

Editor's Page

Exposure to Second-Hand Smoke and Cardiovascular Health: Time to Act

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Smoking has been well recognised as the main cause of lung cancer, chronic obstructive pulmonary disease, peripheral atherosclerosis, and as one of the most important risk factors for cardiovascular disease.¹ One should keep in mind that tobacco smoke contains over 400 chemicals, more than 60 of which are known or suspected to be carcinogenic. Tobacco smoke also contains carbon monoxide, a poisonous gas that inhibits the transportation of oxygen to the body's vital organs via the blood. The smoke emitted from the tip of a cigarette has about double the concentration of nicotine and tar as the smoke being inhaled directly by the smoker. It also contains about three times the amount of the carcinogen benzo(a)pyrene, five times the level of carbon monoxide and about 50 times the amount of ammonia. Add to these the other chemicals in the smoke, such as arsenic, formaldehyde, vinyl chloride, and hydrogen cyanide, and you have a very unappetising toxic gas cocktail. Many of the potentially toxic gases in the smoke are present in higher concentrations in the "sidestream" smoke than in the "mainstream" smoke. A non-smoker is subjected to both the sidestream smoke from the burning tip of the cigarette and the mainstream smoke that has been inhaled and then is exhaled into their environment by the smoker. Nearly four-fifths of the smoke that builds up in a room containing a smoker is of the more harmful sidestream type. Tobacco specific carcinogens have been found in samples of blood or urine provided by non-smokers who have been exposed to passive smoking.² Most non-smokers wish not to be exposed to tobacco smoke against their will.

As a consequence of all the above, the risk attributed to current smoking varies from 40% for coro-

nary heart disease to more than 60% for pharyngeal, oesophageal, and more than 80% for lung cancer.³ Smoking also triggers asthmatic disease. Furthermore, exposure of non-smokers to environmental tobacco smoke has been associated with a substantial increase in the risk of coronary heart disease and cancer.⁴⁻⁶ Several investigators have suggested that both active and passive smoking affect the cardiovascular system through endothelial dysfunction, an increase in oxidised low-density lipoprotein cholesterol, platelet adherence, the inflammation process, mitochondrial and oxidative damage, as well as an acute deterioration in the elastic properties of the aorta.⁷⁻⁹ Indeed, some of the effects of passive smoke on the cardiovascular system in non-smokers are comparable to the effects of smoking in smokers.⁶ Several studies have reported that second-hand smoke reduces oxygen uptake and exercise capacity, and enhances platelet aggregation and clotting, leading to endothelial dysfunction. In addition, it provokes changes in cholesterol levels, or reductions in serum antioxidant defence, which accelerate lipid peroxidation.^{10,11} The ATTICA study has revealed that second-hand smoke may result in chronic inflammation with increased levels of several inflammation markers, as seen among active smokers.¹⁰ The levels of these markers were proportional to the years of reported exposure to second-hand smoke, and were greater in those with regular exposure than in those with occasional exposure. These results suggest that the effects of second-hand smoke on the atherosclerotic process may be similar to those of active smoking.

The prevalence of passive smoking in the general population has serious implications for public health, as it represents an important cause of indoor pollution.

Undoubtedly, the creation of smoke-free environments makes a valuable contribution to human health, although the tobacco industry is trying to generate a false controversy about the fact that passive smoke is dangerous. Despite the known health hazard of cigarette smoking, the number of smokers continues to increase. Especially in Greece, 45% of the population are estimated to be current smokers. As a consequence, the number of people exposed to second-hand smoke is also growing. Indeed, we have observed among the Greek population that approximately 1 out of 3 men and women who have never smoked are exposed to second-hand smoke.¹⁰ Furthermore, it is estimated that in industrialised countries more than 17,000 children under the age of five are admitted to hospital every year because of the effects of passive smoking.

An effective ban on smoking in public places could be a successful way of reducing exposure to passive smoke and its related health outcomes. What happens in European countries? A total ban in smoking in enclosed public places has come into force in England, Ireland, and France, while Germany, the Netherlands, Austria, Italy and Spain have all made provision, in some shape or form, for smoking in pubs and hospitality outlets. Separate smoking areas are provided in Belgium, Cyprus, the Czech Republic, Estonia, France, Latvia, Lithuania, Slovenia, Italy, Malta and Sweden. In Greece smoking areas have been available in public places, although the air ventilation in most places is poor and the non-smokers are often exposed to environmental smoke. What we should do is to implement a policy on smoking by introducing real separate smoke-free areas and improving the ventilation of public places. One should keep in mind that the non-smoker is exposed to all the deleterious ef-

fects of smoking without receiving any of the satisfaction that smokers obtain from this habit.

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