



PHI UNIVERSITY CLINIC OF CARDIOLOGY



Director: Dr. Zhan Zimbakov

Dr. Zhan Zimbakov was born on April 25, 1972 in Skopje, Republic of Macedonia. He finished Medical Faculty University "Ss Cyril and Maethodius", in Skopje, Republic of Macedonia, in 1996, with a speciality in internal medicine at the Medical Faculty, University "Ss Cyril and Maethodius", Republic of Macedonia, in 2003. Supspeciality in cardiology 2010, at the Medical Faculty, University "Ss Cyril and Maethodius". He was employed at the PHI University Clinic of Cardiology in 1998, and worked in the Intensive Coronary Care Unit, 2003-2012 Cath Lab-interventional Cardiology as an interventional cardiologist. 2012 he was employed in Special hospital for cardiosurgery "Filip Vtori" (Cath Lab) until his appointment as a director of the PHI University Clinic of Cardiology in February, 2018. Onboard training Salzburg-Austria, Bad Nauheim-Germany. CME Paris,

Rome, Barcelona, Munich. His special field of expertise, in addition to treatment of acutely ill cardiac patients, is interventional procedures coronary and peripheral interventions, transcatheter implantations of devices in structural heart disease, device therapy implantation, such as a pacemaker, an implantable cardioverter defibrillators. He speaks fluently two languages: Macedonian and English. He is an active member of several professional associations such as the Macedonian Society of Cardiology and the European Society of Cardiology, Macedonian Society of cardiothoracic surgery. He is the author or co-author of many scientific papers published in prestigious international and national journals.

The PHI University Clinic of Cardiology was established on December 29, 1974, by the Department of Cardiology constituted in 1972, as a part of the Internal Clinic. Later on it was named Institute of Cardiac Diseases, part of the former Clinical Center, and in 2008 it was renamed PHI University Clinic of Cardiology, as an independent unit in the Campus of the University Clinics Mother Theresa. In the immediate post-war period, in 1947, with the establishment of the Medical Faculty in Skopje and the Department of Internal Medicine, in the existing "District Hospital", an Internal Clinic was established, with Prof. Dr. Aleksandar Ignatovski as the core, further surrounded by young doctors-internists, Dr. Arsov, Dr. Tadzer, and Dr. Angelkovski. Prof. Dr. Dimitar Arsov and Prof. Dr. Radovan Percinkovski, who at the same time were its first directors in the period from 1974 to 1984, have a special merit for its organization.



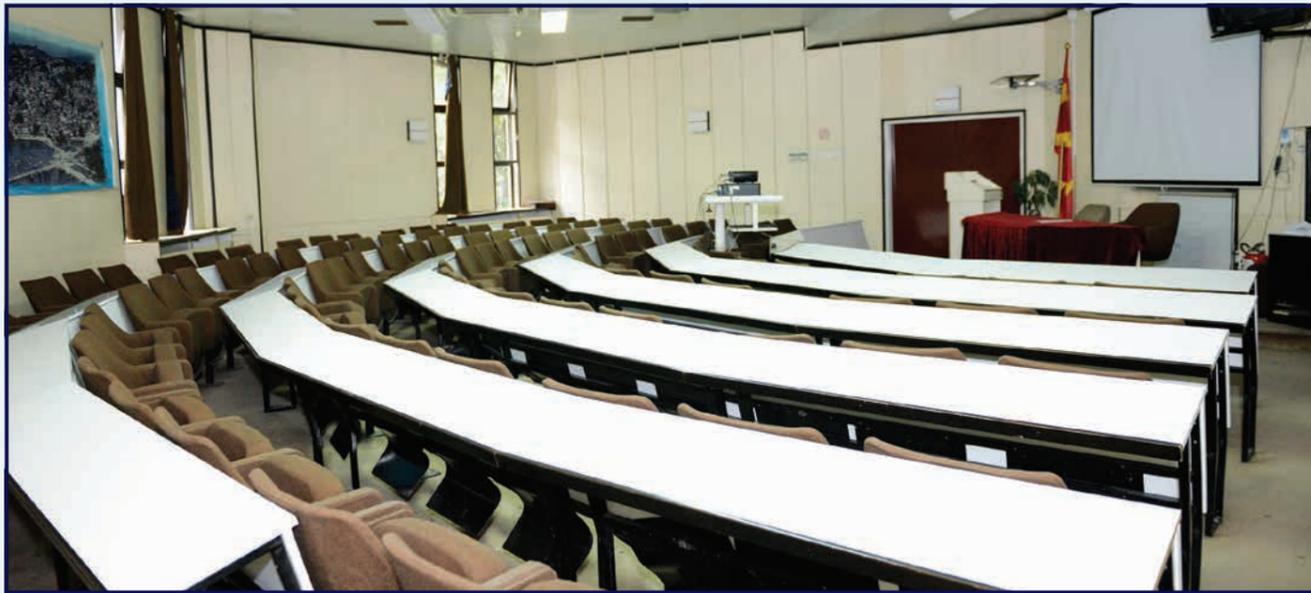
In 1985 the Clinic moved to its own facility and thus physically separated from the building of the Internal Clinics. The period after the separation was a period of rapid development, especially with regard to the application of modern knowledge in the field of cardiology, the continuous medical education of the employees, and the timely application of new noninvasive and invasive diagnostic and therapeutic procedures, which led to a significant increase in the activity and scope of work, following the modern world trend of increased incidence and prevalence of cardiovascular diseases, which are the leading pathologies in the world not only in terms of morbidity, but, what is more important, in terms of mortality from non-communicable diseases.



How did this process take place in the field of cardiology ?

At the time of the establishment of the Internal Clinic, cardiovascular pathology was dominated by valvular diseases - the congenital and acquired valvular heart diseases. However, modern life gradually changed the structure of the disease, and coronary artery disease took over the primacy, right behind the heart failure syndrome. In that early period, hospital mortality as a result of acute myocardial infarction reached up to 30%. This was a motive for the cardiologists to continuously learn and accept modern diagnostic and therapeutic procedures applied in the field of diagnosis and therapy of coronary artery disease. The first one was established by the ICCU-Intensive Coronary Care Unit, with 6 beds at the beginning, and later, in the new facility, as a modern unit with 18 beds organized and equipped in accordance with contemporary standards. It was organized in 1973, and it was a special merit of Prof. Dr. Lazar Srbnovski. It was the first of its kind in our country, which enabled the monitoring and treatment of vitally affected patients: intensive care, reanimation, cardiopulmonary resuscitation, setting up temporary and permanent heart electrostimulators, defibrillation and cardio version. A critical point that changed the course of treatment and outcome in patients with acute coronary syndrome was the introduction of revascularization therapy: pharmacological, with the introduction of fibrinolytic therapy for STEMI treatment, and the introduction of mechanical revascularization with primary percutaneous coronary intervention procedures in 1995 established by Prof. Dr. Borche Petrovski. At that time, and a long time after that, our Center was the leader in the region with a 24/7 service for PPCI procedures in STEMI patients. This gradually decreased in-hospital mortality as a result of acute coronary syndrome from the initial 30%, to 15-18% with the monitoring and care in ICCU, to 10-13% in the fibrinolytic era, and up to 3-5% nowadays. Doctors at the Clinic of Cardiology had a vision for an integrated internist and surgical treatment of cardiovascular diseases, renaming the Cardiology Clinic into an Institute of Cardiovascular Diseases, providing space for such an expansion, providing the formation and functioning of cardiac surgery within a single institution. Many world-renowned cardiac surgeons have supported this idea, but for a number of objective and subjective reasons, the idea to this day has remained unrealized. We do have a clinic of cardiosurgery that operates since 2015, as a completely separate institution under the same roof in the space that was provided by our clinic for that same purpose.





Organizational structure

- the Clinic operates through two integrated units: Hospital Department and Outpatient Clinic Department. Functional units of the Hospital Department are the following: intensive care unit (18 beds), and two ward units on two floors with around 120 hospital beds, with the annual occupancy of around 70-80%. The average hospitalisation rate in the ICCU is 8 patients (although some of them are ward transfers). On average 15-20 direct ward hospitalizations take place, but more than half are hospitalizations for elective percutaneous coronary interventions. The Outpatient Clinic Department consists of: emergency care unit (capacity of 7 beds); outpatient consultations offices (10 functioning on average on a daily basis), and non-invasive diagnostic laboratories. The average volume on a daily basis in this outpatient segment is 400 to 500 patients. Non-invasive laboratories:

ECG laboratory

- the electrocardiographic laboratory is the busiest laboratory, with a daily turnover of about 400-450 ECGs, which means that the annual number of static ECGs exceeds 70.000. At the same time, today's simple, affordable and cheap diagnostic method has not lost any of its diagnostic significance and still represents the basic tool in the hands of the cardiologists.

Laboratory for ergometric load

- Coronary stress test - the exercise stress test on a treadmill belt is one of the oldest diagnostic methods. It was introduced in 1976, starting with two devices (used donations). Several stress protocols are being applied depending on the diagnostic objective: the standard Bruce Protocol and the modified Bruce protocol. Today the average annual number of patients undergoing this study is 7.000, on two fully computerized machines. The laboratory was managed by the recently deceased Prof. Dr. Jelka Davcheva.



Laboratory for echocardiography

- founded in 1978 with a single M-mode echocardiographic device. During the following period this laboratory was managed by Prof. Dr. Elizabeta Srbinovska-Kostovska, and Prof. Dr. Ljubica Georgievska-Ismail today. Several different modalities are routinely performed: standard 2D color Doppler transthoracic echocardiography, transoesophageal echocardiography, stress echocardiography, contrast echocardiography, strain echocardiography. In addition to the electrocardiographic laboratory, this is one of the most frequently visited laboratories in the clinic with an annual average of over 12.000 investigations.



Laboratory for clinical nuclear cardiology

- it serves as an example of a successful long-term interinstitutional cooperation between the Clinic of Cardiology and the Institute of Pathophysiology and Nuclear Medicine, with a beginner in the role of Academic Prof. Dr. Isak Tadzer. Key years were: 1981 - introduction of myocardial scintigraphy with Tc 99 m pyrophosphate for the detection of myocardial sequelae, 1996 - introduction of planar myocardial perfusion scintigraphy for the detection of KAB by application of TI 201, 1998 - introduction of SPETT MPI in the diagnosis and prognosis of KAB, a method that, during this twenty-year period, has helped track more than 9.000 patients. For this development merits go to Prof. Dr. Karanfilski, Prof. Dr. Daniela Pop Gjorcheva (from the Institute for Pathophysiology and Nuclear Medicine, and scientific adviser Dr. Jelena Maksimovic-Pavlovic and Assoc. Prof. Dr. Marija Vavlukis from our institution).

Vascular laboratory

- it started to operate on 09.05.1982, with one apparatus for vascular evaluation (Medasonic with Doppler D10, photoplethysmography and staging plethysmography). In 1997 the laboratory was enriched with a Doppler color spectrum analyzer, and in 2000, Echo Duplex sonography of the peripheral arteries and veins was introduced. Nowadays the volume of this laboratory is about 12.000 patients. Special merits for the development of this laboratory go to Prof. Dr. Biljana Sidovska, Prof. Dr. Slavcho Toshev.

Laboratory for 24-hour Holter monitoring of blood pressure

one of the recent laboratories, operating since 1996, currently functioning within the Center for Hypertension. Its annual volume is about 600 patients. Prof. Dr. Biljana Sidovska and Assoc. Prof. Dr. Magdalena Otljanska have a merit for the functioning of this Center.

Laboratory for 24-hour ECG-Holter monitoring

– it has been operating since 1988, with an annual volume of 1.800 recordings. It started with the work of Prof. Dr. Lidija Dobrkovic-Kamchevska.

Laboratory for electrophysiology and transvenous implantation of electrostimulators, cardiovertersdefibrillators and resynchronization devices

– it has its roots in the distant 1973, when the first implant of both a temporary and a permanent electrostimulator was performed by Prof. Dr. Lazar Srbinovski. From that time the process follows the latest world trends. April 9, 1996, is the second significant date in the history of this laboratory, when the first implantation of an ICD-implantable cardioverter defibrillator was performed, for what we owe a special merit to Prof. Dr. NJ. Reisser - a cardiologist from the Nuremberg Cardiology Clinic, who unselfishly helped in the introduction of a range of diagnostic and therapeutic procedures in the field of invasive and interventional cardiology at our clinic, as well as in the education of our staff for their own performance. The Laboratory for Electrophysiology was established in 1993, and later it emerged as the daughter of the laboratory for permanent heart stimulation. The first electrophysiology study was performed in 1993, followed by the first therapeutic procedure in 1994 ablation. Again, Prof. Dr. NJ. Reisser has a special merit, he educated a team of doctors such as Dr. Gjorgov, and several young doctors.



Angiology Laboratory

is the core laboratory in the Clinic, and the only one that is organized as a separate ward. The beginnings date back to 1973, with the Hemodynamic Laboratory using facilities of the RTG Institute, a special merit of Dr. Zoran Sajkov. Moving in the facilities of the new building, this laboratory started to work as a separate ward – the Angiology Laboratory, in 1993. Today there are three angio-halls with a daily volume of 20-30 patients. The range of procedures includes diagnostic studies of coronary, carotid, renal and peripheral arteries, up to therapeutic interventions: dilatations and endovascular prosthesis implantations to these same arteries. However, several years ago the new procedures such as renal denervation, TAVI - transvascular aortic valve implantation, TEVAR and EVAR-stent implantations of the aorta with transvascular approach were introduced, with the support of vascular surgeons and anesthesiologists. Important years that are worth mentioning are the following: 1993 - the first balloon dilatation of the coronary artery, 1995 - first implant of an endovascular prosthesis of the coronary, 1995 - the first primary PCI at AIM, 1999 - the first procedure to peripheral artery (renal), and 2002 - first carotid artery stenting. Another doctor from the “cat lab” who contributed for the history of this laboratory is Prof. Dr. Borche Petrovski. Today there are 14 senior and junior interventional cardiologists.

Activities of wider significance of the PHI University Clinic of Cardiology

Over the years this clinic has been a source of trained doctors whose careers continued in private health institutions. It is a place that serves as an educational field for undergraduate, and postgraduate students - master and doctoral studies. It is a place for education and training of residents from different specialties, training for non-invasive and interventional procedures. The doctors from this institution are authors of a wide spectrum of papers, scientific works, publications, books and monographies, project holders and/or participants in various national, international or bilateral projects.



Structure of the medical and non-medical staff

Currently this institution has a staff of 225 employees, of which 170 are medical employees (more than 125 nurses) and 50 are non-medical, administrative staff. Today, the clinic has 41 doctors, of which 25 are sub-specialists cardiologists, 17 are specialists for internal diseases and 1 is resident in cardiology, as well as 2 residents in cardiology with full working hours, but without a permanent working status at the clinic. Nineteen doctors have a master degree, and eighteen have PhDs. As a teaching personnel, there are 5 professors at the Medical Faculty within the University of Ss. Cyril and Methodius, four associate professors, two docents, three scientific advisors, and fourteen assistant professors. For their exceptional clinical work, two doctors were entitled Primarius. For their exceptional international activity, five cardiologists from the clinic have been elected FESC - Fellows of the European Society of Cardiology, and two FACC - Fellows of the American College of Cardiology. They represent the basis of the current work and the future development of the PHI University Clinic of Cardiology



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