



## TOBACCO AND CVD A FACT SHEET

### 1. Smoking and the heart

Cardiovascular disease (heart disease, stroke, vascular disease) is the leading cause of death in New Zealand – accounting for 38% of all deaths.

Smoking is the most important preventable cause of cardiovascular disease.

Smokers are almost twice as likely to have a heart attack as people who have never smoked.<sup>1</sup>

Nearly 35 percent of the deaths caused by smoking are due to heart and blood vessel disease. Smoking is associated with increased risk of heart attack, stroke, peripheral vascular disease, and aortic aneurysm.

### 2. How does smoking damage your heart?<sup>2</sup>

When a cigarette is smoked, the body takes in a large amount of toxic chemicals with every puff. The toxic chemicals in the cigarette smoke are almost immediately absorbed into the bloodstream.

Tobacco smoke leads to the development of fatty plaques being deposited in the walls of arteries. This process is called atherosclerosis and causes coronary artery disease. This process is due to the toxic chemicals in tobacco smoke:

- Interfering with the normal functioning of the arteries
- Causing inflammation in the lining of artery walls
- Increasing both blood triglycerides and LDL (bad) cholesterol
- Decreasing blood HDL (good) cholesterol
- Increasing the number of free radicals (you inhale more than 1,000,000,000,000,000 free radicals per puff of cigarette smoke) which damage cells throughout your body.

Tobacco smoke also promotes thrombosis - the formation of clots in the wall of arteries which can cause heart attacks and strokes. Tobacco smoke promotes thrombosis by:

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<sup>1</sup> US Department of Health and Human Services. 1990. *The Health Benefits of Smoking Cessation. A report of the Surgeon General.* Rockville, Maryland: DHHS.

<sup>2</sup> For more detailed information, see Ambrose JA, Barua RS. The Pathophysiology of Cigarette Smoking and Cardiovascular Disease - An Update. *J. Am. Coll. Cardiol.* 2004; 43(10), 1731-1737 and Bullen C. Impact of tobacco smoking and smoking cessation on heart disease. *Expert Rev. Cardio. Ther.* 2008; 6(6), 883-895

- Interfering with the actions of blood platelets and making them more prone to clotting
- Altering the clotting factors in the blood to make it more prone to clot and less able to dissolve any clots which do form

Carbon monoxide in cigarette smoke also reduces the amount of oxygen that the blood can carry to the heart, putting it at risk. It does this by binding to oxygen carrying molecules - haemoglobin, reducing the amount of oxygen that the blood can carry. The heart must then work harder to deliver enough oxygen in the blood to the rest of the body. Carbon monoxide stays in the bloodstream for about six hours. In some smokers, up to half the blood can be carrying carbon monoxide instead of oxygen.

### **What about cigar and pipe smoking?**

People who smoke cigars or pipes seem to have a higher risk of death from coronary artery disease (and possibly stroke) than non smokers, but not as high as that of cigarette smokers. This may be because they're less likely to inhale the smoke.

### **What about passive or second-hand smoke?**

The link between second-hand smoke (also called environmental tobacco smoke) and disease is well known, and the connection to cardiovascular-related disability and death is also clear. Second hand smoke exposure is associated with a 25% increased risk of coronary heart disease. It contributes to the process of atherosclerosis, increases stroke risk and also the size of heart attacks when they do occur.<sup>3</sup>

Even small exposures to tobacco smoke can trigger acute cardiac events. Therefore complete avoidance of second hand smoke exposure is important especially for patients with established coronary artery disease.

### **Smoking cessation**

Smoking cessation leads to an almost immediate reduction in the risks of cardiac events and over time most of the cardiovascular risk caused by tobacco is reversible. Within 5 years of quitting the risk of heart disease and stroke is very similar to that of non-smokers. Smoking cessation is especially effective in lowering the risk for those with established heart disease.

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<sup>3</sup> Bullen C. Impact of tobacco smoking and smoking cessation on heart disease. 2008 *Expert Rev. Cardio. Ther.* 6(6), 883-895