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Keeping Cholesterol, Diabetes and Obesity Under Control to Prevent Cardiovascular Disease

Naples, 13 February 2017 – Management of cardiovascular disease is becoming increasingly complex. There is no longer one medicine for all: even when blood pressure and cholesterol levels are identical, other concomitant conditions such as diabetes, and individual characteristics such as obesity and excess adipose tissue influence treatment strategies. Physicians are attempting to understand the varied mechanisms underlying heart and circulatory system diseases, how different categories of patients should be treated, and to what extent cardiology may be 'customised'.

These are the major points emerging from the *New strategies for reducing cardiovascular risk: from old factors to emerging and therapeutic opportunities* meeting organised in Naples by the School of Medicine and Surgery of the University of Naples Federico II and promoted by the Fondazione Internazionale Menarini.

'We are in need of ever more modern, sophisticated means to identify the patients most at risk of cardiovascular disease, stroke, myocardial infarction and sudden cardiac death,' explains Pasquale Perrone Filardi, Professor of Cardiology at the University of Naples Federico II and Chairman of the meeting. 'Modern-day genetic analysis offers new opportunities for identifying subjects who do not know they are at risk. Indicators of vascular inflammation and cardiac fibrosis, the molecular genetics of dyslipidmias and the relative impact on pharmacology and the genetics of cardiomyopathies are all new tools available to the clinician to customise approaches to treatment of both symptomatic and asymptomatic patients.'

One of the main meeting sessions addressed control of cholesterol levels and the optimal levels for minimising cardiovascular risk.

'European guidelines recommend that the LDL cholesterol target level be defined on the basis of individual risk of fatal cardiovascular events, in an interval from 70 to 100 milligrams per decilitre,' Alberico Catapano, Professor of Pharmacology at the University of Milan, tells us. 'The guidelines also suggest that in the case of high-risk subjects the cholesterol level, if it is excessive, be cut in half even if this means lowering it beyond the lower limit. For example, if the LDL level of an at-risk patient is 100, it is not enough to attain the recommended level of 70 mg/dl: we must instead attain a 50% decrease; that is, a level of 50mg/dl.'

Obesity and adipose tissue also play an active role in determining pathological consequences. 'One consequence of expansion of the body's fat deposits is that the

adipose tissue and fat cells develop a phenotypic modification that determines a modification of the substances exchanged by the cells, such as the adipocytokines,' confirms Dario Leosco, Professor of Internal Medicine at the University of Naples Federico II. 'These substances are involved in modulation of glucose and lipids, in vascular biology, and also in the body's inflammatory response. This process is significantly linked to arteriosclerotic complications and cardiovascular events.'
Stefan Anker, Professor of Cardiology at the University of Göttingen, Germany, stressed the connection between heart failure and diabetes. 'Heart failure is a syndrome associated with a vast number of other conditions, including kidney failure, respiratory conditions, anaemia and depression, to name just a few. As far as diabetes is concerned, it often coexists with heart failure, but in the other hand diabetes in and of itself represents a relevant risk factor for developing heart failure,' Anker continues. 'And since diabetes is on the increase in all parts of the world, it is probable that we will see an exponential increase in subjects with diabetes and heart failure in the near future. At the same time it is becoming increasingly clear that people suffering from heart failure and diabetes differ, clinically speaking, from non-diabetic heart failure sufferers. This is why physicians must manage these two patient categories differently and prescribe different treatments.' Also of note is the association between alterations of the circulatory system and an increased risk of developing Alzheimer's disease. 'This disease is the most frequent cause of senile dementia and is traditionally defined as the accumulation of insoluble deposits of a substance called beta-amyloid in the extracellular spaces in the brain. To slow this process, it is important to reduce oxidative stress, which alters the blood-brain barrier and so favours accumulation of the amyloid, warns Bruno Trimarco, Professor of Cardiovascular Diseases at the University of Naples Federico II. 'Data on several pharmaceuticals and nutraceuticals which can determine a reduction of oxidative stress, above all those products that favour an increase of nitrous oxide in the blood, would seem to offer advantages in this area. Nitrous oxide is used to improve neurotransmission at the synaptic level; this seems to be an important element for preventing cognitive deficit. This is why, to combat Alzheimer's, new drugs that act at the level of the neuronal synapses by increasing blood levels of nitric oxide are now under study.'

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