

## Tobacco use and Cardiovascular diseases

### *Fact sheet for healthcare professionals*

#### KEY FACTS

1. Tobacco use is the major preventable risk factor for cardiovascular disease
2. Second-hand smoking causes over 360.000 cardiovascular deaths a year
3. Tobacco use leads to the formation of atherosclerosis, a leading contributor to cardiovascular diseases
4. Nicotine is a highly addictive substance and affects cardiac function when inhaled but not when delivered through nicotine patches.
5. Smokeless tobacco contain nicotine and other chemical components and are therefore not harmless
6. Quitting tobacco shows immediate and long-term health benefits
7. Advice and treatment by a healthcare professional are very important for a successful quitting attempt

#### 1. Epidemiology: tobacco and cardiovascular mortality risk

##### Tobacco use

Tobacco use is the major preventable risk factor for cardiovascular disease (CVD).<sup>1</sup> Globally, more than 1 in every 10 cardiovascular deaths are attributable to smoking, accounting for about 1.7 million deaths per year.<sup>2</sup> Most of the disability adjusted life years (DALYs) that are attributable to daily smoking are due to cardiovascular diseases (41%).<sup>3</sup> Using smokeless tobacco products is not safe either, since these may cause heart disease by elevating blood pressure acutely and contribute to chronic hypertension.<sup>4,5</sup>

##### Second-hand smoke

Of the approximately 600.000 premature deaths globally that are attributable to second-hand smoke (SHS), CVD causes over 60% of these deaths.<sup>6</sup> The 2014 US Surgeon General Report on smoking concluded that a causal relation exists between SHS and acute cardiovascular events and that the implementation of smoke free laws and policies reduced coronary events significantly in non-smokers under 65 years of age.<sup>7</sup>

#### 2. How does tobacco causes cardiovascular disease?

Tobacco smoke is composed of thousands of different chemicals and contains total aerosol residue (tar), carbon monoxide and nicotine. Nicotine is a highly addictive substance and although it is associated with increases in heart rate and blood pressure when inhaled, the chemicals in tobacco smoke other than nicotine are responsible for most of the risks of CVD. Therefore, using nicotine replacement therapy is safe.<sup>8</sup>



Tobacco use causes cardiovascular diseases, such as ischaemic heart disease, cerebrovascular disease, peripheral artery disease and aortic aneurysm, through contributing to the formation of atherosclerosis and by causing a mismatch between the demand and supply for myocardial oxygen and blood (figure 1).<sup>7</sup>

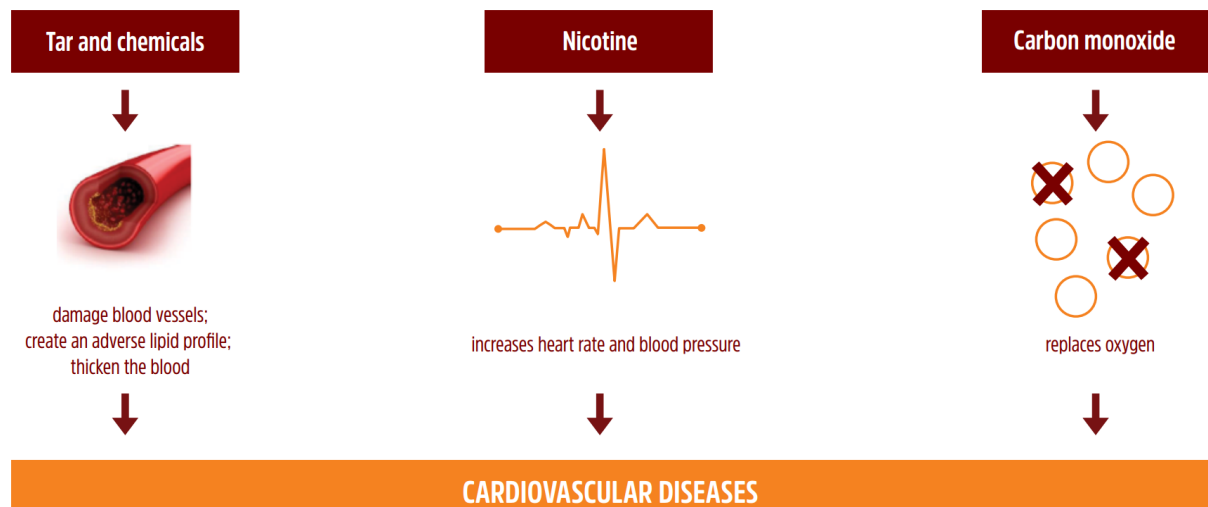


Figure 1. pathophysiological mechanisms leading to cardiovascular disease <sup>7,8,9</sup>

### 3. Lack of knowledge on the risks of tobacco use for CVD

#### Smoking tobacco

Most people are aware that tobacco use causes cancer or lung disease, but there are large gaps in peoples' knowledge on the cardiovascular disease risks of tobacco use. Nevertheless, smoking is *the* leading preventable risk factor of cardiovascular diseases such as ischemic heart disease and cerebrovascular disease. Even smoking one cigarette a day already increases a person's cardiac risk to 50% of the risk of a person who smokes 20 cigarettes a day.<sup>10</sup> It is therefore critical for healthcare professionals, and specifically the cardiovascular community, to inform patients about this major health threat.

#### Smokeless tobacco

Smokeless tobacco is used in almost any part of the world and is available in a variety of products for oral or nasal use. Smokeless tobacco also contains nicotine and may contain over 2000 chemicals of which some are carcinogens<sup>5,11</sup> Due to the variety of smokeless tobacco products, it is difficult to establish a relationship between their use and the risks of cardiovascular diseases. However, a recent meta-analysis on the global health burden due to smokeless tobacco consumption, indicated that the likely burden on ischemic heart disease is substantial and the use of these products should be discouraged by healthcare providers.<sup>12</sup>

#### Electronic Nicotine Delivery Systems

Electronic nicotine delivery systems (electronic cigarettes, e-cigarettes or vaping devices) deliver nicotine to the user by heating a solution, called e-liquid, that contains nicotine, propylene glycol and a wide range of additives and flavouring agents. Because they do not burn tobacco, e-cigarettes expose the user to fewer and lower levels of the harmful chemicals found in cigarette smoke. Therefore, they are likely to be less harmful than continuing to smoke, even though they are not harmless because users are exposed to nicotine and other chemicals.



E-cigarettes are increasingly popular among youth and dual use with cigarettes is often seen.<sup>13</sup> In the absence of long-term safety studies of e-cigarettes smokers wishing to quit should use approved medications first. Some smokers may choose to use e-cigarettes. If so, then they should do it within a structured cessation programme, switch completely to e-cigarettes avoiding using any cigarettes, and eventually plan to quit e-cigarettes too.

#### 4. What are the benefits of quitting tobacco use?

There are many immediate and long-term benefits of quitting tobacco. Blood pressure and heart rate will normalise immediately after quitting; after one year, the risk of coronary heart disease is about half that of a smoker's risk, and after 15 years the risk of coronary heart disease is that of a non-smoker. Socially and economically, there are important benefits of quitting tobacco: it saves household money and significant tobacco-related healthcare costs and the reduced exposure to second hand smoke is especially important for vulnerable groups (e.g. babies, youth, pregnant women). Overall, the benefits of quitting tobacco on health and wellbeing are substantial. Healthcare professionals should actively advise and help their patients to quit using tobacco.



#### 5. How healthcare professionals can help people to quit smoking

The majority of people who smoke indicate they want to quit.<sup>14</sup> Since nicotine is a highly addictive substance, quitting tobacco use can be challenging. Healthcare professionals play an important role in tobacco cessation interventions; in fact, advice from a physician increases by 66% the chance that a smoker will make a successful quit attempt.<sup>15</sup> Healthcare providers can also prescribe cessation medicines and inform patients on the benefits and risks of pharmacotherapy and its correct use. Nicotine replacement therapy is available without a doctor's prescription. Medicines for which a prescription is needed are Bupropion and Varenicline. Pharmacotherapy is generally safe, and is clearly safer than continuing to use tobacco products. A recent study among the general public showed that tobacco cessation therapy did not increase the risk of a serious cardiovascular event.<sup>16</sup> However, care should be taken when prescribed to vulnerable groups, such as patients with certain cardiovascular diseases or psychiatric conditions; treatment, like all newly prescribed treatment, should be monitored.

Find more information [here](#) on how you can support your patients in quitting their tobacco consumption or turn to your national physician organisation or health authority for the latest guidelines.



## 6. What else can you do as a healthcare professional to fight tobacco?

Here are some examples of how you can influence making your direct environment smoke-free:

- Ensure that clear, comprehensive smoke-free policies are established and enforced in all health facilities, events, organizations, and training facilities (including universities and conferences);
- Advocate at your local, regional or national government for smoke-free public places and workplaces by encouraging the implementation and enforcement of smoke-free laws;
- Model tobacco-free living by not smoking;
- Implement programs and protocols to ensure that cessation support and advice to avoid exposure to SHS are provided routinely. Non-smokers should also be advised to avoid SHS exposure by adopting a smoke-free policy for their homes and vehicles;
- Support the inclusion of tobacco cessation counselling into the medical undergraduate, graduate and postdoctoral curriculum. Increase the visibility of tobacco control issues at major clinical cardiology meetings and in continuing education programs, including smoking and SHS exposure;
- Advocate for tobacco-free investments of your health institute's pension fund, accountant and bank.

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