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# DIAGNOSIS, PREVENTION AND TREATMENT OF ISCHEMIC HEART DISEASES

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**Abstract**
This article covers the methods of diagnosis, prevention and treatment of ischemic heart diseases. Ischemic heart diseases are characterized by insufficient blood supply to the heart muscle, which occurs as a result of narrowing of the coronary arteries [4,7,8]. With the help of diagnostic methods, including ECG, echocardiography and coronary angiography detected early. Preventive the desease is measures include healthy eating, physical activity, smoking cessation, and stress management [12,13,14]. Treatment options include medications and surgical procedures. This article reviews aspects of the management of ischemic heart disease effectively [9,10,11].

**Keywords**: Ischemic heart disease, diagnosis, prevention, treatment, coronary angiography, echocardiography, antiplatelet drugs, statins, CABG, PCI.

## Introduction

Coronary heart disease (CHD) is widespread worldwide and is one of the leading causes of death. This disease occurs as a result of insufficient blood supply to the heart muscle, which is often associated with atherosclerotic narrowing of the coronary arteries. The following main forms are included in the CIC:

1. Stable stenocardial;
2. Unstable stenocardial;
3. Myocardial infarction;
4. Myocardial ischemic cardiomyopathy.

According to global statistics, in 2018, coronary heart disease accounted for 53% of deaths from circulatory diseases, which is 24% of the total number of deaths. In January-March 2024, 57.9% of registered deaths in Uzbekistan were caused by circulatory diseases, including coronary heart disease.

**Diagnostics.** Early detection of coronary heart disease is important for improving treatment effectiveness. Diagnostic methods include:

**1. Clinical** Assessment: The patient's complaints are assessed, including chest pain, shortness of breath, and symptoms of increased pain during exercise.



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**2. ECG (Electrocardiogram):** The electrical activity of the heart is recorded; signs of ischemia or infarction are detected.

**3. Echocardiography:** allows for the assessment of muscle movement and valve function through ultrasound imaging of the heart.

**4.Coronary angiography**: by taking X-rays of the heart arteries, the degree of blood flow disturbance and narrowing is determined.

**5.Stress Tests:** Assess how the heart works in a state of friction using physical exertion or medication**.**

**Prevention.** The prevention of coronary heart disease is based on maintaining a healthy lifestyle. Preventive measures include**:**

**Healthy eating:** A diet rich in fruits, vegetables, and whole grains is recommended to reduce cholesterol and fat levels.

- Daily cholesterol intake is recommended to be no more than 5-7% of total calories, which is 200-300 mg per day.
- Saturated fatty acids should be less than 10% of the daily calorie intake. If the risk of cardiovascular disease is high, it is recommended to reduce this amount to 5-6%.
- Unsaturated fatty acids can make up 20-35% of your daily calories.

**Physical Activity:** It is recommended to do at least 150 minutes of moderate-intensity aerobic exercise (e.g., walking, running, swimming, cycling) or 75 minutes of high-intensity aerobic exercise per week.

**Quitting smoking:** Smoking is one of the main risk factors for coronary heart disease, and quitting is important. About 10-15% of deaths from coronary heart disease are related to smoking. Smoking damages the cardiovascular system, narrows the arteries, increases blood pressure, and thickens the blood, which increases the risk of heart attacks and strokes**.**

**Blood pressure monitoring:** Regular blood pressure monitoring is necessary to prevent the development of arterial hypertension.
Blood pressure levels:
1. Normal blood pressure
- Systolic pressure: 120 mmHg or less
- Diastolic pressure: 80 mmHg or less
2. Threshold high blood pressure
- Systolic pressure: 120-129 mmHg
- Diastolic pressure: 80 mmHg
3. High blood pressure (grade 1)



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- Systolic pressure: 130-139 mmHg
- Diastolic pressure: 80-89 mmHg

4. High blood pressure (Lv. 2)
- Systolic pressure: 140 mmHg or higher
- Diastolic pressure: 90 mmHg or higher

5. Hypertensive crisis
- Systolic pressure: 180 mmHg or higher
- Diastolic pressure: 120 mmHg or higher

**Stress Management:** Studies have shown that stress can increase the risk of coronary heart disease by approximately 40-50%. Therefore, it is possible to improve heart health by reducing psychological stress.

**Treatment.** Medical and surgical methods are used in the treatment of coronary heart disease. The treatment strategy depends on the severity of the disease and the patient's condition.

**Medications:**

**Antiplatelet agents:** drugs such as aspirin prevent thrombus formation.

**Stats:** Prevent the development of atherosclerosis by reducing cholesterol levels. These include drugs such as atorvastatin, Rosuvastatin, Simvastatin, Pravastatin, Lovastatin, Fluvastatin, and Pitavastatin.

**Beta blockers:** Decrease heart rate and reduce the heart's need for oxygen. These include the following main drugs: Atenolol, Metoprolol, Propranolol, Bisoprolol, Carvedilol, Labetolol, Nadolol, Nebivalol, Sotalol, Esmalol.

**Nitrates:** Improves blood flow by dilating the heart vessels. The nitrate group includes the following medications: nitroglycerin, isosorbid dinitrate, isosorbid mononitrate, pentaerythritol tetranitrate.

**Surgical Procedures:**

**Coronary Artery Bypass Graft (CABG):** Supplies the heart with blood by creating new blood flow pathways around narrowed arteries. This operation is performed in several stages:

1. Anesthesia: The patient is under general anesthesia, meaning they do not feel pain during the process.
2. Blood vessel removal: A surgeon removes a healthy blood vessel from another part of the body (usually a saphenous vein on the foot, radial artery on the arm, or intratracheal artery on the chest). This blood vessel is then used for bypass.
3. Bypass narrowed artery: The chest is incised to open the heart. A healthy blood vessel is then established as a pathway that circumcirculates a narrowed or blocked coronary artery. One end of the blood vessel can connect to the aorta, and the other end to the lower part of the blocked artery.
4. Surgery with interruption or continuation of the heartbeat: The operation can be performed with temporary interruption of the heartbeat (using a cardiopulmonary machine) or with continuation of the heartbeat.



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5. Sewing the incision: After the procedure is completed, the chest is sutured and the patient is taken to the intensive care unit.

**Percutaneous Coronary Intervention (PCI):** Extends narrowed arteries using stents or angioplasty. The process is carried out in the following stages:

1. Catheter placement: After the patient receives local anesthesia, the surgeon inserts a thin flexible tube (catheter) from the femoral, arm, or armpits artery and directs it to the coronary arteries.
2. Angiography: A contrast agent is injected through a catheter, allowing for the visualization of the state of blood vessels on the X-ray. Narrowing or blocking areas are identified.
3. Ballon angioplasty: A small balloon is inserted into the narrowed artery through a catheter and inflated in the narrowed area. This expands the wall of the artery and restores blood flow.
4. Stent placement: Often, a stent covered with a metal or drug is placed at the narrowing site to keep the artery open. The stent supports the artery wall and reduces the risk of recurrent narrowing.
5. Removal of the catheter: After the procedure is complete, the catheter is removed and pressure is applied to the arm or thigh to stop bleeding.

## Summary

A comprehensive approach to the diagnosis and treatment of coronary heart disease is required. Early diagnosis, maintaining a healthy lifestyle, and effective treatment methods help prevent the disease and reduce its consequences. These measures can reduce the number of deaths and complications from coronary heart disease.

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