ATTACHMENT:

Useful remarks for patient and doctor, to be associated to the analytical results. Your doctor should interpret this report.

Cod. ID: 123456
CCV: 122
Date: 01/01/2013
Patient: Rossi Mario

Rapport de:
NatrixLab
Via Cavallotti, 16
42122 Reggio Emilia
Aut.n. 67 del 26.01.10
Direttore Sanitario
Dott. Michele Cataldo
www.natrixlab.it

CARDIO WELLNESS TEST
(the index of how healthy your cardiocirculatory system is)

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WHAT IS THE CARDIO WELLNESS TEST?

The Cardio Wellness Test analyses eight parameters, recognised and validated by the latest research, correlated to the prevention and onset of diseases of the circulatory system:

- total cholesterol
- HDL
- LDL
- triglycerides
- homocysteine
- reactive C protein (high sensitivity method)
- plasma fatty acids (omega-6/omega-3 ratio)
- lipoprotein A

CHOLESTEROL

Cholesterol is of fundamental importance within the organism. It intervenes in the formation and repair of cell membranes, and it is the precursor of vitamin D, of the steroid hormones and of the sexual hormones. Cholesterol does not circulate freely in the blood, but is bonded to transportation proteins to form lipoproteins; total cholesterol is divided into VLDL (with very low density), LDL (low density) and HDL (high density). Low density lipoproteins (LDL) have similarities with the endothelial walls of the arteries, and these complexes are the ones which favour the appearance and onset of arteriosclerotic plaque; vice versa, the high density lipoproteins (HDL) perform the opposite function: they seize the cholesterol in the blood stream and take it to the liver.

TRIGLYCERIDES

The triglycerides are lipids used as a reserve of energy: they store the unused calories and provide energy. When the organism does not need energy, it stores the triglycerides in the fat cells. In a person whose calorie intake is greater than his/her need, a condition of hypertriglyceridemia can be found which, if protracted over time, can give rise to various chronic diseases.When the triglyceride values in the blood exceed the range of normality, they are in fact considered as a cardiovascular risk factor.

HOMOCYSTEINE

This is an amino acid the formation of which starts from methionine, and which seems to be an important marker of cardiovascular risk. High levels can also be found in other pathologies, such as neurological and muscular diseases, rheumatoid arthritis, systematic lupus erythematosus, hypothyroidism, and in subjects undergoing certain pharmacological treatments. Some factors which increase homocysteine levels are:

- Nicotinism
- Excess intake of coffee and alcohol
- Premature ageing
- Oestrogen-progesterone therapy
- Diet poor in B group vitamins

C-REACTIVE PROTEIN (CRP)

Produced by the liver in the acute phase of various diseases, in inflammatory processes of bacterial and viral origin, during myocardial infarct, in acute articular rheumatisms, in LES and in Crohn's disease. High CRP levels indicate that the organism is subject to considerable stress. At present this parameter is considered able to predict cardiovascular events: the higher the CRP levels, the higher the risk of myocardial infarct or cerebral ictus. It has also been demonstrated that this value further increases the risk to which people with high blood pressure are exposed. It is important to not that high levels of CRP in people with moderate to severe high blood pressure can double the risk of heart attack or stroke.

PLASMA FATTY ACIDS PROFILE

The term fat does not refer only to visible fat deposits, which can sometimes create aesthetic problems. Every cell of our body contains fats which carry out important functions: energetic, metabolic and structural. They are the precursors of substances similar to powerful local hormones (eicosanoids) which are important because they control inflammation, the immune response and arterial blood pressure. They can be classified as saturated fatty acids (SFA) and unsaturated fatty acids. The latter differ from mono-unsaturated fatty acids (MUFA) and polyunsaturated fatty acids (PUFA). Of the essential fatty acids (which must be taken in with food), arachidonic acid (AA-omega6) and eicosapentaenoic acid (EPA-omega3) are considered very important for the well-being and health of the entire organism. What counts most is maintaining a correct balance between omega-6 and omega 3.

LIPOPROTEIN A

Lipoprotein A, otherwise known as “third cholesterol” is similar to LDL cholesterol, the “bad” one. For this, recent studies have associated high levels of this molecule to the increase risk of coronary disease, myocardial infarction, thrombosis, inflammation and the formation of foam cells, precursory cells to the formation of atherosclerotic plaques. Lipoprotein A is also a cardiovascular risk factor, independent from the traditional ones like cholesterol, hypertension, diabetes, obesity and smoking, and therefore should be monitored in the same way to prevent and treat cardiovascular disorders. Diet, exercise and statins are not very effective in lowering the levels of this molecule.

THE MAIN CARDIOVASCULAR DISEASES

Cardiovascular diseases are those which affect the heart and circulatory system: among the best known are hypertension, heart attack, angina, stroke and hypercholesterolemia, heart failure.

Hypertension.
Called the "silent killer" by the experts, it may be symptom-free for many years to then break out unexpectedly and with fatal consequences (heart attack, stroke); in the long term it may lead to kidney damage and sight impairment. The importance of checking one's blood pressure is clear, as well as intervention on the diet front; which may be taken to regularise it. Physical exercise also plays a key role: practising sport regularly helps to keep blood pressure within the limits recognised internationally as acceptable (80/120 mm/Hg).

Myocardial infarction.
Myocardial infarction is spoken of when a part of the cardiac muscle does not receive sufficient oxygen as a result of a vascular obstruction of the arteries of the heart. Although a heart attack may appear sudden, in actual fact the process which leads to it is a long one (taking several years) and by making small changes in one's lifestyle it may be delayed or avoided.

Angina.
This is a phenomenon which occurs when the heart muscle requires an increased amount of oxygen (such as during intense physical activity) and the coronary arteries are unable to satisfy such increased demand on account of an obstruction of greater or lesser size: this results in an oxygen deficiency of the heart which manifests in the form of a sharp pain.
The effects of angina on an individual's life are extremely varied: some patients conduct a normal life, although unable to indulge in physical exercise, while in others permanent invalidity ensues. Although pharmacological treatment for curing the symptoms of angina exists, the importance of prevention, in this case too, should not be overlooked: smoking and hypertension are two triggers to be avoided and kept under control.

Stroke.
This is a cardiovascular disease which affects the blood vessels supplying the brain; a stroke occurs when a physical obstruction (thrombosis) prevents the regular flow of blood and relative transport of oxygen and nutrients. Just a few minutes are enough to cause the death of nerve cells; as a result the latter (which cannot be replaced) no longer perform their function, causing permanent damage.
In this case too prevention and lifestyle are key factors.

Hypercholesterolemia.
Hypercholesterolemia is one of the main causes of arteriosclerosis, characterised by lesions infiltrated by lipids (plaques); a phenomenon which in turn may be considered the beginning of many other cardiocirculatory diseases. Hypercholesterolemia can be kept under control by medications and an improved diet.

Heart failure.
Heart failure refers to the inability of the heart to pump sufficient blood to satisfy the body's needs. In normal conditions the heart acts as a pump so that the blood can flow through the arteries and reach all the organs, thanks to their contraction. In the case of heart failure the heart is unable to perform this essential function.

CARDIOVASCULAR RISK INDEX

As well as showing the results of the eight types of analysis above, the Cardio Wellness Test also provides an assessment called cardiovascular risk index expressed as a percentage probability of suffering a first major cardiovascular event (heart attack or stroke) over the next ten years. The cardiovascular risk assessment is performed by integrating the parameters obtained from the analysis carried out and from the patient's records according to a method indicated by the Italian Higher Institute of Health.
This value aims to provide an easy reference for the patient, as opposed to having to wade through large numbers of figures which are difficult to interpret. The cardiovascular risk assessment is a simple and objective tool for assessing the state of cardiovascular health.
The Cardio Wellness Test is, finally, a precious source of information on the correctness of one's lifestyle and state of health of the circulatory system.

THE IMPORTANCE OF LIFESTYLE

Taking care of yourself is the first way of combating any disease! There are some habits which, if continued, protect the cardiovascular system:

- don't use the lift, walk
- don't smoke
- do moderate and constant physical exercise
- don't get stressed out (have a calmer approach to life, change your mental attitude).

These simple steps can considerably improve your state of well-being, helping to keep your heart in perfect shape!

THE IMPORTANCE OF A CORRECT DIET

You can't do enough to keep your cardiovascular system in shape! Very few people seriously consider the fact that diet plays an important role in the onset and development of heart disease.
Healthy nutritional habits play a key role and are in the front line of prevention; it should also be remembered that cardiovascular diseases vary greatly from one to another but by preventing one you can practically prevent them all; prevention is therefore the best ally for lengthening life expectancy and the quality of life.
Wine plays an important role as regards prevention, the studies and research conducted are extensive and all point in the same direction: one glass of wine per meal (75 ml) is good for the cardiovascular system (reducing the risk of cardiovascular disease by up to 32%). However, it's important not to overindulge, turning a healthy habit into a bad one is small step: even 4 glasses of wine a day may cancel out the preventive effect of the one glass per meal! A reduction of salt intake is very important, (especially for those suffering from hypertension) to allow better control of blood pressure and a reduction of the medications used to control this condition (subject to doctor's advice), it is therefore best not to add salt to food: it already contains enough; although foods may have less flavour initially, in the long run you'll be able to savour tastes better! There are also many studies indicating that regularly eating plain dark chocolate reduces blood pressure.

The regular consumption of fruit and vegetables (about 400 grams a day) is also very important; as well as reducing the incidence of cardiocirculatory disease, this healthy habit keeps the intestine regular.
Garlic also plays an important role in the prevention of cardiovascular disease: eating garlic regularly reduces cholesterolemia by approximately 17 mg/dl; eating the clove of garlic you used for cooking, instead of throwing it away, is a great habit to get into!
Recent studies have also shown that eating almonds regularly (68 grams a day of shelled almonds) reduces

plasmatic cholesterol by approximately 10 mg/dl.
Eating more fish per week (rich in omega-3 fatty acids) reduces the onset of cardiovascular disease by 14%; to achieve such effect eating just 120 g of oily fish 4 times a week is sufficient.
So if you don't eat fish regularly it's advisable to supplement your diet with omega-3 fatty acids (subject to your doctor's advice); in fact numerous studies show it to be beneficial in preventing infarctual phenomena.
The simple recommendation to eat less red meat (rich in omega-6 fatty acids) in favour of more fish (preferably not farmed) is considered, in the long run, to produce amazing results in terms of state of health.
Some studies have linked a reduction of homocysteine levels in the blood with a regular intake of folic acid and group B vitamins; however get advice from your doctor before deciding to supplement your diet with folic acid and group B vitamins.
From all the above information the impact of following the correct diet can be clearly deduced both in terms of the costs to society of some diseases and in terms of quality of life: in fact, just a few small expedients to improve one's health and look forward to the future with confidence. The importance of proper nutrition in teens and children for a healthy future as an adult is also becoming increasingly evident.

REPETITION OF THE TEST

Although no fixed period has been established for repeating the test, it's advisable to repeat it after 6 months if:

- the values are not satisfactory;
- pharmacological treatment (prescribed by the doctor) has been started;
- changes to the patient's lifestyle have been introduced;

the test should be repeated after 12 months if:

- the parameters are all within range and prevention has become a lifestyle choice
- to check the efficacy of a pharmacological treatment (prescribed by the doctor) over time

IMPORTANT

The test results must always be framed in a context relevant to the individual patient by his or her physician and regarding their specific clinical situation. This test can not be partially reproduced. The laboratory results, charts and explanations contained within this document should not be treated as a medical diagnosis. They represent only one tool available to the doctor in formulating a correct treatment, and may be used by integrating them with other elements found during a check-up or by other diagnostic tests.

HOW TO INTERPRET THE TEST

The result of the Cardio Wellness Test is divided as follows:

1. the first page shows the values of the following parameters: reactive C protein, LDL, total cholesterol, HDL, triglycerides, homocysteine, lipoprotein A;
2. the second page shows the result relative a complete profile of the haematic fatty acids;
3. the third page shows the absolute cardiovascular risk index, calculated according to guidelines provided by the Italian Higher Institute of Health.

TEST RESULTS:

Cod. ID: 123456
CCV: 122
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Patient: Rossi Mario

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Dott.ssa Ausilia Rausa

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Cod. ID: 123456
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NatrixLab
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42122 Reggio Emilia
Tel. (+39) 0522 232606

Analysis	Results	Relevant range	
Homocysteine	**10.4 umoli/l**	5 - 15	
Hs-CRP	**0.050 mg/dl**	< 0.10	
Triglycerides	**58 mg/dl**	< 175	target value
		176 - 199	borderline
		200 - 500	high
		> 500	very high
Lipoprotein A	**13.40 mg/dl**	< 30	
LDL Cholesterol	**120 mg/dl**	< 130	target value
		130 - 159	slightly high
		160 - 189	high
		> 190	very high
HDL Cholesterol	**72 mg/dl**	> 39	men
		> 43	women
Total Cholesterol	**193 mg/dl**	0-200	

Test performed in external laboratory.

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Percentage distribution of plasma fatty acids

Analyte	Description	Result (%)
Palmitic acid	C 16:0	**25.79**
Palmitoleic acid	C 16:1	**2.37**
Stearic acid	C 18:0	**7.34**
Oleic acid	C 18:1	**21.79**
Linoleic acid	C 18:2	**26.29**
Linolenic acid	C 18:3	**0.30**
Eicosatrienoic acid	C 20:3	**1.45**
Arachidonic acid	C 20:4	**9.55**
Eicosapentaenoic acid	C 20:5	**0.73**
Docosapentaenoic acid	C 22:5	**1.98**
Docosahexaenoic acid	C 22:6	**2.41**

	Result (%)	(*) Ideal Values (%)
Summation A.G. SATURATED - SFA	**33.13**	27.00-37.00
Summation A.G. - MONOUNSATURATED - MUFA	**24.16**	22.00-28.00
Summation A.G. - POLYUNSATURATED - PUFA	**42.71**	28.00-40.00

AA/EPA Ratio	**13.06**

In clinically healthy subjects taking omega-3, the ideal AA/EPA ratio ranges from 3.7 to 5.1.

(*) The ideal values are referred to clinically healthy Italian subjects. The minimum and maximum ranges are arbitrary and are the result of experimental studies

Test performed in external laboratory.

Cardiovascular risk index

This index expresses the percentage probability of suffering a first major cardiovascular event (heart attack or stroke). This assessment is made following the directives of the Italian Higher Institute of Health. The risk index is calculated by integrating the value of several individual risk factors with the analytical data obtained.

Gender:	F
Age:	56
Smoker:	NO
Arterial systolic pressure:	120
Total cholesterolemia:	193
HDL cholesterolemia:	72
Diabetes:	NO
Use of anti-hypertension medications:	NO

The probability of suffering a first major cardiovascular event is equal to

1.0 %

over the next 10 years

This means that out of 100 people with the same characteristics,

1.0

will suffer a myocardial infarct or stroke over the next 10 years.

VALUE	**RISK**
Risk index of 20% or higher	high cardiovascular risk
Risk index of 3% to 20%	limited cardiovascular risk
Risk index of less than 3%	low cardiovascular risk

Repeat the cardiovascular risk assessment with new hematochemical results at least:

- every six months for persons with a high cardiovascular risk
- once a year for persons at cardiovascular risk (adopting a healthy lifestyle)
- every five years for persons at low cardiovascular risk

IMPORTANT

- The age group considered in terms of absolute cardiovascular risk is from 35 to 69 years old, outside this range test results are no longer significant. In this case the test will in any case be performed considering the age range of 35 to 69. In this case the result has a purely informative meaning and no longer gives an absolute probability of suffering a first major cardiovascular event (heart attack or stroke).
- To extrapolate the absolute cardiovascular risk value some of the information in the patient's medical records is required; if this information is not provided correctly the test becomes meaningless.
- In the event of missing data, NatrixLab will replace it with parameters recognised as standard: if the patient does not indicate his/her status as regards smoking he/she will be considered a non-smoker, if the patient does not indicate the presence of diabetes he/she will be considered a non-diabetic, if the patient does not declare his/her blood pressure a pressure of 80/120 mmHg will be considered, if the patient does not declare use of anti-hypertension medications he/she will be considered as not undergoing treatment.
- Remember that the assessment of absolute cardiovascular risk refers to the probability of suffering a first major cardiovascular event (heart attack or stroke): should a first major cardiovascular event have already occurred, the test becomes meaningless.
- In the event of missing data on the patient record sheet, NatrixLab will not be responsible for the accuracy of the absolute cardiovascular risk index.