff organized three international conferences Immunopathology of Respiratory Diseases. The forums attracted scientists from Poland, Russia, Belarus and the USA (experts in hypoxia from the National Aerospace Agency). The conferences resulted in an international grant project on epidemiology of bronchial asthma (Ukraine-Poland-Belarus-Canada).



Students and clinical residents from different countries train at the Clinic

The clinic is a training center for domestic and international students and interns enrolled at TSMU Faculty of Medicine and Institute of Nursing. All lecturers of the Clinic speak foreign languages and are certified to teach in English. Prospective areas of research and clinical work include diagnosing diseases using immunophenotyping of peripheral blood and bone marrow cells, cytogenetic and molecular genetic research methods; introduction of high-dose chemotherapy, auto- and allotransplantation of bone marrow; study of markers of the immune response to pegylated interferons and intravenous monoclonal antibodies. The Clinic develops its cooperation ties with leading world Immunology, Gastroenterology and Hematology Centers to train its doctors, master and introduce new diagnostic and treatment techniques.

CLINIC OF FUNCTIONAL AND LABORATORY DIAGNOSTICS



Head of the Functional Diagnostics Center associate professor M. Marushchak, MD.

Clinic of Functional Diagnostics and Clinical Pathophysiology, established on June 7, 2012, merged Functional Diagnostics Unit of Ternopil University Hospital and Department of Functional Diagnostics and Clinical Pathophysiology. Associate professor M. Marushchak oversees the Clinic.

The function of the Clinic is to introduce modern methods of functional diagnostics into the diagnostic and medical process and to implement methods of deep, comprehensive diagnostic exploration. The Multidisciplinary Unit of the Clinic owns modern, highly informative imported and domestic medical equipment as specified by Regulations on Functional Diagnostics Service in Ukraine, and by the European Society of Cardiologists, the European Respiratory Society and the Ukrainian Association of Clinical Neurophysiologists.

Staff of the Clinic carries out examination of the cardiovascular, nervous, respiratory and musculoskeletal systems. Currently, they offer electrocardiography, Holter ECG monitoring, daily monitoring of blood pressure, electroencephalography, densitometry and tests of external respiratory function.



Dr. S. Dzyha demonstrates taking an ECG

Modern electrocardiographic system ECG Pro (Imesc, Ukraine) is used to record heart electrical activity, detecting various disorders of its rhythm and conduction, presence of ischemic changes, and daily variability of blood pressure.

Tests of external respiration function are performed on digital spirometric equipment Spirolab 3 (MIR, Italy), which allows to estimate restrictive and obstructive types of external respiratory disorders; tests with bronchial spasmolytics give an opportunity to detect dynamic compression of the airways.



Electroencephalogram registration

Computer encephalograph System Plus Evolution (Micromed, Italy) is used to record brain cells biopotentials reflecting functional activity of the brain.

Staff of the Clinic has developed working ties with diagnosticians of Kyiv Heart Center and the Association of Cardiologists of Ukraine. Together with the personnel of the Functional Diagnostics Unit, lecturers of the Department take part in clinical trainings, scientific seminars and workshops.

PARACLINICAL DEPARTMENTS

Paraclinical departments work together with all the clinics of Ternopil University Hospital to organize and carry out medical and diagnostic interventions.

Functional Diagnostics Department. The main task of the department is to provide highly skilled and specialized functional diagnostic tests with the emphasis on cardiovascular (electrocardiography, rheography, stress test) and respiratory (pneumotachography, spirometry) systems.



Head nurse Z. R. Zombra records EKG

These methods allow to carry out early diagnosis of heart pathology, in particular disruptions of its metabolism and rhythm, acute and chronic coronary insufficiency. Evaluation of dynamic changes in the indicators of functional values allows reliably determining the efficiency of drug treatment, general state of the patient, the degree of blood flow insufficiency and ventricular damage.

Functional diagnostics Department of the university hospital has modern medical equipment, including diagnostic computer system Cardio-plus and digital rheography system. Quantitative indicators of work efficiency in the department are on par with similar units in regional hospitals of Ukraine. Throughout 2010, department staff carried out almost 25 thousand functional tests. Future development of the department will involve improvement of options for functional diagnostics of the bronchial and pulmonary systems.

Another timely development is the implementation in hospital work methods such as rheoencephalography and digital optical capillaroscopy to detect early damage of microcirculation in patients with vascular, endocrine, cardio, and neurological disorders.



Pneumotachography test

In close cooperation with other hospital departments and TSMU researchers, department staff carries out diagnostic studies, development and discussion of difficult clinical cases. They use results of these studies in teaching, workshops, and conference presentations. Functional diagnostics department is used for training and professional development of doctors and nurses of district and municipal hospitals in the region.



Nurse M. H. Novosad performs stress test

Radiology Department. The main task of the department is optimization of radiation exposure on the patients and radiology staff in the treatment and prevention medical facilities of the region. This objective is achieved through control of adherence to the radiation safety standards, control of the workplace exposure doses and of collective effective doses, and use of appropriate radiation protection equipment.

Radiologists and engineers of the department control the implementation of the 2007-2017 Program of protection of Ternopil region population from the effects of ionizing radiation.

Electric and Manual Therapy Department. Ternopil University Hospital offers electric and manual therapy to the patients. It also provides organizational, methodological, and advisory assistance to other medical institutions in the region.

Staff of the department include doctors holding the highest and first qualification categories, delivering specialized treatments to the general care and surgery patients. They perform electrical, laser and magnet treatment procedures. Department staff takes part in research conferences, seminars and meetings. They publish papers and conference proceedings in specialized journals and general media.



Measuring ionizing radiation

Staff of the department includes 15 nurses and 11 junior nurses. Each year they perform 33 to 34 thousand procedures such as:

- laser therapy (magnetic laser therapy and infrared laser);
- low-frequency electrotherapy (galvanization, diadynamic therapy, electrostimulation);
- high-frequency electrotherapy (induction therapy, darsonvalization, UHF therapy, centi- and decimetre-wave therapy, ultrasound therapy);
- inhalation procedures, including ultrasound and steam inhalation, singlet-oxygen therapy;
- simulated microclimate room (halotherapy);

- massage procedures, which include classic manual and mechanical massage using massage chairs and relaxation heated tables.

Mud therapy room is used for ozokerite and paraffin treatments.



Head of Electric and Manual Therapy Department N. Y. Bryksa

New treatment methods are constantly being introduced, including:

- singlet-oxygen therapy for ischemic heart disease and diabetes;
- electrophoresis with Poltava bischofite brine to treat spine disorders;
- inhalation with glutargin solution to treat patients with arterial hypertension.

Electric and Manual Therapy Department works together with TSMU Department of Physiotherapy, Medical Rehabilitation and Sports Medicine (head of the department prof. I. R. Mysula). They also closely collaborate with physiotherapy department of Zhytomyr regional clinical hospital. The teams exchange quarterly data reports and indicators.



UV therapy procedure

Future directions of department work involve using its hydrotherapy facility at full capacity. The facility is equipped with showers and baths, hydromassage rooms, circular shower massage, underwater stretching gear and Charcot (high-pressure) shower massage device.



Massage therapy

Physical Therapy Department. The main task of the department is providing early stage physical rehabilitation of general medicine and surgery patients in order to prevent emergence of complications, restore functional capabilities of the body and prevent long-term disability. Each year PT Department delivers treatment and rehabilitation services to 9500-10400 patients. Medical staff of the department utilizes modern techniques of medical physical therapy. Since June 2003 the Department is a member of the National association of sports medicine and physical therapy.

Rehabilitation process uses procedures of medical, corrective and breathing (sound, drainage, force) exercises, prescribed walking, training sets. With the patients suffering from musculoskeletal diseases, the staff uses the newest methods of passive, passive-active and active stretching of the limbs, and utilizes appropriate training machines.

To accelerate medical and functional recovery of the patients, the staff has introduced approaches such as formation of isometric tension elements (for hypertension disease), cyclic scaling of physical load (diabetes mellitus), and postisometric relaxation using Yevmenov apparatus.



Head of the Physical Therapy Department, N.P. Bobeliak holds the highest qualification category

Using methodological recommendations of Ternopil State Medical University, Ternopil State Regional Administration Department of Health, and Ternopil University Hospital from January 31, 2011 “Rehabilitation of the patients with myocardial infarction”, Department of Physical Therapy introduced a system of rehabilitation for the patients that had suffered a heart attack. The system is

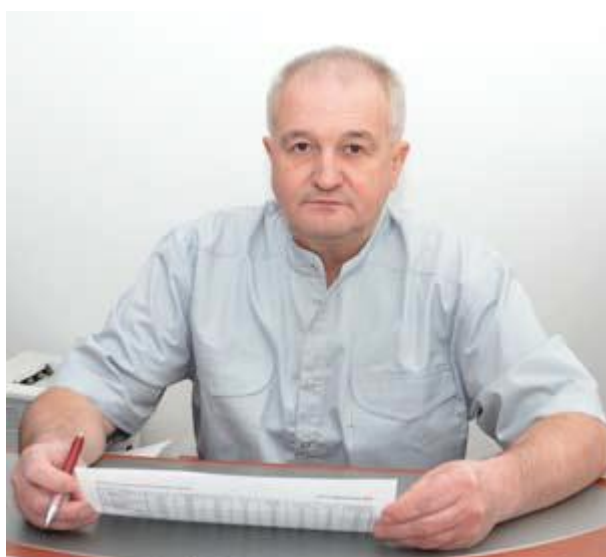
being implemented at the Cardiology Department, rehabilitation centers of local cardiology sanatoriums, and outpatient clinics close to the patients' place of residence. Plans for development of the Department include implementation of the complex of early stage physical therapy for the patients with cranial and brain injuries.



Nurse O.P. Nahaienko supervises joint stretching exercises

SURGERY CENTRE

Since 2001, a deputy chief physician for surgical work V.V .Zaporozhets heads the surgical unit of Ternopil University Hospital. Dr. Zaporozhets is an experienced surgeon who has built a career starting as an urgent surgeon, then clinical resident, to the head of a district surgical department. He has studied organization management and made important contribution to the development of new techniques of diagnosis and treatment the process. Under the management of Dr. Zaporozhets the department has achieved good results in the minimally invasive techniques of abdominal and thoracic surgeries, otorhinolaryngology and urology, new approaches to the treatment eye and orthopaedic disorders, introduction of protocols and standards for diagnosis and treatment of surgery patients.



Head of the surgery centre V.V .Zaporozhets holds the highest qualification category and is a deputy chief physician for surgical work

Surgery centre of Ternopil university hospital delivers highly specialized and highly skilled inpatient and surgical care to the population of the region. It also provides methodological

assistance to the medical institutions of the region and serves as a study centre for Ternopil State Medical University students as well as doctors and nurses taking continuous education courses. The surgery centre includes Clinic of Surgery № 1, Clinic of Surgery, Anaesthesiology and Resuscitation № 2, Clinic of general and Minimally Invasive Surgery, Clinic of Otorhinolaryngology, Ophthalmology and Neurosurgery, and Clinic of Dental Surgery. Altogether, there are 11 surgical facilities with a total capacity of 365 beds, and 9 paraclinical departments furnished with applicable equipment and machines.

Surgery Centre has launched specialized units for eye microsurgery, endoprosthesis, and minimally invasive techniques.

Each year the Centre delivers inpatient care to more than eleven thousand patients, carry out 6 to 6.5 thousand surgical procedures, and introduce 45 to 50 new diagnostic and treatment methods. The centre widely uses these up-to-date medical approaches: plasmapheresis, peritoneal dialysis, laparoscopic diagnostics, arthroscopy, hip joint endoprosthesis, eye microsurgery, fitting and implantation of artificial optical lenses for cataracts treatment, microsurgical intervention for spine disorders, a range of maxillofacial operations, endoscopic surgeries for prostate adenoma, removal the urinary tract concretions, reconstructive ENT surgeries and vascular surgeries.

Delivery of specialized medical care in the Centre is made possible thanks to its strong medical team, employees of Ternopil University Hospital and Ternopil State Medical University.

L. Y. KOVALCHUK CLINIC OF SURGERY AND UROLOGY № 1

Clinic of Surgery № 1 delivers specialized scheduled and urgent, proctology and thoracic surgical care to the population of the region.

Theoretical and practical research findings developed by the Clinic staff have been adopted by the surgeons not only in Ternopil, but also throughout Ukraine. The Clinic now has a team of highly skilled surgeons. One of the founders the clinic was prof. Y. T. Komorovskyi, DSc, who managed it from 1965 to 1987.

From 1987 to 2010 head of the Clinic of Surgery № 1 was Ternopil State Medical University rector prof. L. Y. Kovalchuk, DSc. Among his many titles was the Honorary Professional of Scientist and Technology of Ukraine, Corresponding member of the National Academy of Medical Sciences. Dr. Kovalchuk was the first in Ukraine to study the blood flow volume in oesophagus, stomach and duodenum. He has developed new safer techniques for surgical procedures on the stomach, oesophagus, gallbladder, and bile ducts. These approaches are now widely used by the surgeons of Ukraine and Ternopil region. Dr. Kovalchuk has trained a cohort of scientists and practicing surgeons. Eight of them have achieved the degree of Doctor of Medical Sciences, and 27 Candidate of Medical Sciences.



Head of the Clinic of Surgery № 1 professor A.D. Bedeniuk, DSc

Prof. Kovalchuk's student A. D. Bedeniuk, DSc, became the head of Clinic of Surgery № 1 in 2011.

Diagnostic and treatment services in the Clinics are delivered by 3 professors, 4 assistant professors, 3 Candidates of Medical Sciences, 7 surgeons holding the highest qualification category and 2 – first qualification category. They continuously introduce new methods of surgical interventions on the organs of chest, abdominal cavity, vessels, and endocrine system.



Surgical procedure

Clinic of Surgery № 1 has 70 beds (45 for surgical patients with proctology and purulent illnesses and 25 for thoracic patients). Medical staff of the Clinic each year perform over 1400 complex surgical interventions on the stomach, bile ducts, liver, pancreas, intestines, thyroid, and organs of the thoracic cavity. Surgical load in 2010 was 75.5%, which is much larger indicator than in previous years, with postoperative mortality of 0.2%.

The Clinic serves as a training centre for doctoral and master's students, clinical residents and interns.

Medical staff of the Thoracic Department has accumulated significant experience in treating the patients with diseases of lungs, pleural cavity, tumours and cysts of the lungs and mediastinum, diaphragm dysfunctions (hernia, paralysis), pathology of the oesophagus, and chest trauma.

The University Hospitals has equipment and expertise allowing to perform surgeries even if the patients suffer from serious concomitant diseases.

Among the scheduled surgical procedures, a significant proportion is pneumonectomies, pleurectomies and lobectomies. For 2010, the number of operations on the oesophagus, diaphragm and mediastinum has increased by 2.5 times.



Case discussion in the dressing room

Close cooperation the Clinic of Minimally Invasive Surgery allowed medical staff of Department to use minimally invasive methods in routine diagnostic and treatment of the bullous lung disease and spontaneous pneumothorax, as well as for removal of diaphragm hernias. Specialists of the

Thoracic Department provide round the clock urgent care to the patients of the region. The majority of the urgent surgical interventions involve penetrating wounds and closed trauma of the chest.



Associate professor V. V. Tverdokhlib performs transurethral resection of benign prostate hyperplasia

All structural units of the Hospital that perform surgeries closely work with its operating facility. Every year close to 6,000 surgical interventions are being performed on its 12 operating tables. Staff of the facility includes 15 nurses and 14 junior nurses.



Clinical rounds in Clinic of Surgery № 1

The clinic serves as a study centre for the 4th to 6th year medical students studying abdominal, thoracic, vascular, and endocrine surgery. Additionally, the students use clinic facilities to run surgery seminars. Clinic professors have developed unique work programs, lecture courses, and methodology manuals. They constantly work on strengthening clinic's teaching means, using the new informational technology in the training process.

The clinic has all the conditions for practical classes by the bedside, in the operating and dressing rooms, and for theoretical classes. The instructors have all required visual teaching aids, such as thematic illustrations and schematics of the surgeries, X-rays, etc. The students can test their knowledge using test questions, developed by the staff of the Clinic.

Medical staff of the Clinic constantly works on their professional development, attending workshops, conferences and seminars not only in Ukraine, but also abroad: at the University Hospital of South Carolina Upstate (USA), Charles University (Czech Republic) and Wroclaw University (Poland). They implement the new experience the have gained in everyday work of the clinic and introducing new high tech approaches.



Head of the Thoracic Department
associate professor VV Maliovanyi examines the patient

In the past year, medical staff of the Clinic published 45 research papers, received 7 patents for inventions, presented their findings at 12 conferences and symposia. A group of professors of the Clinic has written and published in 2010 the textbook *Surgery*, edited by prof. L. Y. Kovalchuk. Each year the Clinic hosts a national meeting of the heads of medical school Departments of Surgery.



Head of the Surgical Department associate professor O. M. Husak performs anterior resection of the rectum

The clinic has developed new techniques to optimize preoperative preparation, intraoperative correction and postoperative treatment of ulcer. The staff carried out a study of bacterial spectrum in the content of abdominal cavity and postoperative wounds in patients with inflammatory complications after the surgery on the stomach and duodenum. New methods were developed to improve treatment outcomes and prevent complications such patients. Another study helped to determine manifestation stages and the main factors in development of ischemic reperfusion damage of the liver after biliary duct decompression in the patients suffering from obstructive jaundice. Researchers of the Clinic defined the link between the expressed reperfusion damage in the patients with varying bilirubinemia levels and duration of obstructive jaundice. They also studied impact of applied bandages on the trophic ulcers caused by varicose vein and post-thrombotic syndromes of the lower extremities.



Professor of the Surgery Clinic № 1 V. I. Maksymliuk performs subtotal resection of the stomach.

Launch of the university laboratory have expanded the opportunities for research work for TSMU and University hospital staff. Doctors affiliated with the Clinic of Surgery № 1 constantly work on implementing new techniques for diagnosis and treatment of their patients. In the near future, they plan to upgrade Clinic's equipment and facilities, in particular in the operating suite. This will allow increasing the number of surgical procedures and improving their quality. Close cooperation between TSMU faculty and University hospital medical staff ensures delivery of highly skilled surgical care to the population of Ternopil region.



Surgery in the Thoracic Department

CLINIC OF GENERAL AND MINIMALLY INVASIVE SURGERY

Founded on December 27, 2010, Clinic of General and Minimally Invasive Surgery includes Departments of Minimally Invasive Surgery, Urology, Orthopaedic Traumatology and Endoscopy of Ternopil University Hospital.

Highly qualified clinicians perform endoscopies, provide specialized surgical, gynaecological, urological, orthopaedic and trauma care to patients using innovative approaches.

Clinic staff includes one doctor of medical sciences, five associate professors, two assistant professors, 15 interns (including two candidates of medical sciences). Most of them hold the highest qualification category.



Head of the Department of General and Minimal Invasive Surgery prof. I. K. Venger, MD, DSc
The clinic has 110 beds. Fifteen of them are in the minimally invasive surgery centre, 45 are in the urological department and 50 are in the department of orthopaedics. Each year, the clinic treats over 3,000 patients, performs over 2,000 surgical procedures, conducts about 10,000 endocrine trials, 3,000 manipulations, and 1,500 cytomorphology studies.



Prof. O. L. Kovalchuk performs laparoscopic cholecystectomy
Department of Minimally Invasive Surgery provides high-quality treatment for more than 500 scheduled and emergency patients per year. Of these admissions, 450 are surgical procedures, bringing the total surgical load to 85%. The minimally invasive procedures are preformed for a number of disorders:



- Head of the Department of Minimally Invasive Surgery S. I. Duts
- laparoscopic abdominal surgery: gallstone disease, gallbladder polyposis, obstructive jaundice of benign genesis; acute and chronic pancreatitis; hernia of the oesophageal opening of the diaphragm; abdominal hernia; conjunctival peritoneal disease; acute and chronic appendicitis.

- laparoscopic gynaecology and hysteroscopy: benign neoplasms of the uterus and uterine appendages; tubal peritoneal infertility; uterine tubal ligation;
- minimally invasive urology: transurethral resection of the prostate for benign prostatic hyperplasia; loop removal of lower ureteric stones; transurethral bladder biopsy; transurethral resection of urinary bladder papillomas and prostate malignancy; urethral stone removal; resection of the bladder neck; prostate vaporization; endoscopic lithotripsy;



Assistant professor O. H. Netsiuk and intern Y. I. Butnytskyi carry out cannulation of the large duodenal papilla and retrograde pancreatic cholangiography

- arthroscopic orthopaedic surgery: repair of the meniscus, anterior and posterior cruciate ligaments; restorations of articular cartilage of the knee joint; treatment of deforming arthrosis; detection of intra-articular loose bodies; treatment of osteochondritis dissecans, habitual dislocation of patella, synovitis of unknown aetiology;
- endoscopy: pancreatic retrograde cholangiography (PRC); papillectomy; endoscopic stenting; polypectomy; removal of extraneous bodies; endoscopic haemostasis.



Head of the endoscopy department V. L. Butskin carries out endoscopic examination of the large intestine

The department staff performs endoscopic procedures, manipulations, and surgery: esophagogastroduodenoscopy, colon fibroscopy, laryngoscopy, fibroscopy; collecting diagnostic cytological material; therapeutic bronchial fibroscopy; polypectomy; removal of extraneous bodies; gastroenteric tube feeding; removal of papillomas, throat fold granulomas; use of endotracheal tube introducers for difficult intubations.

University Hospital endoscopy staff provides round-the clock inpatient and outpatient medical care and emergency surgical service.

Emergency endoscopy is performed in patients with bleeding. New techniques used to stop the bleeding (infiltration haemostasis, clapping, electrocoagulation) result in good outcomes of the surgical treatment of patients with peptic ulcer. Another technique being introduced is ERCP with papillon proctectomy.

The Orthopaedic Traumatology Department with 50 beds houses Regional centre of endoprosthesis and new orthopaedic and trauma techniques. The department performs 800 surgeries each year, with over 1200 patients receiving treatment.

The department employs three associate professors and six interns. In recent years, the staff introduced more than 30 new types of surgeries to treat bone fractures and their complications, including the following:

- blocking intramedullary osteosynthesis of diaphyseal fractures of long bones;
- plate osteosynthesis of internal and periarticular fractures with the use of state-of-the-art fixation and navigation systems;



Head of the Orthopaedic Traumatology department S. V. Harian

- plate osteosynthesis of uncomplicated fractures of the bones of pelvis and spine;
- endoprosthesis of the hip and knee joints.

The Urology department has 45 beds to provide specialized urology services to the population. The urology staff treats over 1,200 patients, and performs over 500 surgical procedures a year. The department employs four doctors and interns.



Assoc. prof. Y. S Smorschok performs arthroscopic menisectomy

In addition to urologic surgeries the department offers a wide range of minimally invasive endoscopic surgeries on the bladder and prostate gland: transurethral resection, transurethral bladder biopsy, loop removal of lower ureteric stones.

The medical staff introduced a technique of prostate adenomectomy with controlled haemostasis based on E.O. Stakhovsky's method.

Department doctors trained in leading clinics of Ukraine and Europe, such as at Institute of Clinical and Experimental Surgery in Kyiv, Marie Skłodowska Curie Oncology Centre in Warsaw, Taiko French Laparoscopic School in Moscow, and the Russian Academy of Postgraduate Education.

They co-authored the first Ukrainian monograph on Endo Surgery Laparoscopic Biliary Surgery and a multimedia CD-ROM Laparoscopic Surgery.



Total hip and knee replacement

The staff of Orthopaedic Traumatology department underwent theoretical and practical training at the best clinics of Ukraine and Europe (Munich, Vienna, Graz, Prague, Berlin, Davos, Warsaw, Budapest, and Zory).

The clinic staff published 32 papers in scientific journals, gave eight conference presentations, defended one thesis for the Degree of Doctor of Medical Sciences and received two copyright certificates for inventions.



Curator of Orthopaedic Traumatology department Assoc. prof. Y. O. Hrubar (second to the right) facilitates clinical case discussion

Among the department's clinical research interests are laparoscopic cholecystectomy in cirrhotic patients and prevention of complications after laparoscopic surgeries in the hepatobiliary area. Department is also focused on approaches to prevent complications during endoscopic surgeries on the pelvic organs, the impact of adrenal glands in urological diseases, hyperplasia of the prostate and the effect of intoxication on its course.

Another research area is the use of modern systems of osteosynthesis and prevention of postoperative complications. In particular, medical staff employs supplementary test methods such as ultrasound of large joints damage, MRI diagnostics of musculoskeletal system disorders, and comprehensive laboratory diagnostics of osteoporosis. They have made significant advancements in the complex treatment of bone and skin injuries resulting from musculoskeletal trauma.



An on-going project explores the role of distant and local regulatory activity of the nitric oxide system in the process of bone tissue regeneration.



Head of the Urology department, doctor holding the highest qualification category V. Y. Khorosh

Fourth and fifth year students of TSMU faculty of Medicine and post-graduate interns train in the clinic. They take professional development courses on surgery, endoscopy, gynaecology, urology, orthopaedics and traumatology as well as a pre-certification cycle in the specialty Traumatology and Orthopaedics.

Plans for development of the clinic include installing a computer simulator for students to expand their skills in endoscopic procedures such as EGDS, colonoscopy, stopping gastrointestinal bleedings, RPCG, and endoscopic ultrasonography.

Planned new types of minimally invasive procedures include surgeries on the large intestine, urinary system, urinary disease treatment by extracorporeal lithotripsy, nephroscopy, arthroscopic surgeries on shoulder and ankle joints, and corrective pelvic osteotomy. The number of available limb reconstructive surgeries continues to increase.

The clinic has facilities and expertise to perform a wide range of interventions to treat surgical, gynaecological, urological, and orthopaedic patients.

CLINIC OF OTORHINOLARYNGOLOGY, OPHTHALMOLOGY AND NEUROSURGERY



Head of the clinic of Otorhinolaryngology,
Ophthalmology and Neurosurgery prof. O. I. Yashan MD, DSc

The clinic delivers highly specialized otorhinolaryngology, ophthalmology and neurosurgery services to the population of the region and Ukraine. On staff are 11 TSMU faculty (2 professors, 3 associate professors and 6 assistant professors) and 17 employees of Ternopil University Hospital, the majority of whom have the highest qualification category. Clinic staff introduces new, more effective methods of diagnosing and treating University Hospital patients and performs advanced surgical procedures on the head, neck and spine.



Prof. P.V. Kovalyk MD, DSc, examines the patient

The clinic encompasses three specialized units: otorhinolaryngology, ophthalmology and neurosurgery departments as well as separate ophthalmology trauma centre and Vision Correction centre. It has in total 130 beds, with 45 of them in the otorhinolaryngology unit, 30 in the neurosurgery unit, and 55 in the ophthalmology unit. Each year, the staff treats about 4,250 patients. Of those, about 1,200 patients are examined and treated in the otorhinolaryngology unit, 2,300 patients in the ophthalmology unit, and about 750 patients in the neurosurgery unit. The Vision Correction Centre consults over 1,000 patients with refractive eye disorders, manufactures more than 200 rigid contact lenses, and follows up over 14,000 patients.



Head of the Otorhinolaryngology Department
I.A. Havura performs diagnostic nasal endoscopy

Clinic staff performs more than 2,600 surgical procedures each year. 1,000 of these are performed on ear, nose and throat; 1,400 on the eye and its appendages; and 200 on the brain and spinal cord. The clinic has implemented a number of advanced diagnostic methods such as rigid nasal endoscopy, otomicroscopy, computer tomography, diagnosis of eye diseases using ophthalmic ultrasound imaging system, diagnosis of diseases of the optic nerve using Fosfen device, monitoring and measurement of intracranial pressure with implanted sensors. Every year, professors and doctors introduce 2 to 3 new methods of diagnosis and treatment.



Prof. O. I. Yashan performs facial nerve decompression micro-surgery

This ensures accurate identification of head and spine diseases, cuts patients' stay in hospital, and guarantees their quick rehabilitation and return to normal lifestyle.

A founder of the Clinic is prof. O.I. Yashan. He became one of the first in Ukraine to perform microscopic surgeries on patients with sclerosis and chronic otitis media. Prof. Yashan later used the otorhinolaryngology department to launch the Western Ukraine Ear Microsurgery Centre. Over the past 40 years, the Centre has treated more than 10,000 patients with illnesses such as chronic otitis media, otosclerosis, tumours and congenital hearing impairment. To the present day, there are only seven such centres in Ukraine offering ear microsurgery.



Associate professor, ophthalmologist T. A. Tabaliuk examines the patient

Clinic staff defended three doctoral and five candidate of sciences theses in the field of ear disorders. A number of new, more effective ear, nose and throat surgeries have been developed and put into practice.

The clinic is equipped with surgical microscopes and endoscopic equipment. Its main focus is ear microsurgery. Every year about 200 surgeries (tympanoplasty, stapedoplasty, and atticoantroostomy) are performed in patients from Ternopil, Lviv, Ivano Frankivsk, Rivne, Khmelnytsky, Chernivtsi and other regions of Ukraine. The range of surgeries is constantly expanding, while all of the types of tympanoplasty, stapedoplasty, and atticoantroostomy use modern methods and materials. In recent years, the clinic introduced cosmetic surgery on the ear, the inner ear surgery (closing fistulas using bone transplant) and facial nerve surgeries (decompression and suturing).

Among research interests of the clinic staff are aetiology, pathogenesis and treatment of acute and chronic sinusitis (assoc. prof. Y. M. Andreichyn, doctoral thesis), diseases of the larynx (assistant prof. A. P. Kovalyk), and development of sensorineural hearing loss under acute otitis (assistant prof. I.V. Horuzhyi).

The clinic performs about 350 endoscopic nasal surgeries per year; in recent years its staff defended one doctoral and candidate of sciences dissertations in the field of nose disorders. Among the newly introduced techniques is endoscopic dacryocystorhinostomy.

The Ophthalmology Department performs cataract phacoemulsification surgery using the Bausch & Lomb Millennium system and implantation of flexible intraocular lenses of all types. Glaucoma surgeries are performed at all stages of this disease, including cyclocoagulation of the ciliary body in refractory and secondary glaucoma using the Cryomax instrument. Clinic staff also performs cryotherapy of eyelid and conjunctiva lesions, cosmetic eyelid and corneal replacement surgery.



Head of the ophthalmology department
associate professor M.V. Turchyn performs glaucoma surgery

Department's inpatient services include conservative treatment for the diseases of the optic nerve, retina, vitreous body, dystrophic diseases of the anterior and posterior parts of the eye. Clinic staff performs subconjunctival, peribulbar, and sub-Tenon's injections.



Head of the ophthalmology department associate professor M.V. Turchyn performs the slit lamp exam

In 2010 the ophthalmology department was the first in Ukraine to introduce therapeutic penetrating keratoplasty to treat corneal inflammation. This innovative approach was incorporated as a part of associate professor M.V. Turchyn's doctoral thesis.

Neurosurgery department introduced 16 new types of surgical treatment addressing trauma, vascular and oncological illnesses of the nervous system. Among these techniques are microsurgery on the brain and spinal cord using surgical microscope and updated spine and peripheral nerve surgeries (associate professor P. S. Hudak).



Assistant professor P. S. Hudak gets ready for spinal cord herniation surgery

Among department's research interests are: neuro-oncology, nerve compression pain syndromes of the spine, neurotrauma and pathology of the cerebral vessels. Staff of the clinic is involved in the studies of immune processes in the palatine and lingual tonsils; physical and chemical changes of the ear fluid; problems associated with keratoconus; congenital pathology of the brain vessels (aneurysms and malformations), and their surgical treatment; and microsurgical trigeminal neuralgia treatment. The clinic of otorhinolaryngology, ophthalmology and neurosurgery serves as a study base for the 4th and 5th year students of the Faculties of Medicine and Dentistry, 2nd year students of the Institute of Nursing, as well as interns and doctors from the Faculty of Postgraduate education taking pre-certification courses.



Head of the department of Neurosurgery I. V. Zahriichuk

Clinic staff has introduced the One Day approach, bringing students in closer contact with the patients. This allows doctors-in-training to acquire specialised practical skills in the difficult fields of otorhinolaryngology, ophthalmology and neurosurgery. Promising new medical directions in the clinic include endoscopic procedures and plastic surgery of the nose and ears. Planned new procedures include the sinus, lattice labyrinth, and skull base surgery, and the use of laser for retinal photocoagulation.

CLINIC OF DENTAL SURGERY

Clinic of dental surgery is the only specialized unit in the region providing highly skilled, both planned and urgent care to the residents of Ternopil and the region suffering from maxillofacial and neck disorders. Staff of the clinic includes one professor, one assistant and two doctors holding the highest qualification category. The clinic has 30 beds, treats about 800 patients and performs 600 each year.



Head of the Clinic of Dental Surgery prof. Y. P. Nahirnyi, MD, DSc

Clinic staff develops and implements modern methods of treating injuries and inflammatory processes of the maxillofacial area. In recent years, they introduced various types of surgical treatments of fractured mandibles, and treatment of the injured bone to prevent purulent complications. They introduced new localized methods to improve wound healing. Clinic doctors are especially proficient in treatment of benign head and neck lesions. The staff regularly visits district hospitals, providing consultation services. Simultaneously, they deliver on-call and urgent medical care covering the entire region.

Main research focus of the clinic is correction of maxillofacial regenerative osteogenesis following trauma and postoperative defects. This research resulted in two defended dissertations for the degree of Doctor of Medical Sciences, and two ongoing projects towards the degree of Candidate of Medical Sciences.

Research in the clinic has clarified the features of regenerative osteogenesis and its correlation to the initial bone mineral density, changes of immune and endocrine systems, endogenous intoxication, the system of calcium phosphorus exchange and markers of bone metabolism in patients with mandibular fractures. This allowed to recommend a complex drug therapy to promote bone regeneration. Medical staff presented their findings at the regional and national meetings of maxillofacial surgeons.



Head of the Dentistry Department of O. I. Dzikh examines the oral cavity of the patient

Clinic staff published two study guides, 97 papers, received seven invention patents. Each year they take part in the national conference New Technologies in Dentistry.

The clinic is used for instruction in dental surgery to domestic and international students, and teaching Fundamentals of Dentistry course to the 5th year students of the Faculty of Medicine.



Dental surgeon I.O. Lypnytska performs tooth extraction

Future directions of clinic's work include improving methods of bone tissue regeneration following the injury using the correction of osteogenesis regulation systems, improvement of local blood flow, and localized treatment the bone injury site to prevent destructive impact of oral cavity flora.

Another important direction of clinical innovation is optimization of the complex treatment of purulent and inflammatory processes in the maxillofacial area and neck.

Outpatient Dental Surgery is a unit of the Clinic of Dental Surgery. It has a modern dental surgery office fully equipped to provide outpatient care services.



Practical lesson at the clinic of Dental Surgery

Surgery room of the Clinic has all required modern equipment to carry out all kinds of outpatient surgical procedures. Clinic staff constantly introduces new methods for treating patients, including the technique of removing third molars and filling out the cavity with osteoplastic material Kolapol KP3 LM. Follow up of these patients shows reduced incidence of inflammation in the postoperative period, and stronger reparative processes.



Assistant professor H.B. Kolodnytska reviews X-ray image

The clinic well equipped for the students to learn and develop practical skills. There are seminar rooms and a dental surgery room for practical classes.

Students are present for all dental surgeries performed in the clinic. They can either assist teachers or complete certain surgical procedures under the supervision of the instructors. Students are also involved in clinical case discussions and debriefing.