

O.M. Korzh

Kharkiv Medical Academy of Postgraduate Education, Department of General Practice-Family Medicine, Kharkiv, Ukraine

Role of family physicians in the prevention of heart failure

For cite: Zdorov'a suspil'stva. 2018;7(6):259-266. doi: 10.22141/2306-2436.7.6.2018.158612

Abstract. Background. Heart failure is a life-threatening disease, and its solution should be seen as a global health priority. Heart failure is indeed a complex disease and has until now been the leading cause of morbidity and mortality in developing and developed countries. Standardized medical therapy was successful in the early stages of heart failure. The advanced stages of heart failure require frequent hospitalization because of the presence of severe heart failure and / or associated co-morbid conditions that require the strict implementation of an adequately individualized multidisciplinary approach and quality measures. **Materials and methods.** In our review Ukrainian and international clinical guidelines, recommendations, documents and scientific literature were used. **Results.** The range of diseases that predispose patients to heart failure is extremely wide. Health care professionals in all clinical disciplines should receive education to identify patients with diseases that increase the risk of heart failure and prescribe preventive medications. This ensures that as many people as possible get access to therapy. Even after the development of heart failure, premature deaths can be prevented if they are taught to recognize symptoms and seek immediate medical attention. Public awareness campaigns on these messages have a great potential for improving outcomes for patients with heart failure and, ultimately, for saving lives. Compliance with the recommendations of clinical practice is also associated with improved results for patients with heart failure. However, there are significant differences in how closely the doctors follow the recommendations. In order to promote equitable care, improvements should be promoted through the use of indicators and incentives for hospitals that are appropriate to local conditions. The policy should facilitate the research needed to create an evidence base for performance indicators that reflect improved outcomes for patients. **Conclusions.** Prevention of heart failure is of paramount importance. Ensuring access to preventive drugs should be provided to those who are at greatest risk for developing heart failure, regardless of age, sex or income. Cost-effective information, education and support programs to reduce the risk of heart failure should be at the forefront of public health guidelines. Lifestyle events can have a significant impact on the health of the world, because obesity, diabetes, cigarette smoking and high blood pressure significantly increase the likelihood of heart failure. Renewing commitment to public education the importance of healthy nutrition and weight, regular exercise and prevention of smoking should be a priority for policy makers.

Keywords: heart failure; prevention; compliance; medical care; therapeutic education

Introduction

Cardiovascular disease (CVD) remains the leading cause of death, premature mortality and disability worldwide. The mortality rate from CVD has been declining since the early 1990s as a result of significant changes in lifestyle and improved health care. This growing prevalence is due to improved survival of people with myocardial infarction and patients with heart failure and a high burden of heart risk factors for people such as hypertension, obesity, diabetes and smoking. While physical activity and regular exercise are emphasized for the development of general cardiovascular health, modern guidelines for heart failure inadequately emphasized the

importance and recommendations for physical activity as a means of preventing a condition [1].

Nevertheless, there are certain regions with significantly higher total and mortality from cardiovascular diseases, despite relatively good access to medical care and invasive cardiology procedures. Previous reports conducted among residents of these regions showed adverse lifestyles with a very low prevalence of people who follow current recommendations for the prevention of cardiovascular diseases. This poor adherence to recommended recommendations may be a function of a lack of awareness of the methods of preventing CVD. Several studies have indicated that improving awareness of the

© «Здоров'я суспільства» / «Здоровье общества» / «Health of Society» («Zdorov'a suspil'stva»), 2018

© Видавці Міжнародна громадська організація «Міжнародна асоціація «Здоров'я суспільства», Заславський О.Ю. / Издатели Международная общественная организация «Международная ассоциация «Здоровье общества», Заславский А.Ю. / Publishers International Public Organization "International Association "Health of Society", Zaslavsky O.Yu., 2018

Для кореспонденції: Корж О.М., Харківська медична академія післядипломної освіти, вул. Амосова, 58, м. Харків, 61176, Україна; e-mail: redact@i.ua

For correspondence: O. Korzh, Kharkiv Medical Academy of Postgraduate Education, Amosova st., 58, Kharkiv, 61176, Ukraine; e-mail: redact@i.ua

risk factors for cardiovascular disease and prevention can be a prerequisite for adopting of a healthy lifestyle [2].

To determine the most effective ways to solve the problem of heart failure in different parts of the world, an international approach is needed, as well as the inclusion of necessary measures in everyday practice. Political initiatives at the local, national and international levels can reduce mortality due to heart failure and improve the quality of life of patients.

The global burden of heart failure

In recent years, the survival rates of patients with heart failure have improved in many parts of the world, in parallel with the introduction of modern evidence-based methods and patient management systems. Nevertheless, about 2-17% of those admitted to the hospital with heart failure die in the hospital. Survival rates are better for those who are treated in outpatient clinics, which usually have less pronounced symptoms than those who are treated in the hospital. However, even the newest therapies can only alleviate the symptoms in many patients without slowing the progression of their disease or prolonging life. This is due to the fact that heart failure can arise due to a number of different underlying problems with the structure or function of the heart, some of which are more difficult to treat than others [3].

HF may seriously damage developing countries by creating loss of productivity of cardiac patients. It often severely limits a person's ability to work. Loss of productivity hurts not only the individual, but affects the family's income and the country itself by extension. Also, the weakened cardiac patients often need care givers; consequently, a care giver often is a family member and he or she has to stop working in order to nurse a cardiac patient at home [2, 3].

Infections remain a common cause of heart failure in many parts of the world and can affect any age. Heart failure is not a disease of the elderly in sub-Saharan Africa, where half of the patients hospitalized with this disease are 55 years or younger. Patients in the Asia-Pacific region are also usually younger than in the western regions. Rheumatic fever due to preventable bacterial infections is an important cause of heart failure in Africa, Asia, Australia and Latin America. HIV infection is also a major source of cardiovascular disease worldwide. In areas of Latin America where Chagas disease is prevalent, almost half of all cases of heart failure are the direct result of this preventable parasitic infection [4, 5].

Heart failure is a widely researched disease because of its burden. There are many studies in which the incidence of heart failure is positively associated with several risk factors. The very first study that addressed the etiology of this disease was a cohort study that followed people for 20 years, a study of the heart of Framingham in the 1970s. According to the Framingham Heart Study, heart failure had several major risk factors. It was found that the highest risk factor for heart failure among the population is hypertension, which accounts for 39% of heart failure in men and 59% in women. The second most sig-

nificant risk factor was myocardial infarction, which accounts for 34% of heart failure in men and 13% in women. Other important risk factors were diabetes mellitus, left ventricular hypertrophy and heart valve disease. This was the first scientific evidence of heart failure associated with behavioral factors [6, 7].

Heart failure significantly affects the quality of life of patients. Fear, anxiety and depression are common, and work, travel and everyday social and leisure activities are difficult for people with shortness of breath and extreme fatigue. Emotional, physical and financial costs are also high for those who care for family members with heart failure. Heart failure leads to a large number of deaths and a widespread disease and requires huge economic and social costs, and the problem worsens. It is time for coordinated awareness programs about heart failure and strategic and policy initiatives to improve patient care.

Preventing heart failure in high-risk groups

Prevention of heart failure is of paramount importance. After an establishment the deterioration of a status of heart can be often treated, but, as a rule, it is impossible to cancel. Policymakers should emphasize the need for health professionals in all clinical disciplines to identify patients with diseases that increase the risk of heart failure and prescribe preventive drugs. Ensuring access to preventive drugs should be provided to those who are at greatest risk for developing heart failure, regardless of age, sex or income. Policymakers should also give priority to the elimination of certain infectious diseases in some parts of the world where they continue to cause heart failure [2, 7].

Risk factors for heart failure vary from lifestyle factors to concomitant diseases, medications, laboratory and visual characteristics for new biomarkers and genomic markers. The risk of heart failure increases with age, and the male sex is associated with a higher risk. Higher physical activity, increased salt intake and lower socioeconomic status were associated with increased risk. Hypertension, diabetes, obesity and coronary disease all increase the risk. More than half of patients hospitalized with heart failure, regardless of the ejection fraction, have coronary artery disease. Hypertension and coronary artery disease are the most common and most powerful risk factors, which bring an increased risk of 2-3 times. Valvular heart disease increases the risk due to hemodynamic changes.

Obesity, due to a variety of mechanisms, predisposes to heart failure. Excessive use of alcohol increases blood pressure and is a direct myocardial toxin; However, light consumption is moderately associated with risk, especially in men. Smoking contributes to several cardiovascular risk factors associated with heart failure. Dyslipidemia and renal dysfunction predispose to heart failure. Other co-morbidities that increase the risk include anemia, sleep breathing disorder, increased heart rate, lung dysfunction and microalbuminuria. The levels of homocysteine and natriuretic peptide are associated with an

increased risk. Serum resistance, lipoproteins associated with phospholipase A2 and myeloperoxidase are also associated with an increased risk [5-7].

Several chemotherapeutic agents, for example doxorubicin, cyclophosphamide, trastuzumab and 5-fluorouracil, are associated with heart failure. Inhibitors of cyclooxygenase-2 may increase the risk of myocardial infarction. Thiazolidinediones were associated with edema and heart failure. Several cardiac anatomical and physiological measures are associated with a higher risk, including enlargement of the chamber with an increase in terminal diastolic or terminal systolic dimensions, an increase in left ventricular mass, worsening diastolic filling of the left ventricle, an increase in the left atrium and asymptomatic systolic dysfunction. There is growing interest in genomic predictors of heart failure.

While patients at high risk benefit greatly from proper and consistent treatment, unfortunately, they often undergo suboptimal management. Their inability to tolerate even minor fluctuations in cardiac and renal function makes them vulnerable to frequent and recurring episodes of acute heart failure.

Many people have diseases that put them at risk of heart failure. Health care professionals who treat such patients should adopt a broad approach that includes encouraging positive lifestyle changes that reduce the risk of heart failure and prescribe preventive therapy as needed. Medications that control blood pressure, heart rate and cholesterol levels are effective in preventing heart failure in a large number of people who have conditions such as high blood pressure, coronary heart disease, kidney disease and diabetes. Pacemakers and the replacement of heart valves can also prevent heart failure in a small number of people who have a particular heart rate or valve disorders. The range of diseases that predispose patients to heart failure is extremely wide. Health care professionals in all clinical disciplines should receive education to identify patients with diseases that increase the risk of heart failure and prescribe preventive medications. This ensures that as many people as possible get access to therapy [1, 4, 7].

Patients receiving long-term preventive therapy should be evaluated regularly at the expense of health care providers. In addition, patients with chronic diseases, such as coronary artery disease or Chagas disease, should periodically evaluate and monitor heart changes. Patients with breast cancer are another group that will benefit from such monitoring. Several existing and new methods of treating cancer are toxic to the heart, and it is important for health professionals to be aware of the need to evaluate and manage the risks involved.

Bacterial infections that cause heart disease are largely eliminated in economically developed countries due to the use of antibiotics. In other regions, bacteria and tropical parasites cause a significant proportion of heart failure, many of which can be prevented by appropriate treatment methods. Therefore, the potential benefits of policy initiatives aimed at eliminating infectious diseases extend to preventing heart failure in many parts of the

world. In particular, to continue global efforts, it is necessary to eradicate Chagas disease, based on the progress made in Latin America over the past two decades [1, 2].

Preventive treatment could be started earlier, identifying people with early signs of abnormal cardiac muscle remodeling. Unfortunately, large-scale screening programs, such as those that allowed earlier treatment of bowel cancer, cervical cancer and breast cancer, are unfortunately not possible, because there is no simple diagnostic test for heart failure. Early changes in the structure or function of the heart can be detected using medical imaging technology; However, it is inadvisable to perform these complex procedures in a large number of people with diseases that lead to heart failure and, of course, not for the general population. In the future, extended genetic tests and statistical modeling of risk groups that take into account the myriad potential causes of heart failure may be available, and this can allow individuals to be identified for in-depth screening.

Targeting preventive drugs to people with the highest risk of heart failure can increase profitability, allowing more people to take advantage. Further research in these areas continues and should continue to be supported by public and private funds. In addition, information programs should be directed at everyone who has medical conditions that predispose to heart failure. They should include education about the symptoms of heart failure and the benefits of positive lifestyle changes. The same messages are important for public information programs [3-6].

Therefore, it is more necessary to invest in the earliest possible prevention of cardiovascular diseases from childhood and further, in preventing the development of an increased overall risk of cardiovascular diseases. This can be achieved by creating non-smoking generation of adolescents who are physically active throughout life and prevent the development of overweight and obesity.

Preventing heart failure in the elderly is becoming a more urgent health priority, as the age of the population. Heart failure is the most common cause of hospitalization in people older than 65 years in economically developed regions. In elderly patients hospitalized with heart failure, mostly women. Although a number of studies of patients with heart failure have shown that survival rates are better in women than in men, recent studies have shown that long-term prospects for women are not as good as previously thought. Therefore, initiatives aimed at improving the prevention of heart failure should include strategies to reach older people, especially older women [2, 3].

In economically developed countries, heart failure is more common and most likely the cause of death in people with low socioeconomic status than the rest of the population. This is still the case after adjusting for age differences, the use of drugs and the proportion of people with other cardiac diseases. The view was expressed that the role of housing can be played by housing stability, social support, substance abuse, language skills and distance to the hospital.

Several studies have reported a reduction in the risk of heart failure with a healthy lifestyle. It has been shown that healthy weight, avoidance of smoking, exercise and healthy eating reduce the risk factors for heart failure, including ischemic disease, diabetes and hypertension. Recently, researchers in the health research of doctors reported that habits of a healthy lifestyle, that is, normal body weight, rather than smoking, regular exercise, moderate alcohol consumption, consumption of breakfast cereals and consumption of fruits and vegetables, were associated with a lower risk of heart disease with the most high risk of 21.3% in men who do not observe any of these habits, and the lowest risk of 10.1% in men who adhere to 4 or more of them.

Healthy lifestyle, behaviour, socio-economic issues

Although many heart failure risk factors have been described, determining their role in predicting a future event is still difficult. Despite a strong etiological relationship to the disease, the risk factor may be limited in its prognostic role. Although individual risk factors for heart failure, such as hypertension, are well described, how to clearly identify individual risk in patients with different combinations of risk factors. For coronary events, schemes for predicting multiple risks have been developed, for example, the Framingham risk score. However, heart failure syndrome is a spectrum from ischemic to non-ischemic etiology and from normal to depressed ejection fraction. Older patients may develop heart failure due to age-related cardiovascular changes in the absence of traditional risk factors. Thus, high-risk subjects can not be detected using coronary risk regimes.

Social changes can affect the CVD epidemic in different ways. May be influenced by globalization, migration, socio-economic changes and unemployment. Over the years, differences in the incidence of CVD among countries, regions and areas have increased; these inequalities can be explained by the components of human behavior, such as diet, exercise, smoking and work-related functions, as well as overcrowding, unemployment and other deprivation indicators. The expected life expectancy is constantly increasing with income

Smoking of tobacco

Tobacco smoking remains one of the most important preventable causes of premature mortality, and quitting is the most cost-effective strategy for the prevention of cardiovascular disease. Improvements have been made with regard to tobacco smoking, in some countries more than in others, with large differences in accordance with the socioeconomic class. Governmental constraints and rules were successful; high taxes on tobacco products are the most effective policy measure to reduce smoking among young people. However, this need to be complemented by continuing campaigns in the field of health education, especially those targeting young people and other subgroups of society. There must be restrictions on advertising, promotion and sponsorship by the industry.

All smokers should be advised to quit. Patients should be referred to formal programs to discontinue therapy, and pharmacological therapy should be offered to increase success. Current recommended strategies include the following: (a) Medicines. Several drugs are available for tobacco dependence. Seven first line drugs significantly increase long-term rates of abstinence from smoking, including bupropion SR, nicotinic gum or inhaler or cake or nasal spray or patch and varenicline. (b) Counseling and psychosocial support. Individual, group, telephone practical consultations and social support are effective, and their effectiveness increases with the intensity of treatment. (c) Combination. However, the combination of counseling and medication is more effective than one, so clinicians should encourage all people who attempt to stop using both counseling and medication.

If the recommendations, stimulation and motivation are likely to be insufficient, drug therapy should be considered at an early stage, including nicotine replacement therapy (NRT), bupropion or varenicline. Pharmacotherapy for smoking cessation can double or triple throw rates, and a combination of pharmacotherapy and counseling improves throw rates.

Dietary habits

As for the dietary habits of the population, the changes occurred in different areas. For example, consumption of salt and saturated fats has been reduced in most societies. The food industry has reduced the presence of trans fatty acids in different foods; This was promoted by regulatory initiatives in some communities. Nevertheless, the potential for preventing cardiovascular disease through dietary adaptations is still poorly implemented. Compliance with a balanced diet is usually limited; Control of high blood pressure, dyslipidemia and disglycemia can be significantly improved due to lifestyle changes. Achieving better adherence to dietary recommendations requires an understanding of the determinants of poor compliance. At the population level, structural measures, such as product information and user-friendly food labeling, can improve health-friendly options. Energy-intensive products with nutrient deficiencies are usually highly available and inexpensive; marketing of such products may be limited and taxed. On the other hand, fruits and vegetables tend to be more expensive; subsidizing their costs can be useful.

At the clinical level, general practitioners have the opportunity to provide advice on a diet for treating risk factors for coronary diseases. However, obstacles related to time constraints, knowledge and perceived effectiveness were reported. The degree to which doctors are familiar with a healthy dietary pattern (ie, DASH, the Mediterranean diet) and with the translation of this information into practical recommendations may be limited. A multidisciplinary approach, including dieticians and nutritionists, can help, but needs to improve coverage of reimbursement.

At the individual level, new strategies can help improve patient self-control and lead to a sustained behavior.

ior change. Many applications and devices are available that provide data that can be useful for lifestyle changes and patient self-care.

Physical activity

Physical inactivity is an important risk factor for cardiovascular disease, including heart failure. Regular physical activity has important and broad benefits, such as reducing the risk of cardiovascular disease, hypertension and diabetes. Physical activity is a key to good health and an important component of weight loss and weight maintenance, improving the profile of lipoproteins and reducing the risk of hypertension, diabetes and coronary artery disease. These favorable effects on the profile of cardiovascular risks, in turn, reduce the likelihood of heart failure [5-7].

Promotion of physical exercises is a crucial and central issue in all strategies for the prevention of cardiovascular diseases. At the individual level, physical activity should be recommended at different times; he must become part of ordinary life from childhood. Children and adolescents should be encouraged to spend from 30 to 45 minutes of exercise at school or in their free time every day. This should be maintained as long as possible, through adolescent adulthood.

Healthy adults in all age groups are encouraged to choose pleasant physical exercises that fit into everyday life on most days of the week. It is recommended to perform at least 150 minutes per week of moderate aerobic physical activity (30 minutes for 5 days a week) or 75 minutes per week of intense aerobic physical activity (15 minutes for 5 days a week) or a combination thereof. At the individual level, the purpose of the exercise should be more personalized. Therefore, a brief history of the individual's physical level is needed (how many minutes per day is spent on average with activity at moderate or strong intensity).

Overweight and Obesity

There are several plausible mechanisms for the association of obesity and an increased risk of heart failure. Indirect, but well-known and documented mechanism is the effect of obesity in heart failure with the help of other risk factors. The increase in BMI is a risk factor for the development of hypertension, diabetes mellitus and dyslipidemia, all of which increase the risk of myocardial infarction, which is an important precursor of heart failure. In addition, hypertension and diabetes mellitus independently increase the risk of HF occurrence. It has also been shown that increased BMI is associated with altered left ventricular remodeling, possibly due to increased hemodynamic loading, neurohormonal activation, and increased oxidative stress. Studies have shown that obesity can have a direct effect on the myocardium, demonstrating a loss of cardiac function through cardiac steatosis and lipoapoptosis.

Although elevated BMI is well known as a risk factor for heart failure, this study showed that an elevated BMI is not a risk factor for increasing mortality, but rather is associated with a trend toward improved survival. This counterintuitive epidemiological link between survival

outcomes and traditional risk factors is called reverse epidemiology or "paradoxical obesity," and it is now well documented in numerous studies and in the literature on heart failure.

The exact mechanisms underlying the paradox of obesity have not been clearly defined. There are several theories. A common explanation for the increase in survival in obese patients with heart failure is that additional fatty tissue provides greater reserves against catabolic changes associated with the disease process that can lead to cardiac cachexia. Cardiac cachexia is a syndrome that includes progressive weight loss and changes in the body composition, which carries a destructive prognosis for heart failure, as well as in other painful conditions.

The basic approach to risk reduction for obese patients should include weight control and physical activity, as well as control of related risk factors such as hypertension, diabetes, sleep disorders and metabolic syndrome components. Changes in the myocardium with non-surgical or surgical weight loss are possible and a slight weight loss is effective; weight loss of 10% reduces systolic dysfunction, and a weight loss of 8 to 10 kg leads to a significant decrease in the size of the left ventricle and the mass index and improves diastolic function. Significant weight loss reduces the thickness and volume of the wall of the left ventricle, filling pressure, improves diastolic parameters and improves systolic function of the left ventricle. The role of metabolic and neurohumoral modification may take precedence over hemodynamic effects, since left ventricular mass or functional improvement occurs independently of load changes.

Alcohol Consumption

Although epidemiological data constantly demonstrate the harmful effects on health associated with alcohol use, current literature cites some evidence of reducing the risk of heart failure with mild and moderate alcohol consumption. However, in order to fully understand the relationship between mild to moderate alcohol consumption and heart failure, several gaps need to be filled, especially the role of alcohol samples, beverage types, genetic variations affecting alcohol metabolism, and the effect of light on moderate drinking in predicting mortality and concomitant morbidity among people with heart failure.

Excessive consumption of alcohol is associated with alcoholic cardiomyopathy. Interestingly, other data are consistent with the possible benefits of moderate alcohol consumption for the risk of heart failure. In addition, it was reported that mild to moderate alcohol consumption is associated with a 40-50% lower risk of heart failure than with a previous myocardial infarction, whereas in the same study, the risk of heart failure without previous myocardial infarction among people who use heavy drinks, was 1.7 times higher than that of abstained. Similar results were presented in the study of the health of doctors. The favorable effects of alcohol on the risk of developing hypertension, myocardial infarction and dia-

betes mellitus have also been reported, while alcohol increases the level of high-density lipoprotein cholesterol, increases insulin sensitivity, reduces the level of inflammatory markers and clotting factors in plasma, and increases the level of adiponectin.

Management of cardiovascular risk factors

All current guidelines on the prevention of CVD in clinical practice recommend the assessment of total CVD risk because atherosclerotic CVD is usually the product of a number of risk factors. Prevention of CVD in a given person should be adapted to his or her total CVD risk: the higher the risk the more intensive the action should be. The stratification of the community into different levels of total CVD risk was given in recent guidelines.

Dyslipidaemias

The treatment goals for LDL-C depend on the total CVD risk of the patient and of the baseline LDL-C level. In patients at very high CVD risk, an LDL-C goal of <1.8 mmol/L (70 mg/dL), or a reduction of at least 50% if the baseline LDL-C level is between 1.8 and 3.5 mmol/L (70 and 135 mg/dL), is recommended.

In patients at high CVD risk, an LDL-C goal of <2.6 mmol/L (100 mg/dL), or a reduction of at least 50% if the baseline LDL-C level is between 2.6 and 5.2 mmol/L (100 and 200 mg/dL), is recommended. In subjects at moderate risk, an LDL-C goal of <3.0 mmol/L (115 mg/dL) should be considered.

Statins have proven effective in patients with coronary heart disease; however, their usefulness in staging left ventricular dysfunction, which remains under investigation. The role of statins in the prevention of heart failure is shown.

Based on the results of the IMPROVE-IT study, further reduction in LDL-C by the addition of ezetimibe should be considered in patients with cardiovascular diseases with LDL-C ≥ 70 mg / dl (≥ 1.8 mmol / L), despite the maximum allowable dose of statin. Now a new family of drugs that lower lipid levels is available. These inhibitors of subtilisin / kexin type 9 retardate convertase (PCSK9) further reduce LDL-C in addition to what can be achieved with statins. In a FOURIER study, inhibition of PCSK9 with evolocumab against statins lowered LDL-C to a median of 30 mg / dL (0.78 mmol / L) and reduced cardiovascular events. The use of this drug should be considered in patients with a very high risk of cardiovascular disease, in which LDL-C remains elevated, despite the fact that it is treated with a maximum dose of statins in combination with ezetimibe or in patients with statin intolerance.

Arterial hypertension

Elevated blood pressure (BP) is one of the most powerful modifiable risk factors for cardiovascular disease. The beneficial effects of lowering blood pressure on the reduction of stroke, myocardial infarction, heart failure and death have been shown in numerous RCTs and in

various meta-analyses. BP reduction can be achieved through lifestyle changes and drug therapy [8].

Progression progresses from hypertension to structural changes in the ventricles and systolic and diastolic ventricular dysfunction. The increase in chronic load, left ventricular mass and stress, accompanied by a deterioration in the properties of diastolic filling, occurs in a chronic environment. Disproportionately increased left ventricular mass leads to inadequate microcirculation for perfusion of hypertrophied myocardium, which leads to subendocardial hypoperfusion, ischemia. These changes increase the risk of developing coronary thrombosis and a heart attack characterized by loss of contractile function, neurohormonal activation and ventricular remodeling, which leads to the development of systolic dysfunction. Anomalies in neurohormonal activation and the balance of water and electrolyte also play a role in the cascade, which leads from hypertension to heart failure.

Dysglycaemia and Diabetes mellitus

In people with impaired glucose tolerance, the development of type 2 diabetes mellitus (DM) can be delayed or prevented. In patients with type 2 diabetes, cardiovascular disease can be prevented by good control of risk factors for cardiovascular disease. Intensive management of hyperglycemia also reduces the risk of microvascular complications.

Diabetes mellitus is an independent risk factor for heart failure in all age groups. The relative risk of heart failure in patients with diabetes varies from 1.3 to 2.7, increasing to 4 in patients under the age of 65 and 11 in individuals younger than 45 years. Several mechanisms have been proposed to explain the increased risk. Combinations associated with heart failure, including obesity, hypertension and coronary artery disease, are common among people with diabetes. Insulin resistance itself can cause disturbances in the cardiac structure and function [9].

Unfortunately, the prevalence of type 2 DM increases in most parts of the world, mainly because of unbalanced diets and lack of physical activity. The diagnosis of DM is also problematic in a large number of people and even in patients with established CVD. Screening should be considered by evaluating HbA1c or fasting blood glucose levels. When there is any doubt, you should offer a test for glucose tolerance orally.

For most non-pregnant adults with type 1 or 2 DM, it is recommended to reduce HbA1c <7.0% (<53 mmol / mol) to reduce the risk of cardiovascular disease and the risk of microvascular complications. When diagnosed or at the beginning of a DM, the target HbA1c $\leq 6.5\%$ (≤ 48 mmol / mol) should be considered in patients who are not brittle and do not have CVD.

Metformin is recommended as first-line therapy if it is tolerated and not contraindicated after assessing kidney function. In patients with diabetes and cardiovascular disease, the use of sodium glucose-based co-transporter-2 (SGCT2) inhibitors reduced cardiovascular and total mortality without significant adverse effects. These drugs should be considered at an early stage of treatment

of DM in these patients. Optimal management of LDL-C and BP levels is of great importance for all patients with DM.

Public awareness of heart failure and compliance

Appropriate care for heart failure and adequate provision of care and research require recognition of its clinical, social and economic importance not only by health authorities and providers of health services, but also by the general public. Without recognition of the symptoms and their severity, people with heart failure will not seek immediate treatment - patients often present with a long history of dyspnea. Awareness of the causes of HF can help to make appropriate lifestyle changes to reduce the risk. In addition, awareness of the benefits of treatment can help compliance and encourage patients to seek appropriate care. However, there is a lack of information about public awareness of HF. Studies have shown a relatively low understanding and treatment of heart failure by general practitioners. If doctors are not aware of the importance of HF, it is unlikely that the general public will have a good understanding [10].

Cost-effective information, education and support programs to reduce the risk of heart failure should be at the forefront of public health guidelines. Lifestyle events can have a significant impact on the health of the world, because obesity, diabetes, cigarette smoking and high blood pressure significantly increase the likelihood of heart failure. Renewing commitment to public education the importance of healthy nutrition and weight, regular exercise and prevention of smoking should be a priority for policy makers.

Compliance with the recommendations of clinical practice is often associated with improved outcomes for patients with heart failure. However, in many countries there are significant differences in how closely hospitals follow the recommendations of national recommendations for heart failure. In response, policymakers must protect the fairness of care for all patients. First, it is important to promote heart failure training programs that raise awareness of the guidelines among all relevant health professionals. Secondly, better care should be encouraged, using performance indicators and incentives appropriate to local conditions. Funding is needed to research evidence-based health-care performance indicators that reflect improvements in clinical outcomes for patients with heart failure.

Recommendations for the use of drugs for the treatment of heart failure are based on clinical trials conducted mainly in Europe and the United States. In other parts of the world, the underlying causes of heart failure are different, and it is not safe to assume that drugs will be equally effective in all patient groups. A further clinical study to investigate the efficacy of treating heart failure in different patient groups around the world should be maintained.

Conclusion

Prevention of disease and death due to heart failure should be a priority in the field of health. Despite the increasing number of people living and dying of heart fail-

ure, awareness of this disease is low among the public, politicians and even some health professionals. Despite the lack of treatment for heart failure, many cases can be prevented, and most patients can effectively be treated to improve quality of life and survival. Policymakers are responsible for ensuring that as many people as possible can take advantage of affordable prevention, diagnosis, treatment and long-term treatment of heart failure. At the same time, research should be supported in areas where immediate unmet needs exist.

All current recommendations for the prevention of cardiovascular disease in clinical practice recommend an estimate of the overall risk of cardiovascular disease, since atherosclerotic cardiovascular risk is usually the result of a number of risk factors. Prevention of cardiovascular disease in this person should be adapted to his or her overall risk of cardiovascular disease: the higher the risk, the more intense the action should be.

Any program aimed at improving long-term management must recognize that patients with heart failure play a key role in their own care. Self-service includes maintenance, monitoring and management. Maintenance involves taking medication as prescribed, regular meals and a healthy diet. Monitoring involves monitoring of symptoms and weight (which can serve as a warning sign of increasing fluid accumulation). Management involves responding to changes in symptoms by adjusting the doses of certain drugs if they are prescribed for "use as needed" (for example, drugs that increase urine production to reduce fluid accumulation) or by seeking medical help if symptoms worsen.

Conflicts of interests. Author declares the absence of any conflicts of interests that might be construed to influence the results or interpretation of their manuscript

References

1. Robertson J, McElduff P, Pearson SA et al. The health services burden of heart failure: an analysis using linked population health data-sets. *BMC Health Serv Res* 2012;12:103. doi:10.1186/1472-6963-12-103.
2. AlHabib KF, Elasar AA, Alfaleh H et al. Clinical features, management, and short- and long-term outcomes of patients with acute decompensated heart failure: phase I results of the HEARTS database. *Eur J Heart Fail* 2014; doi: 10.1002/ejhf.57.
3. Huelsmann M, Neuhold S, Resl M, et al. PONTI-AC (NT-proBNP selected prevention of cardiac events in a population of diabetic patients without a history of cardiac disease): a prospective randomized controlled trial. *J. Am. Coll. Cardiol.* 2013; 62:1365-72.
4. Ledwidge M, Gallagher J, Conlon C, et al. Natriuretic peptide-based screening and collaborative care for heart failure: the STOP-HF randomized trial. *JAMA.* 2013; 310:66-74.
5. Gaggin HK, Mohammed AA, Bhardwaj A, et al. Heart failure outcomes and benefits of NT-proBNP-guided management in the elderly: results from the prospective, randomized ProBNP outpatient tailored chronic heart failure therapy (PROTECT) study. *J. Card Fail.* 2012; 18:626-34.

6. Son CS, Kim YN, Kim HS, et al. Decision-making model for early diagnosis of congestive heart failure using rough set and decision tree approaches. *J Biomed Inform.* 2012; 45:999-1008.

7. Kelder JC, Cramer MJ, Van WJ, et al. The diagnostic value of physical examination and additional testing in primary care patients with suspected heart failure. *Circulation.* 2011; 124:2865-73.

8. Heidenreich PA, Hernandez AF, Yancy CW et al. Get with the guidelines program participation, process of care,

and outcome for Medicare patients hospitalized with heart failure. *Circ Cardiovasc Qual Outcomes* 2012;5:37-43.

9. McAlister FA, Stewart S, Ferrua S et al. Multidisciplinary strategies for the management of heart failure patients at high risk for admission: a systematic review of randomized trials. *J Am Coll Cardiol* 2004;44:810-9.

10. Palaniswamy C, Mishkin A, Aronow WS et al. Remote patient monitoring in chronic heart failure. *Cardiol Rev* 2013;21:141-50.

Received 30.11.2018 ■

Корж О. М.

Харківська медична академія післядипломної освіти, м. Харків, Україна

Роль сімейних лікарів у профілактиці серцевої недостатності

Резюме. Актуальність. Серцева недостатність є небезпечним для життя синдромом, що вимагає пріоритетного розгляду. Серцева недостатність є провідною причиною захворюваності і смертності в країнах, що розвиваються і розвинених країнах. Стандартизована медикаментозна терапія є успішною на ранніх стадіях серцевої недостатності. На пізніх стадіях відзначається висока частота госпіталізації через наявність тяжкої серцевої недостатності та / або супутніх захворювань, які вимагають адекватного індивідуалізованого міждисциплінарного підходу. **Матеріали та методи.** У нашому огляді проаналізовані національні та міжнародні клінічні керівництва, рекомендації, наукові статті з проблеми профілактики серцевої недостатності і ролі в цьому сімейного лікаря. **Результати.** Спектр захворювань, що призводять до розвитку у пацієнтів серцевої недостатності, надзвичайно широкий. Медичні працівники всіх клінічних дисциплін, особливо первинної медичної допомоги, повинні мати необхідні знання для виявлення пацієнтів із захворюваннями, які підвищують ризик розвитку серцевої недостатності, і призначати профілактичні препарати. Фундаментальні принципи впливу на фактори

ризик у хворих з серцево-судинною патологією загально-визнані. Всі пацієнти з серцево-судинним захворюванням повинні отримувати інформацію про своє захворювання, а також рекомендації щодо зміни способу життя і спрямованого фармакологічного втручання з метою зменшення факторів ризику, що модифікуються. **Висновки.** Навіть у хворих з вираженою серцевою недостатністю можна запобігти передчасної смерті, якщо хворі зможуть розпізнавати симптоми і негайно звертатися за медичною допомогою. Інформування громадськості та навчання пацієнтів мають великий потенціал для поліпшення прогнозу хворих із серцевою недостатністю. Дотримання клінічних рекомендацій також пов'язано з поліпшенням результатів у пацієнтів з серцевою недостатністю. Проте, існують значні відмінності в дотримуваних рекомендацій. Необхідні дослідження для створення доказової бази з метою визначення індикаторів ефективності, що характеризують поліпшення результатів профілактики та лікування пацієнтів в амбулаторних умовах.

Ключові слова: серцева недостатність; профілактика; прихильність; медична допомога; терапевтичне навчання

Корж А. Н.

Харьковская медицинская академия последипломного образования, г. Харьков, Украина

Роль семейных врачей в профилактике сердечной недостаточности

Резюме. Актуальность. Сердечная недостаточность является опасным для жизни синдромом, требующим приоритетного рассмотрения. Сердечная недостаточность является ведущей причиной заболеваемости и смертности в развивающихся и развитых странах. Стандартизированная медикаментозная терапия является успешной на ранних стадиях сердечной недостаточности. На поздних стадиях отмечается высокая частота госпитализации из-за наличия тяжелой сердечной недостаточности и / или сопутствующих заболеваний, которые требуют адекватного индивидуализированного междисциплинарного подхода. **Материалы и методы.** В нашем обзоре проанализированы национальные и международные клинические руководства, рекомендации, научные статьи по проблеме профилактики сердечной недостаточности и роли в этом семейного врача. **Результаты.** Спектр заболеваний, предрасполагающих к развитию у пациентов сердечной недостаточности, чрезвычайно широк. Медицинские работники всех клинических дисциплин, особенно первичной медицинской помощи, должны обладать необходимыми знаниями для выявления пациентов с заболеваниями, которые повышают риск развития сердечной недостаточности, и назначать профилактические препараты. Фундаментальные принципы влияния

на факторы риска у больных с сердечно-сосудистой патологией общепризнаны. Все пациенты с сердечно-сосудистым заболеванием должны получать информацию о своем заболевании, а также рекомендации по изменению образа жизни и направленному фармакологическому вмешательству с целью уменьшения модифицируемых факторов риска. **Выводы.** Даже у больных с выраженной сердечной недостаточностью можно предотвратить преждевременную смерть, если больные смогут распознавать симптомы и немедленно обращаться за медицинской помощью. Информирование общественности и обучение пациентов имеют большой потенциал для улучшения прогноза больных с сердечной недостаточностью. Соблюдение клинических рекомендаций также связано с улучшением результатов у пациентов с сердечной недостаточностью. Тем не менее, существуют значительные различия в следовании рекомендациям. Необходимы исследования для создания доказательной базы для определения индикаторов эффективности, характеризующих улучшение результатов пациентов в амбулаторных условиях.

Ключевые слова: сердечная недостаточность; профилактика; приверженность; медицинская помощь; терапевтическое обучение