

## Course 5

- Preventive activity in the FM
- Health promotion
- Detection and control of cardiovascular risk factors

- **Preventive activity**

Preventive medicine is based on 4P

- prediction
- prevention
- personalization
- participation

### **Types of prevention**

- Primary prevention - disease prevention
- Secondary prevention - early detection of diseases
- tertiary prevention - prevention of complications and aggravation of diseases
- Specific prevention - prevention of diseases by means of specific means (eg vaccinations)

Special prophylactic medical assistance

- Protecting the mother and child
- Family planning and contraception

### **Primary prevention**

- is specific to the family doctor (only FD comes in contact with the healthy people)

Primary prevention is done through

- actions on the environment
- actions on the person

### **Actions on the environment**

- family environment
- professional environment
- social media
- ecological environment - the ecosystem
- epidemiological situation

Family environment

- Living conditions, hygienic and sanitary conditions
- Family nutrition
- Procurement and storage of food

- Epidemiological conditions
- Spending free time
- Relationships between family members
- Disorganized families
- Violent families
- Abandoned families
- Combating genetic factors

#### Professional environment

- Physical, thermal, chemical
- Toxic, allergic substances
- Neuropsychological requests
- Relations with bosses and colleagues

#### Social environment

- Social involvement of the individual
- Economic factors
- Social pathology

#### Ecosystem

- pollution
- Combating chemical, biological factors
- Changes in the habitat
- Combating too hot or cold temperatures
- Combating infectious, psychosocial factors
- Influence on the health status of the respective community

#### The epidemiological situation

- Incidence and prevalence of diseases
- The presence of infectious outbreaks
- Transmission pathways
- The state of receptivity of the population

\* immunization - specific prevention

#### **Actions on the person**

- supervision of the health status of the individual
- clinical examination of the balance sheet
- identification and control of risk factors
- ensuring the needs
- avoidance of excesses
- compliance with hygiene rules
- respecting an appropriate lifestyle

- cultivation of healthy factors
- health education

The "tripod" of primary prevention

- identification and control of risk factors
- lifestyle optimization
- health education

Identification and control of risk factors

- Ex. Ischemic heart disease
  - cardiovascular history
  - smoking
  - excessive alcohol consumption
  - obesity
  - hypercholesterolemia
  - hypertension
  - diabetes
  - male sex
  - old age

•Purpose

- identification and control of modifiable risk factors

The most common chronic diseases are:

- cardiovascular diseases
- cancer
- obesity
- diabetes
- COPD

The most common chronic diseases share 7 major risk factors:

- consumption of saturated fats
- high cholesterol levels
- smoking
- alcohol consumption
- sedentary
- obesity
- hypertension

Lifestyle optimization

- is responsible for 40% of the individual's health
- (30% genetic factors, 30% average factors)

## Purpose

- avoiding pathogenic factors
- avoidance of risk factors
- cultivation of healthy factors

## Targets

- nutrition
- avoiding alcohol and tobacco consumption
- avoiding sedentarism
- intensifying physical efforts, performing them daily
- observing the work program, observing the rest periods
- avoiding harmful habits
- appropriate family life
- the appropriate spiritual life

## Health education

- provides the patient with the medical knowledge necessary to comply with hygienic and sanitary norms
- personal hygiene
- food hygiene
- sexual hygiene - prevention of sexually transmitted diseases
- avoidance of risk factors
- smoking
- alcohol
- drugs
- adopting a healthy lifestyle
- combating sedentarism, practicing physical exercises

## Health education depends on

- the age of the individual
- profession
- risk group
- the cultural level

## Secondary prevention

- is not specific to the family doctor
- the FD is more accessible than the specialized specialists because it represents the patient's first contact doctor

## Methods for early detection of diseases

- current consultations
- clinical examination of the balance sheet, periodic control
- screening

What can be diagnosed in the current consultations and the periodic health examination?

- diseases with asymptomatic evolution
- diseases with minimal symptomatology
- ex. Hypertension, diabetes, anemia, thyroid nodule, skin cancer, breast cancer, cervical cancer, prostate cancer

### **Screening**

- represents an active mode of detection of diseases that have a prevalence of more than 1% and which have an effective treatment
- The tests must have a certain sensitivity and specificity

### **Tertiary prevention**

- avoiding complete incapacity
- medical recovery
- professional recovery
  
- Tertiary prevention - tools
  - chronic disease surveillance
  - preventing and combating complications
  - correct treatment / individualization of the treatment
  - therapeutic education of the patient, ex. Hypertension, diabetes

### **Specific prevention**

- prevention of diseases by specific means
- vaccinations for infectious diseases
- vitamin D for congenital rickets
- iron for iron deficiency anemia

Breast and ovarian cancer

- BRCA 1,2 genes
- increases the susceptibility to breast / ovarian cancer

Breast cancer

- estrogen receptor
- present receptor: possible response to endocrine therapy
- receptor for epidermal growth factor 2
- indicates a more aggressive disease
- trastuzumab is a specific treatment for this receptor

Breast, lung, colorectal cancer

- receptor for epidermal growth factor
- patients with this receptor gene mutation are eligible for treatment with gefitinib or erlotinib

Pancreatic cancer, colorectal

- KRAS
- KRAS mutation: lack of response to cetuximab or panitumumab

## **Health promotion**

Purpose

- improving the health status
- it is different from the primary prevention that aims to prevent illnesses

The components of health promotion

- identification and control of risk factors
- promotion of healthy factors
- health education of the individual

Healthy factors

- food
- dairy / yogurt
- ocean fish
- fruits vegetables
- dietary fiber
- physical exercises

Results

- forcing the body by natural factors
- prevention of cardiovascular disease and obesity
- increasing the performance of the cardiovascular and respiratory system,
- Increased attention, concentration
- Primary prevention
- overlaps with the health care of the healthy people
- Secondary and tertiary prevention
- overlap with the current medical activity

## **Detection and control of cardiovascular risk factors**

- CV diseases represent a major cause of death (in Romania it causes more than 60% of all deaths)
- Atherosclerosis can start directly with a major CV accident

- Myocardial infarct and stroke incur high costs with therapeutic interventions that, in most cases, only achieve an improvement in the quality of life
- Increased frequency of CVD is closely linked to lifestyle
- Intervention on risk factors leads to decreased morbidity and mortality due to cardiovascular diseases

### **CV risk in Romania**

- SEPHAR epidemiological study - of the prevalence of hypertension and CV risk assessment
- 2005
- persons over 18 years of age
- the parameters followed
  - blood pressure
  - weight
  - height
  - waist circumference
  - glucose
  - lipid profile
  - CRP

### **Results**

- 86% of the subjects have CV risk
  - the prevalence of hypertension is 40% (4 adults out of 10 suffer from hypertension)
  - only 42% of hypertensive people knew they were sick
  - only 13% of patients complied with the prescribed antihypertensive treatment
  - obesity affects 37% of adults, being more common in women than in men
  - diabetes is present in 5% of the subjects
  - the prediabetes condition is encountered in another 14% of the subjects
  - dyslipidemia: 46%
  - smokers: 29%
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- SEPHAR II epidemiological study
  - 2011
  - followed the evolution of risk factors in the period 2005-2012
  - Result: profile of hypertensive patient in Romania
  - female patient
  - middle-aged
  - urban area of the southern region
  - secondary level of education
  - low average income
  - sedentary

- nonsmoking
- awareness of BP values
- visceral obesity
- cholesterol, high LDL-cholesterol
- normal HDL-cholesterol and triglyceride levels
- metabolic syndrome present
- cumulation of 4 cardiovascular risk factors

### **Risk factors**

- modifiable
- unchangeable

#### **A. Risk factors that cannot be modified:**

- a. age - over 83% of people who died from coronary heart disease are over 65 years old;
- b. male sex - men have a higher risk of developing CV disease than women;
- c. genetic (racial) factors - the black people has higher values of BP than the Caucasian population; Mexican Americans, Indians and Asians have a higher rate of obesity, diabetes and a higher risk for CV disease;
- d. strong family history associated with CV disease

#### **B. Modifiable CV risk factors:**

- a. smoking - smokers have a 2-4 times higher risk for coronary heart disease and cardiac arrest;
- b. dyslipidemia;
- c. hypertension - increased heart activity, increases the risk of stroke, coronary heart failure, kidney failure and congestive heart failure.
  - When HTA coexists with smoking, diabetes, obesity and hypercholesterolemia, the risk of coronary or stroke increases 3-4 times;
- d. diabetes mellitus.
  - The presence of diabetes is equivalent to the existence of a myocardial infarction.
  - Even if the blood glucose level is kept under control, diabetes still increases the risk of coronary heart disease or stroke, but it is much higher in those with uncontrolled blood glucose levels.
  - About 3 out of 4 people with diabetes die from CV disease.
- e. obesity and overweight.
  - Excess weight overloads the heart, increases TA levels and is frequently associated with increased cholesterol levels.
  - A weight loss of 4-5 kg is significant to reduce the risk of coronary heart disease;
- f. inactivity.
  - Exercises can affect serum cholesterol, diabetes, obesity and even BP.

New psycho-social risk factors have been implicated in the development of CV diseases:

- precarious socio-economic status,
  - lack of social support,
  - professional and family stress,
  - depression, anxiety, hostility and personality type D
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- Stress attracts other risk factors.
    - The stressed person begins to smoke;
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- Alcohol consumption in uncontrolled amounts can lead to hypertension and subsequently to heart failure and stroke.
  - Alcohol increase incidence of cancer and other diseases such as obesity, suicide and accidents.
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- High-sensitivity C-reactive protein (CRP) and homocysteine could be used in people with moderate cardiovascular risk as additional biomarkers in assessing the risk of CV disease.

The profile of a patient to maintain their health

- Nonsmoker
  - Physical activity: 30 min a day, 5 days a week
  - Healthy eating habits
  - Without excess weight
  - Blood pressure below 140/90 mmHg
  - Serum cholesterol sub 190 mg / dl, LDL <115mg./dl
  - Controlled glucose metabolism fasting blood glucose <100 mg/dl, Hb A1C <7%
  - Avoiding excessive stress
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- The objectives of risk factor management in CV diseases
  - population strategy (changes in lifestyle and environment, addressing the entire population)
  - high risk strategy (reducing the level of risk factors in people at high risk, either individuals without CVD, but at the top of the distribution of cardiovascular risk, or individuals with manifest CVD).

### **Steps in the prevention of CV diseases**

1.Evaluation of risk factors by risk chart and calculation of BCV risk at 10 years (SCORE diagram).

- The SCORE system estimates the risk of a first fatal atherosclerotic event at 10 years, regardless of myocardial infarction, stroke, aortic aneurysm or others.
- The risk factors involved are: sex, age, total cholesterol, systolic blood pressure values, smoking status.

The total cardiovascular risk / categories:

- 1. Very high risk
- 2. High risk
- 3. Moderate risk
- 4. Low risk

#### 1. Very high risk

Any of the following:

- BCV documented by invasive or noninvasive tests (such as coronary angiography, nuclear magnetic resonance, stress echocardiography, carotid atherosclerosis plate ultrasound), history of myocardial infarction, acute coronary syndrome, coronary revascularization (PCI, CABG) and other procedures arterial revascularization, ischemia, peripheral arterial disease.
- diabetes mellitus (type 1 or type 2) with one or more cardiovascular risk factors and / or target organ lesions (eg microalbuminuria: 30-300 mg / 24 h).
- severe chronic kidney disease (RFG <30 ml / min / 1.73 m<sup>2</sup>).
- A SCORE risk calculated  $\geq 10\%$ .

#### 2. High risk

Any of the following:

- A single risk factor with extremely high values, such as familial dyslipidemia or severe hypertension.
- Diabetes (type 1 or type 2), but without cardiovascular risk factors or target organ damage.
- Moderate chronic kidney disease (GFR 30-59 ml / min / 1.73 m<sup>2</sup>).
- A SCORE risk calculated  $\geq 5\%$  and  $< 10\%$

#### 3. Moderate risk

- A SCORE risk is  $\geq 1$  and  $< 5\%$

#### 4. Low risk

- A SCORE risk  $< 1\%$

## 2. Changing the lifestyle

- The family doctor has the obligation to advise at-risk families on the necessity of adopting a healthier lifestyle.

Recommendations for a healthy life:

- Saturated fatty acids represent less than 10% of total energy intake by replacing them with polyunsaturated fatty acids.
- Trans-unsaturated fatty acids: as little as possible, preferably not from processed foods, and <1% of the total energy intake of animal origin
- <5 g of salt per day
- 30-45 g of fiber per day, from whole grains, fruits and vegetables
- 200 g of fruit per day (2-3 servings)
- 200 g of vegetables per day (2-3 servings)
- Fish at least 2 times a week, of which a portion should be fatty fish
- The consumption of alcoholic beverages should be limited to two glasses per day (20 g / day alcohol) for men and one glass per day (10 g alcohol) for women

### **CV risk factor management**

The risk factors management CV aims to correct the 6 major risk factors: smoking, HTA, dyslipidemia, sedentary lifestyle, obesity, diabetes.

a. Smoking - must be completely discontinued. Studies have shown that the only effective way in time is to give up smoking permanently.

Strategies for smoking cessation counseling. The 5 A:

- ASK - systematic questioning of smoker status;
- ASSESS - determining the degree of addiction and the desire to quit smoking;
- ADVISE - permanent counseling;
- ASSIST-agreement on the smoking cessation plan;
- ARRANGE - organizing the monitoring process.

The patient should be informed about the health benefits of smoking cessation:

- fewer sick days,
- fewer symptoms,
- increased tolerance to physical exertion,
- lowering the risk of IMA from the first day of quitting smoking,
- coronary mortality is halved after the first year of smoking cessation,
- coronary morbidity becomes equal to that of non-smokers at 5 in those with manifest coronary disease,
- quitting smoking halves the risk of mortality and cardiovascular accidents, reducing the value of BP, cholesterol, LDL-cholesterol.

b. Hypertension

- hypertension is a major risk factor for
  - coronary artery disease
  - heart failure

- cerebrovascular disease
- peripheral arteriopathy
- renal insufficiency
- atrial fibrillation

#### BP values

- below 140/90 mmHg
- below 130/80 mmHg in those with DZ or kidney disease present
- Observational studies
  - in elderly patients: the risk is directly proportional to the systolic blood pressure

#### Tips

- recommendations for healthy eating
- a hypo-sodium diet
- daily administration of antihypertensive drugs
- explanation of the antihypertensive effect in case of improvement of the other risk factors: obesity, sedentary lifestyle, dyslipidemia, increased physical exertion

#### c. Dyslipidemia

- Cholesterol and LDL-cholesterol are risk factors for BCV
- CT below 190 mg / dl
- LDL below 115 mg / dl
- Hypertriglyceridemia and low HDL-cholesterol are independent risk factors for BCV
- HDL over 40 mg / dl
- triglyceride below 150 mg / dl

#### d. Physical activity

- The guides recommend periodic physical activity, aerobic exercises, as a very important non-pharmaceutical tool for primary and secondary cardiovascular prevention.
- It is recommended to carry out 2 1/2 h - 5h / week. of moderate intensity physical exercises.

#### e. Obesity

- It is recommended to decrease the weight until a BMI of 18.5-24.9 kg / m<sup>2</sup> is obtained.
- The distribution of adipose tissue by area is more important in determining the cardiovascular risk than the total body weight
- By analyzing the abdominal circumference a better CV risk assessment is obtained.

The values of the abdominal circumference representing the CV risk factor are based on sex

in men:

- over 94 cm represents cardiovascular risk factor;
- over 102 cm represents an increased cardiovascular risk factor

in women:

- over 79 cm represents cardiovascular risk factor;
- over 87 cm represents an increased cardiovascular risk factor

f. Diabetes

- optimal blood sugar control
- Hb A1C below 7%
- attention in antihypertensive treatment
- treatment of dyslipidemia
- platelet antiaggregant treatment - 25% lower risk of cardiovascular events in patients with DZ and cardiovascular, cerebrovascular or other forms of atherothrombotic disorders

### **3. Chemoprophylaxis**

- antiplatelet therapy for platelets
  - in primary prevention: CVD risk decreases
  - in patients with cardiovascular or cerebrovascular disease: the risk of morbidity and mortality decreases
  - in patients with SCA: dual anti-aggregation therapy with a P2Y12 inhibitor (ticagrelol or prasugrel) plus aspirin is superior to the combination of clopidogrel plus aspirin
- antithrombotic therapy
  - in atrial fibrillation
  - depending on the risk factors for stroke and thrombembolism

### **4. Immunoprophylaxis**

- influenza and pneumococcal vaccination in people at risk of CVD