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Quantitating loss of life by smoking a single cigarette

Sirs: Cigarette smoking is an important risk factor for cardiovascular disease and cancer and results in a shortened life expectancy [3, 4]. Fifty-five years after the relationship between cigarette smoking and lung cancer was suggested the results of a prospective randomised smoking cessation trial have been reported [1]. Long-term survival was significantly improved in a group of asymptomatic persons with mild obstructive pulmonary disease who underwent a smoking cessation intervention as compared to a usual care group. This was the first prospective randomised trial showing a survival benefit of smoking cessation. Although it is clear that smoking shortens the life expectancy, the exact amount of life lost by a single cigarette is unclear.

The recently published 50 year follow-up of the “British doctors study” [2] may allow a more accurate estimation of the amount of life time lost by a

single cigarette. The study included a socially homogeneous group of British physicians born between 1920 and 1929 thereby removing any confounding by the fact that poorer individuals smoke more than richer individuals. This was the youngest cohort examined in the trial at entry into the observational database. The average age at entry into the study was reported to be 36 years. The excess mortality associated with cigarette smoking was greatest for this group of physicians compared to those born earlier and their smoking habits resemble current smoking habits.

At age sixty, this group had a 3-fold risk of death compared to the never smokers and a similar survival rate as compared to physicians who were 15 years older but had never smoked. The smoking physician had started smoking already at age 18. They had smoked an average of 18 cigarettes per day.

Given that by the age of 60 years, this cohort had lost on average of 15 years of life, this leads to the following calculations:

The 15-year loss of life in minutes corresponds to $15 \times 365 \times 24 \times 60 \text{ min} = 7\,884\,000 \text{ min}$ of lost life. The number of cigarettes smoked during the 42 years from age 18 to age 60 amounts to $42 \times 365 \text{ days} \times 18 \text{ cig/day} = 275\,940 \text{ cigarettes}$. The number of minutes lost per cigarette can be obtained by dividing $7\,884\,000 \text{ min}$ by the number of cigarettes smoked, i.e. 275 940 resulting in 28.57 min of life lost for each cigarette.

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Comment

This is a surprisingly large number of minutes (almost 30 min) of life lost for each single cigarette up till age 60. The results of the INTERHEART study suggest that there is no threshold for the harmful ef-

fects of smoking; even regular smoking of 1–2 cigarettes/day increases the risk for myocardial infarction by about 10 to 15% [5, 6]. Doll et al. [2] point out that not all physicians were killed by their habit, but some individuals were affected to a greater degree than others. The authors conclude that two-thirds of the smokers born in this decade – with smoking habits similar to those in our time – would succumb to their smoking habit: this is more than has previously been suggested [2]. This post hoc calculation illustrates the substantial damage caused by cigarette smoking on an individual smoker. The fact that a smoker throws away half an hour of life each time he/she smokes one cigarette should be brought to the attention of every smoker, as this may have a more immediate effect on their perception of harm and therefore their willingness to quit. Although

similar data on women are lacking, a substudy from the INTERHEART study [5] indicates that the harmful effects of smoking are similar in men and women, so that it is likely that our calculations apply to women as well. In this study each daily cigarette increased the risk of a myocardial infarction by 5.6%.

Conclusion

The results of these calculations emphasize the tremendous harm induced by smoking and the importance why individual smokers will benefit from complete cessation of smoking.

This information is likely to be helpful in convincing a smoker to give up the habit.

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