

Improvement of Cardiovascular Diseases Medical Rehabilitation System

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Abstract: Disablement and mortality due to cardiovascular diseases are the highest among the consequences of all cardiovascular system diseases. Most of cardiovascular diseases such as myocardial infarction, impaired cardiac function, underwent operations on heart and vessels requires complex rehabilitation program. Dynamics and structure of economic loss due to cardiovascular diseases is covered in the article. Cardiologic rehabilitation is presented as important measure that allows reducing economical and social loss due to cardiovascular diseases. Essence and the aims of rehabilitation of patients with cardiovascular diseases are defined together with main stages of rehabilitation and existing problems. Among these problems there are foundation of multidisciplinary centers of rehabilitation, development and application of training programs for patients with cardiovascular diseases and their relatives, introduction of alternate models of cardiologic rehabilitation, development of cardio-somatic rehabilitation.

Key words: Incapability • Mortality • Cardiovascular diseases • Economical and social loss • Cardiopathology • Cardio rehabilitation • Rehabilitation stages • Multidisciplinary approach

INTRODUCTION

Cardiovascular diseases remain the main reason of incapability and untimely death in advanced and developing countries including Russia. Cardiovascular diseases are widely spread, characterized by high complexity and stable health damage, they are followed by long and often stable loss of ability to work and all this make a hard burden on society.

Social and economical effects and risk factors of these diseases is composed of direct spending of public health service (emergency admission to hospital for a long time, expensive revascularisation, etc.) and indirect losses, related to long-term loss of ability to work, incapability and untimely deaths in employable age. According to World Health Organization, WHO in 2005-2015 the loss of GDP in Russia due to untimely deaths due to cardiovascular diseases may equals B8,2 Rubles [1].

Despite a certain decrease of mortality and progress in treatment cardiovascular diseases in most cases acquire chronic character and require lifelong support, medicamental and often surgical treatment [2]. The most

important measures after giving diagnosis are medical rehabilitation and secondary prophylaxis of cardiovascular diseases. Numerous researches show that broadening of traditional cardiological practice; using advanced knowledge and experience in cardiological rehabilitation allow improving functional state and quality of life of cardiovascular patients and reducing risk factors and mortality of population [3].

Heart diseases and cardiovascular diseases are the main reason of mortality both in Russia and most advanced countries. In mortality structure this group of diseases is stable leader. In 2012 1055,6 thousand people died from cardiovascular diseases in Russia that accounted 55,4% of all deaths [4]. Despite positive dynamics of reduction of mortality due to this class of diseases it remains the highest in the world and has the greatest excess of mortality indicators comparing with the largest countries of Europe. For example, mortality level due to cardiovascular diseases reduced in Russia per 100 thousand people is higher the same indicator of developed European countries: 7,8 times higher than in France, 5,2 times-in Italy, 5 times-in Great Britain, 4,3 times-in Germany (Fig. 1).

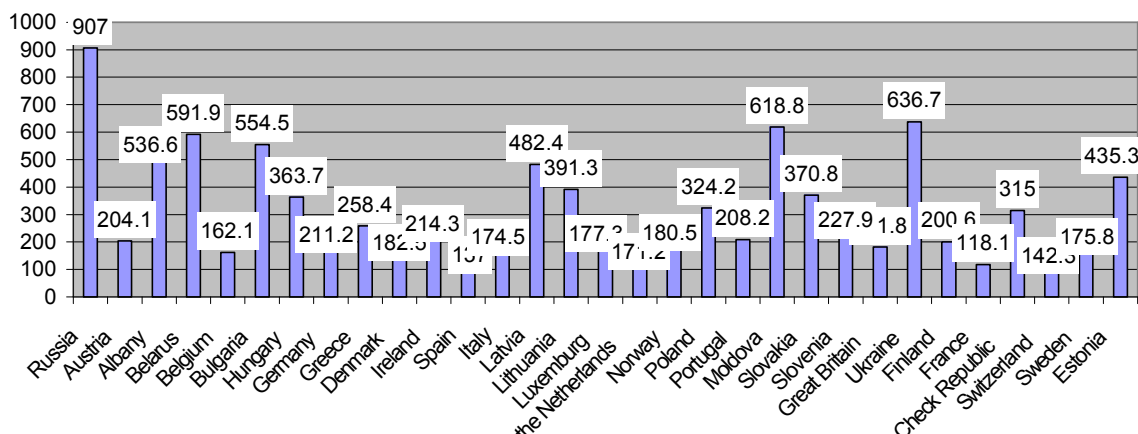


Fig. 1: Mortality due to cardiovascular diseases on European countries (data of 2010 year) [5]

Despite the trend to decrease of mortality level due to cardiovascular diseases that have been observed last years in Russia that problem of depopulation is still urgent.

Cardiovascular diseases are the cause of more than third of all deaths [6] in employable age (up to 65 years) that bear the main burden of creating GDP that the wealth of nation depends on. For example, mortality level among men living in Russian Federation up to 65 years is almost 13 times higher than in France, among women up to 65 years-is 16 times higher [7].

Despite the reduction of primary disablement due to cardiovascular diseases that have been evidenced from 2005 this group of diseases leads in the structure of incapability of adult population of Russia.

High mortality and incapability of population due to cardiovascular diseases is the cause of significant economical loss including direct spending of public health system on pre-hospital, hospital and outpatient stages as well as indirect spending related to the loss of GDP due to untimely deaths and provisioning of disability grants.

In 2011 scientists of FSU the State Scientific and Research Center of Prophylaxis Medicine of the Ministry of Health and Social Development of Russian Federation carried out research that showed that in 2008-2009 the gross economical loss due to cardiovascular diseases is greater that B1 a year [8] (Fig. 2). Major part of economical loss due to cardiovascular diseases is related not to losses of public health system and the system of social protection (21%), but to the losses due to increase of the lost years of potential of the population in employable age (79%).

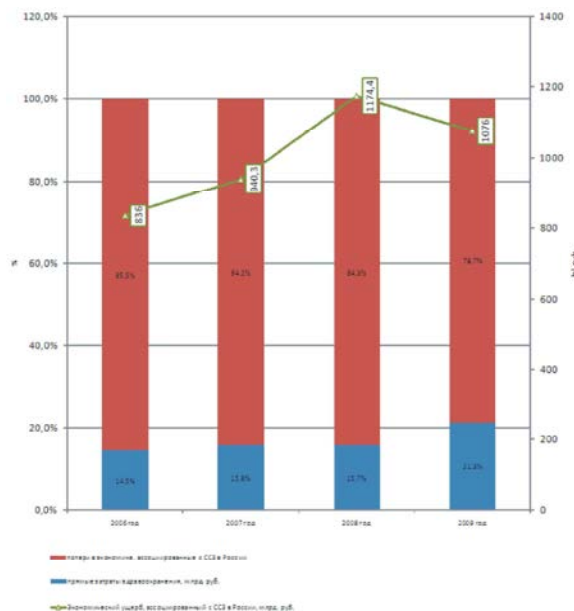


Fig. 2: Economical loss related to cardiovascular diseases in Russia

Important and effective measure that allows reducing economical and social loss due to cardiovascular diseases is cardiological rehabilitation. Normally patients in 6 months after discharge from a hospital stop following the instructions for self-treatment and start to complain the changing of mode of life.

B, rubles, years, economical loss related to cardiovascular diseases in Russia, direct spending of public health system, B, rubles

Following recommendations (diets, physical exercises and ceasing smoking) after cardiovascular diseases is associated with much lower risk of repeated

cardiovascular events [9]. Rehabilitation measures support longtime commitment to optimal treatment by educating patients and repeating the thesis that keeping on following prescribed treatment and recommended mode of life. Early prescription of medical rehabilitation and its effective realization lead to reduction of spending on public health due to reduction of treatment time and prevention of untimely disablement that in turn leads to reduction of necessary state support.

Cardiologic rehabilitation is long-term complex program that consists of medical evaluation of functional state of a patient, bodily exercises (training) prescribed basing on individual tolerance to load, modification of cardiac risk factors, educating and consulting of patients. These programs are oriented on reduction of physiological and psychological negative consequences of cardiovascular diseases, reduction of risks of sudden cardiac deaths and repeated cardiac infarction, observation of the symptoms of heart diseases, stabilization and involution of atherosclerotic process and increase of functional capabilities and life status of patients.

Cardiological rehabilitation is interdisciplinary and multidimensional process oriented on prevention of deaths due to cardiovascular diseases, morbidity and disablement and strengthening of health of people with cardiocirculatory pathologies [10].

Cardiological rehabilitation originates from applying of bodily exercises to therapy of ischemic heart disease. Programs of cardiological rehabilitation started to develop in 1960s. Up to this time it had been thought that full recovery from cardiac infarction required strict confinement to bed for 6 weeks. Usually a patient with cardiac infarction had not hope to recover to normal working life, sports and active rest. In 1960s World Health Organization offer initiative and specific proposals on organization of cardiological rehabilitation in leading countries. Institution of Cardiology of Academy of Medical Sciences of the USSR (later All-Union Cardiological Scientific Center of Academy of Medical Sciences, Russian Cardiological Scientific and Industrial Complex) was the main developer of this initiative in Russia. Researches that have been carried these years proved negative consequences of confinement to bed and became important stimulus of cardiological rehabilitation development. Primary aim was to reduce negative effects of confinement to bed and physical detraining.

Later when patients started to become active earlier and fuller after acute cardiovascular events the most important aim of rehabilitation was return of people to

work in employable age. In the beginning of the 21 century the main aim of programs of cardiological rehabilitation changed to secondary prophylaxis. Researches show that applying cardiological rehabilitation and secondary prophylaxis it is possible to reduce the total and cardiovascular mortality on 20-25% [11].

Success in cardiovascular diseases treatment and data that prove effectiveness of secondary prophylaxis significantly increased the range of patients who need medical rehabilitation. Besides patients who had cardiac infarction, persons who underwent heart transplantation, percutaneous coronary surgery, chronic impaired cardiac function, implantable cardioversion devices (ICD), implantation of pacemaker feel positive effects of rehabilitation.

But Russian system of medical care that has formed in Russia is characterized by serious structural disproportions with dominating in-patient treatment and weak development of primary medical care and medical rehabilitation care. Availability of rehabilitation care to patients with cardiovascular diseases is still very low and does not satisfy existing requirements. The main reasons of such situation are insufficient or misdirected equipment of rehabilitation units, obsolete programs of medical specialists training, insufficient coordination of medical institutions and physicians operation in different stages of rehabilitation, lack of continuity in carrying out rehabilitation measured by medical organizations.

On a whole medical rehabilitation is long and multistage process.

First-hospital-stage of medical rehabilitation begins in in-patient department. Initial rehabilitation care is provided in acute phase of disease in intensive care department. This rehabilitation stage is realized in cardiological departments of hospitals. Confinement to bed is slightly extended while a patient remains in intensive care department. On first-second day he(he) is allowed to sit, on second-third day-to take vertical position, etc. Physiotherapy specialist performs with a patient individual basic physiotherapy complex [12]. This stage includes also communications with a patient: doctor speaks about his(her) diagnosis, gravity extent of his(her) condition, explain the directions of medicament therapy and the way of carrying out medical rehabilitation.

After short (2-4 days) of staying in intensive care department a patient goes on rehabilitating and extending the regimen with the help of medical staff and relatives; it is not necessary for him(her) to stay in clinic but he(he) is not ready to go home. Rehabilitation period is

transferred to in-patient rehabilitation department of a hospital where his(her) physical activity is being completely restored, he(he) gets psychological help and medicament therapy is being selected before discharge.

According to medical practice the period of the most probable development of hard aftereffects is 6-7 days after surgery [13]. In this period a patient receives specialized after surgery treatment that includes initial activation, breathing recovery, prevention of rhythm disturbance, etc. Duration of hospital stage of rehabilitation should be individual or differential according to functional reserve of vascular system and intensity of aftereffects in after surgery period. Medical rehabilitation period in hospital stage without aftereffects is 10-15 days.

Second stage of medical rehabilitation is sanatorium treatment. A patient is sent to specialized rehabilitation centers and sanatorium and resort organizations to undergo further rehabilitating treatment. But in practice only 15-20% of patients goes to sanatoriums after myocardial infarction. It is proved by all-Russian statistics gathered by well-known Russian cardiologist and rehabilitation specialist Professor D.M. Aronov. He says that only every fifth patient of those needing rehabilitation receives sanatorium treatment [14]. Most of the cardiological patients after in-patient stage go on out-patient care where full-fledged rehabilitation is simply impossible. Besides, level and the quality of rehabilitation on sanatorium stage is not relevant to up-to-date requirements to rehabilitation (there are no adequate training programs, aerobic training, psychodiagnosis and psychological correction is not provided).

Third stage of patients with cardiovascular diseases rehabilitation is out-patient (dispensary) treatment. It is provided in usual outpatient's clinic with observation of district general practitioner and periodical consulting of cardiologist although World Health Organization recommends providing it in out-patient department of rehabilitation center. This stage lasts all remaining life of a patient and requires multidisciplinary approach. But in practice all the treatment in this stage now is limited to medication therapy.

Among the drawbacks of realization of this stage there are fully skipping non-medication methods of treatment, lack of confidentiality in contacts with a doctor who doesn't inform patients about the reasons of proscribing a certain medicine, main mechanism of its impact, expected effects and terms of their appearance, about a great danger of self-cancellation, reduction of dose of it by a patient and about the essence of treatment in courses.

It should be noted that now in Russia several measures were undertaken on federal level to develop cardiological rehabilitation. In November 2011 a law "On the basics of health of citizens of Russian Federation" was passed. Article 40 of the Law provides introduction in the country rehabilitation system not only for cardiac but other types of pathology: neurologic, cardiologic, oncological, as well as in traumatology and perinatology.

In December 2012 the Government of Russian Federation approved federal program "Development of health care in Russian Federation up to 2020". Subprogram on medical rehabilitation is its important component. The Ministry of Health of RF approved the order of provisioning of medical care to people with cardiovascular diseases [15]. Classification of services of medical rehabilitation has been compiled. Professional organizations started to work out clinical recommendations on main groups of clinical entities necessarily containing set of recommendations on rehabilitation. Medical rehabilitation for the first time will be included in the Program of State Guaranties in 2014.

Main ways of development of medical rehabilitation of patients with cardiovascular diseases are the following.

Founding multidisciplinary rehabilitation centers with in-patient and out-patient cardiological departments. Multidisciplinary rehabilitation centers provide cooperation of different specialists-core practitioners, therapist-cardiologist, chiropractors, clinical psychologists, specialists in rehabilitation, trainers of physiotherapy, functional diagnostics, physiotherapy, physiotherapy, chiropractics, speech therapist and aphasiologists and other specialists.

Wider use of training programs for cardiovascular diseases patients and their relatives. It is desirable to include pharmacy specialist in a group of rehabilitation specialists of "School..." program. The role of this specialist may provide explanation of the aims of a certain prescription, special features of a certain medicine, mechanism of action, treatment effects and terms of appearance of these effects, etc. Many countries start to use this approach.

Introduction of effective alternative modes of cardiological rehabilitation such as multifactor personal telemedicine via Internet, telemedicine focused on bodily exercises, telemedicine focused on rehabilitation at home as well as additional treatment methods.

Development of innovative directions of rehabilitation: cellular tissue technologies, robototechnics, neurocomputing interfaces as well as numerous cognition technologies.

Development of cardiosomatic rehabilitation that provides applying rehabilitation measures also on associated illness of cardiac patients if there are some. Cardiosomatic rehabilitation of patients with associated neurologic, bronchopulmonary, gastroenterologic and metabolic diseases have been started and carried on. Methods developed got approval in modern clinics and showed safety and effectiveness. These results may be recommended to active use in practical health care.

Analyzed methods of development of cardiological rehabilitation of patients with cardiovascular diseases allow shorten recovery period without a danger for their health, improve the quality of medical rehabilitation with simultaneous increase of rehabilitation effectiveness that means reduction of state spending due to decrease of mortality and disablement of patients with cardiovascular diseases.

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