

## DIABETES MELLITUS AND ITS TREATMENT

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**Annotation:** *Diabetes mellitus is a most serious socio-medical and economic problems facing health authorities throughout the world. A major threat is vascular complications of the disease. The currently available diagnostic tools, up-to-date means for monitoring glycemia, introduction of innovative insulin preparations and hypoglycemic agents, development of high-technology therapeutic modalities may greatly improve disease prognosis, reduce the frequency of chronic complications, related disablement and mortality rates. The targeted control of major risk factors, viz. hyperglycemia, hypertension, and dyslipidemia, during the patient's lifetime starting from the onset of diabetes remains the most promising strategy for the prevention of diabetic complications. An indispensable condition for efficacious management of diabetes is the elaboration of active screening programs for the early diagnosis of complications and optimal organization of the clinico-diagnostic process in the framework of multidisciplinary approach.*

**Key words:** *diabetes mellitus, federal program, diabetic complications, retinopathy, nephropathy, diabetic foot syndrome, cardiac pathology.*

The incidence of DM on the globe doubles every 10-15 years, acquiring the character of a non-infectious epidemic. According to WHO, there are currently 285 million patients with diabetes in the world, and by 2025 their number will be 380 million and 435 million in 2030. At the same time, the real rate of increase in the incidence is far ahead of even such depressing forecasts of statisticians. So, in 2000, the number of patients with diabetes was 11% more - 175 million against 154 million according to the estimated data in 1998.

As of January 1, 2010, 3,121,318 patients with diabetes were registered in Russia, which amounted to 2,156 people per 100,000 population, of which 297,794 were patients with type 1 diabetes (DM1) and 2,823,524 were patients with type 2 diabetes (DM2) (Fig. 1). Over the past decade alone, the number of patients with diabetes in Russia has increased by more than 1 million people, but the true prevalence of the disease is 2–3 times higher, mainly due to type 2 diabetes, which corresponds to 6–9 million patients. The World Health Organization (WHO), the International Diabetes Federation and the Saint Vincent Declaration have defined DM as an epidemic disease of a non-communicable nature and called on governments around the world to create national programs to combat this disease. In accordance with Diabetes mellitus (DM) is a real threat to the health and quality of life of the population of all countries of the world, being one of the

most common chronic diseases. Vascular complications of DM (micro- and macroangiopathy), such as nephropathy, retinopathy, damage to the main vessels of the heart, brain, lower extremities, are annually chained to a wheelchair and claim the lives of millions of people suffering from this disease. The development of DM is 60-80% due to genetic predisposition. Hereditary predisposition to DM is associated with certain combinations of alleles of a number of highly polymorphic, usually found in the general population of genes, which, in combination with external factors, can lead to the development of the disease. A full genomic search revealed more than 20 DM1 predisposition loci located on different chromosomes. Among all genetic loci of predisposition to DM1, the leading role is assigned to the genes of the ILL locus. Comparative analysis of homozygous twins and NHL-haploidentical siblings revealed 40-50% concordance for LL-markers. The development of molecular genetic research methods in the last decade has made it possible to create a more accurate picture of predisposing and protective gene variants.

Diabetology is one of the most dynamically developing areas of modern medicine. Over the past decade, the world, including has achieved unprecedented progress in the diagnosis, treatment and prevention of diabetes and its complications. The latest insulins and their analogues, innovative hypoglycemic drugs, modern means for monitoring glycemia and continuous subcutaneous insulin infusion, high-tech methods for diagnosing and treating diabetic retinopathy, nephropathy, diabetic foot syndrome, and cardiac pathology have been introduced. Along with conservative methods of preventing vascular complications, interventional and endovascular technologies for restoring blood flow in cases of damage to the coronary and peripheral arteries are being widely introduced, which in many cases allows avoiding acute vascular accidents and amputations, socially adapting and restoring the working capacity of patients. The practice of diabetologists has included immunological markers and molecular genetic studies to predict the risk of developing DM and its complications. In the foreseeable future, whole genome sequencing will become possible. At the same time, many unresolved problems remain, primarily of an organizational nature. The irreparable damage that DM and its late complications cause to human health and society as a whole requires that maximum efforts be made to create effective prevention programs and active screening for the purpose of early diagnosis of DM and its complications. Providing prevention along with a multidisciplinary approach in the treatment of DM is the key to successful treatment and maintaining the quality of life and health of our patients.

In this regard, the second link of specialized comprehensive care for patients with lesions of the lower extremities should be represented by specialized departments based on centers with the capabilities of multidisciplinary diagnostic and therapeutic care.

It is known from world experience that this model of organizing a system of specialized care for patients with DFS can reduce the frequency of high amputations by 62% (from 7.4 to 2.8 per 100 thousand people in the general population), as well as the overall frequency of amputations by 40.3 %. For every 10,000 people with DM, there was a decrease in the overall frequency of amputations by 70%, the frequency of high amputations by 82%. Along with the standard methods for diagnosing SDS: examination of the legs, which should be carried out at each visit to the doctor; assessment of neurological status (examination of vibration sensitivity, determination of pain, tactile and temperature sensitivity, determination of tendon reflexes, electromyography); assessment of the state of arterial blood flow (ultrasound Doppler); radiography of the feet and ankle joints, high-tech diagnostic methods should be more widely introduced: duplex scanning of the arteries of the lower extremities, transcutaneous oximetry, CT or MRI angiography, X-ray angiography, CT or MRI of the feet, computed pedobarography.

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