

Reversal of risk upon quitting smoking

In March, 2006, 17 scientists from eight countries met at the International Agency for Research on Cancer (IARC), in Lyon, France to assess the evidence on the reversal of health risks after quitting smoking cigarettes. These assessments will be published as the 11th handbook in the IARC series on cancer prevention.

Cigarette smoking causes cancer of the lung, head and neck, oesophagus, stomach, pancreas, liver, kidney, urinary bladder, uterine cervix, and myeloid leukaemia.¹ Cigarette smoking also causes heart, cerebrovascular, peripheral vascular, and chronic obstructive pulmonary diseases, abdominal aortic aneurysm, and many other related diseases.²

The Working Group of experts examined the scientific evidence to answer three questions: (1) is the risk for disease lower in former smokers than in continuing smokers; (2) what is the time course of the reduction in risk with continued abstinence; and (3) does the risk return to that of never smokers after long periods of abstinence?

Published studies show lower risk of lung cancer in former smokers than in current smokers.³⁻⁶ Within 5-9 years after quitting, the lower risk for lung cancer in former smokers becomes apparent and diverges progressively with longer time since cessation. Stopping smoking in middle-age confers substantially lower risk for lung cancer than if stopping at older age or not stopping at all.⁷ The absolute annual risk of developing lung cancer does not decrease after stopping smoking and there is a persistent increased risk for lung cancer in former smokers compared with never smokers, even after long duration of abstinence.

The relative risk for laryngeal cancer decreases steeply with time since stopping smoking, with reductions of about 60% 10-15 years after cessation and even larger after 20 years. However, former smokers still have higher risks as compared with never-smokers for at least 20 years.

The relative risk for oral and pharyngeal cancers decreases with increasing duration of abstinence compared with continuing smokers. The risk remains higher compared with never-smokers until the second decade of abstinence but reaches the level of never-smokers thereafter. Former smokers have a lower risk than current smokers for squamous-cell oesophageal

cancer but the risk remains higher for at least 20 years after cessation.

For stomach cancer an increasing number of years since smoking cessation and younger age at cessation are associated with decreasing risk compared with continuing smokers. The data are inadequate to determine whether the risk of former smokers ever returns to that of never-smokers.

The risk for pancreatic, renal cell, and bladder cancer is lower in former than in current smokers and declines with longer time since smoking cessation. Nevertheless, the risk remains higher than that in never-smokers for at least 15 years (pancreas), 20 years (renal cell), and 25 years (bladder) after cessation. The risk for squamous-cell carcinoma of the cervix is lower in former smokers than in current smokers and decreases rapidly following cessation to the level of never-smokers.⁸ The risk for cancer of the liver, nasopharynx, sinonasal cavities, and myeloid leukaemia seems to be lower in former than in current smokers, but the data are inconsistent or inadequate.

Studies of patients with existing coronary heart disease suggest a relative-risk reduction for former smokers of about 35% compared with continuing smokers within the first 2-4 years of smoking cessation. Some studies find the risk to be similar to never-smokers after 10-15 years of abstinence, whereas others find a persistent increased risk of 10-20% even after 10-20 years of abstinence.⁴

Former smokers have substantially lower risk for cerebrovascular diseases than current smokers. There is a marked risk reduction after 2-5 years and the relative risk decreases for up to 15 years after cessation. In some studies, the risk returns to that of never-smokers after 5-10 years, but other studies report small increased risks even after 15 years of abstinence.

Former smokers have a lower risk for abdominal aortic aneurysm than continuing smokers. There are only scarce data addressing the duration of cessation and risk for abdominal aortic aneurysm, and results suggest that cessation is associated with a slow decline in risk, which continues for at least 20 years after stopping smoking. However, the risk remains greater than that of a never-smoker even after such a prolonged duration of abstinence.

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There are overwhelming health benefits of quitting smoking that accrue with increasing duration of abstinence for most of the diseases reviewed. Rarely does the risk for disease decline to that of never-smokers, but with longer and variable periods of abstinence, the risk of the former smoker tends to approach the risk of the never-smoker. Unequivocally, quitting smoking avoids the further increase in risk for death from cancer, cardiovascular disease, and pulmonary disease caused by continued smoking. The evidence on the health benefits of quitting should be used to work towards increasing tobacco cessation worldwide.

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In populations without clinically evident disease, former smokers have a reduced risk for peripheral arterial disease compared with current smokers.⁹ Prospective cohort studies suggest that the relative risk for peripheral arterial disease in former smokers remains greater than that of never-smokers even after a long duration of abstinence (at least 20 years). Within 1–5 years of stopping smoking, peripheral arterial disease patients experience complication rates that are similar to those of never smokers.

The Lung Health Study, a multicentre randomised trial of smokers with mild-to-moderate chronic obstructive pulmonary disease who received usual care or smoking-cessation support and either inhaled bronchodilator or placebo, reported an increase in forced expiratory volume (FEV₁) during the first year as a result of smoking cessation. In the following years, the rate of decline in FEV₁ in sustained quitters was half that of continuing smokers.^{10,11} Cohort studies of the general population show that the accelerated decline in FEV₁ in current smokers reverts to the age-related rate of decline seen in never-smokers within 5 years of cessation.¹²

Symptoms of chronic bronchitis decrease rapidly within a few months after smoking cessation. Prevalence of these symptoms is the same as in never smokers within 5 years of sustained smoking abstinence.¹³ Interventions aimed at stopping smoking also reduce mortality substantially.¹⁴