

Evaluation of risk factors and prevention of respiratory diseases

Most causes of chronic respiratory disease are known, and the study of risk factors and quality of life is an important element of clinical history.

Non-influential risk factors:

- age,
- gender,
- genetic susceptibility.

Influential risk factors , on which the prevention activity can act:

- smoking,
- exposure to internal and external pollutants,
- outdoor and indoor allergens
- occupational exposure

Risk factors for other chronic diseases , such as:

- diet,
- obesity and
- reduced physical activity

Socio-economic, cultural, political and environmental determinants	Influential risk factors
• globalization	• unhealthy diet
• urbanization	• sedentary
• population aging	• smoking
• westernization	• pollution - internal, external
	• allergenic
	• accusatory factors
	Non-influential risk factors
	• age
	• heredity

Causes of chronic respiratory disease (according to WHO)

Intermediate pathological conditions:	The main chronic diseases:
• blood pressure rise	• heart disease
• increased blood sugar	• strokes
• dyslipidemia	• cancers
• obesity	• chronic respiratory diseases
• respiratory disorders	• diabetes
• allergic awareness	• allergic diseases

Smoking is by far the most important risk factor in chronic respiratory diseases, in all countries, regardless of their level of development, and its fight is a major objective of to all health systems.

According to WHO reports, the main causes of death from smoking worldwide are:

- **cardiovascular diseases (1.7 million deaths annually),**
- **chronic obstructive pulmonary disease (1 million deaths annually) and**
- **lung cancer (0.85 million deaths annually).**

In children passive smoking:

- increases the risk of sudden death of the newborn,
- small airway disease,
- prevalence of wheezing and cough,
- the risk of exacerbation of asthma.

In adults, active and passive smoking are associated with:

- increased risk of chronic respiratory disease (COPD, asthma, lung infections),
- lung and non-lung cancer .

Indoor pollution consists of exposure to substances such as:

- cigarette smoke,
- house dust allergens,
- formaldehyde,
- volatile organic compounds,
- carbon monoxide

Their source is the living or working environment , especially the heating and ventilation systems and is influenced by the socio-economic level.

It was found that women and children under 5 represent the population most susceptible especially in poor countries.

Outdoor pollution is represented by a multitude of substances that have the source especially industry and transport, being more emphasized in the urban environment.

The most known substances are:

- carbon monoxide,
- nitrogen monoxide,
- sulfur dioxide,
- vapor
- gas.

Pollution can complexly affect the respiratory system, causing or exacerbating respiratory diseases , such as asthma and allergic rhinitis, chronic obstructive pulmonary disease (COPD) and aggravating respiratory infections.

The consequences of increased exposure to indoor and / or outdoor polluting factors are: increased incidence and severity of respiratory diseases , as well as increased overall morbidity and mortality.

The prevalence of obstructive pulmonary disease, especially bronchial asthma and chronic obstructive pulmonary disease (COPD), has been steadily increasing in recent decades.

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There are risk factors that favor the development of asthma in genetically predisposed individuals, triggering the symptomatology or promoting its persistence and aggravation of the disease.

The main influencing risk factors for asthma in children are:

- maternal smoking,
- artificial nutrition,
- early allergenic exposure,
- viral infections,
- socio-economic factors.

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Most known risk factors in adults are:

- allergenic exposure,
- smoking,
- occupational factors,
- sedentary lifestyle,
- indoor and outdoor pollution,
- respiratory infections,
- obesity
- western lifestyle.

Most patients with COPD (over 80%) have as a risk factor smoking , the risk being directly proportional to the duration , quantity (number of packages / year) and onset of smoking .

Other risk factors for COPD are:

- individual factors (genetic susceptibility, alpha1-antitrypsin deficiency),
- respiratory infections,
- indoor and outdoor pollutants
- professional factors.

Other risk factors in the living or professional environment can induce acute (due to massive exposure to respiratory irritant) or chronic respiratory diseases, such as interstitial lung disease and hypersensitivity pneumonitis (eg , farmer's lung, poultry breeder's disease, farmer's disease, mushrooms, beet or cotton).

In order to reduce the effects of the risk factors of respiratory diseases, they must be recognized, quantified and monitored. The 2017 guides (GINA, GOLD) draw attention to new favorable conditions for the development of chronic lung disease:

- use of paracetamol under 1 year and asthma,
- low birth weight and COPD.

WHO strategy for prevention and control of chronic respiratory diseases (WHO Strategy for Prevention and Control of Chronic Respiratory Diseases) recommends the implementation of national programs to identify and control the main risk factors.

These relate in particular to combating smoking in public spaces (and in our country in 2016),

- indoor and outdoor pollution control measures,
- reducing the incidence of respiratory infections and
- control of exposure to occupational risk factors.

Evaluation of cardiovascular risk factors

The clinical examination of the balance includes the evaluation of the cardiovascular risk factors.

Factors that by their presence contribute to the increased cardiovascular risk of the hypertensive patient are:

Major risk factors:

- - Smoking
- - Dyslipidemia
- - Old diabetes
- - Age over 55 years
- - Central obesity
- - Sex (postmenopausal women or men}
- - Family history of cardiovascular disease in women under 55 and in men under 55

Evaluation of cardiovascular risk factors

Target organ / cardiovascular disease involvement with clinical manifestations:

- - Heart attack
- - LVH
- - Angina pectoris or history of MI
- - Previous revascularization
- - heart failure
- - stroke
- - Peripheral vascular disease
- - Retinopathy

Clinical-paraclinical evaluation thus allows stratification of hypertensive patients with regard to the risk of developing cardiovascular events. This risk is determined not only by the level of BP , but also by the degree of damage of the target organs , as well as by the accumulation of other risk factors for cardiovascular diseases. At the risk of predisposing risk factors are the conditions that reduce the risk of illness. Such situations are encountered in some areas of the world, with environmental social conditions in which ischemic heart disease and hypertension have an extremely low prevalence, and human longevity is very high. Also, the rarity of obstruction cases was found coronary disease in patients with severe pernicious anemia. Further studies on these negative risk factors would could bring new insights into the internal mechanism of the population against atherosclerosis or other diseases. In his current activities the family doctor can discover many risk factors . With the help of anamnesis and al

the objective examination and the patient's living environment, the doctor family can make a first appreciation of the risk factors, being able to you even make a risk chart of the individual . Some risk factors are influential and others are not influential.

Thus, for example, the gender, age or heredocolateral background of an individual cannot be influenced. If the parents of an individual have died of MI, these antecedents will remain an irrelevant risk factor. But we will be able to influence other risk factors such as: smoking, excessive consumption of alcohol or animal lipids.

Therefore, primary prevention will have to give special importance to risk factors and especially those that can be avoided.

Because some diseases such as DIABETES and HYPERTENSION can be risk factors for other diseases, such as BCI, often primary prevention is very much intertwined with secondary and tertiary prevention .

Possibilities for measuring risk

Risk	Remarks
<ul style="list-style-type: none"> Absolute risk 	<ul style="list-style-type: none"> It is identical to the rate of disease onset, that is, the ratio between the number of new cases in a time t and the number of persons at risk in the range t (R_a)
<ul style="list-style-type: none"> Relative risk 	<ul style="list-style-type: none"> It is equal to $R_r = \text{incidence rate of those exposed} / \text{incidence rate of unexposed ones}$
<ul style="list-style-type: none"> The attributable risk 	<ul style="list-style-type: none"> It is equal to $R_a = \text{incidence rate at exposed} / \text{incidence rate at unexposed}$

The mechanism of action of the different risk factors in the etiopathogenesis of atherosclerosis

Factor	The mechanism of action
<ul style="list-style-type: none"> Smoking 	Lipid mobilization Increasing their free fatty acids HDL reduction Increased catecholamine secretion
<ul style="list-style-type: none"> alcohol 	HDL reduction Increased catecholamine secretion Disruption of coagulation
<ul style="list-style-type: none"> Inactivity 	HDL reduction obesity Diabetes
<ul style="list-style-type: none"> obesity 	The decrease in HDL Diabetes Disruption of coagulation

The mechanism of action of the different risk factors in the etiopathogenesis of atherosclerosis

Factor	The mechanism of action
• HYPERTENSION	<ol style="list-style-type: none"> 1. Hemodynamic stress 2. Endothelial lesions 3. Proliferation of smooth muscle cells
• Birth	<ol style="list-style-type: none"> 1. HDL reduction 2. thrombogenesis 3. hypertension
• stress	<ol style="list-style-type: none"> 1. Increased catecholamine secretion 2. It mobilizes lipids 3. It favors hypertension

Significant progress has been made in understanding the development of cardiovascular risk over the last 3 decades. The recent decline in cardiovascular mortality is due to improved methods of screening and appropriate treatment , as well as increased public awareness of the importance of a healthier lifestyle. Numerous prospective studies indicate that essential hypertension has an onset in childhood, which is why blood pressure should be measured correctly in the routine pediatric medical examination for children over 3 years old.

The objectives of risk factor management in cardiovascular diseases:

- **Counseling - the first step in the prevention of cardiovascular disease**
- **Applying a correct prevention of cardiovascular risk factors present early in childhood will effectively reduce the occurrence of diseases and complications.**
- **The family physician is required to advise at-risk families on the need for a healthier lifestyle. The American Heart Association's Cardiovascular Health Scheme may be a useful guide for introducing recommendations for changing risk factors during medical visits. regular routines of the child.**

When the family doctor identifies a child at risk of cardiovascular disease, a counseling session with the whole family may be the most effective way to initiate intervention to reduce both family and child risk factors.

- All family members should attend this 30-60 minute session .
- Prior to the counseling session, parents can complete a family history questionnaire focused on cardiovascular risk factors.

Family questionnaire adapted from Washington RL Intervention to reduces cardiovascular risk in children and adolescents

Name

Date of birth birth weight sex length at birth race

Dad's occupation father's age

Mother's occupation mother's age

Social isolation stress negative emotions

The following questions may help to better assess the risk of a child's cardiovascular disease as an adult:

1. Does the child have a parent with myocardial infarction, stroke or high blood pressure?
2. Does the child have both parents with myocardial infarction, stroke or high blood pressure?
3. The child has grandparents with myocardial infarction, stroke or hypertension?

If yes to any of the above questions, the questionnaire should be continued with the following questions:

4. Did any of the above situations occur before 55 years?
 5. If yes, which of the family members suffered myocardial infarction, stroke or hypertension before 55 years?
 6. Were there any unexplained or sudden deaths in the family?
 7. Does anyone have a close family member with diabetes?
 8. If yes, what kind of diabetes?
 9. Do parents smoke?
 10. If so, how many cigarettes per day do you smoke?
 11. Is alcohol consumed in the family?
 12. Eating habits?
 13. Favorite foods?
 14. The amount of salt consumed?
 15. What are the cholesterol values of the parents?
 16. When the cholesterol levels were first and last measured?
 17. What are the values of HDL cholesterol, LDL cholesterol, triglycerides, CRP?
 18. What is the last value of the parents' blood sugar?
 19. Do parents use drugs?
 20. If yes, what medicines? Which parent?
 21. Parents exercise periodically (at least 3 times a week, minimum 30-40 minutes)? What kind of exercises?
 22. Did you measure your pulse during the effort?
 23. What is the current height and weight of the father?
 24. What is the current height and weight of the mother?
 25. What are the abdominal circumferences of the parents?
 26. Does the child have brothers or sisters?
 27. What is the height and weight of the child?
 28. The child sports or has physical activity at least 3 times week for 30-40 minutes? What kind of physical activity and what is the pulse during it?
 29. Does the child smoke? How long and how many cigarettes per day?
 30. Does the child drink alcohol?
 31. Is the child a drug user? How long and what exactly?
 32. Does the child take medication? What?
 33. Is he diagnosed with a major illness? What disease?
 34. Has your blood pressure been measured?
 35. Has cholesterol measured? When were these measurements made?
- There are several methods of calculating the overall and relative risk of a person.

Factors that influence blood pressure are:

- age, height, heredity, genetic factors, fetal life, race.

As the subject gets older, the risk of developing high blood pressure increases.

There are also risk factors that can be controlled: obesity, diet, sedentary lifestyle, stress, drug use, smoking, consumption of alcohol.

Gender - during adolescence, boys have higher blood pressure than girls, as age increases, this difference disappears.

Obesity - is a complex multifactorial disorder that develops from the interaction of behavioral, environmental and genetic factors that can influence individual response to diet and physical activity. **Avoiding weight gain or reducing the existing excess weight** plays a very important role. Weight loss is strongly recommended for obese (BMI > 30) or overweight (BMI 25-30), as well as those with excessive abdominal fat.

Active lifestyle changes in people at risk increased depend on:

- the patient understands the relationship between lifestyle and disease
- agrees to change the lifestyle the patient is involved in identifying risk factors and modifying them
- drawing up a lifestyle change plan
- monitoring the progress of these changes.

Eating

- adjusting the caloric ratio to maintain the ideal body weight (we recommend the consumption of fruits, vegetables, cereals, whole bread, low fat products, fish, lean meat), reducing carbohydrate consumption.

a. Lipid management - plasma cholesterol = 190 mg / dl, LDL cholesterol = 115 mg / dl, triglycerides <150 mg / dl.

- Particular attention should be paid to people with diabetes in order to prevent microvascular complications.

b. Quit smoking and alcohol

c. Increasing the degree of physical activity.

The concept of primary and secondary prevention has been replaced by recognition of the fact that atherosclerosis is a continuous process. Priorities have been proposed on four levels: patients with diagnosed disease, asymptomatic individuals with high risk of CVD mortality, first-degree relatives of patients with premature CVD and other individuals encountered in routine clinical practice. . Lifestyle counselors are given greater importance, with the CV risk approach being revised in young people, using **the relative SCORE risk charts**.

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 BP values, smoker status.

There are currently two approaches to **CV disease prevention** :

- **population strategy** (changes in lifestyle and environment, addressing the entire population) and
- **high risk strategy** (reducing the level of risk factors in persons at high risk, either individuals without CVD, but at the top of the distribution of cardiovascular risk, or individuals with manifest CVD).