

To the Editor

**Ischaemic heart disease in smokers**

SIR—Townsend and Meade<sup>1</sup> suggest that the decrease in relative risk with age for smokers, compared to non-smokers, may be due to the susceptibility of some smokers to heart disease, or to complex interactions with 'environmental factors'.

As part of a project funded by Shell on monitoring for industrial hazards, we have developed a model of the IHD death rates found by Doll and Peto in British doctors,<sup>2</sup> which is in broad agreement with Townsend's model. The latter used the amalgamated results of several British and American studies, including the British doctors. Their results may be more simply explained, by using absolute rather than relative risk. The model we have fitted to the doctors' death rates (per 10<sup>5</sup> man years) is:

$$DR = 0.12 (AGE-35)^{2.65} + 8.0 \text{ CIGS} \quad (1)$$

where CIGS is the number of cigarettes smoked per day. This accounts for 97.5% of the variance, and is constrained to zero at ages below 35 years. The homogeneity of the study population probably accounts for the goodness of the fit.

Equation (1) has been used to derive the relative

risk for smokers relative to non-smokers; as follows:

$$RR = \frac{DR_{\text{smoker}}}{DR_{\text{non-smoker}}} = 1 + \frac{8.0}{0.12 (AGE-35)^{2.65}} \text{ CIGS} \quad (2)$$

As in Townsend's model, this predicts a decrease in the excess risk with age per cigarette smoked per day. The reason for the decline in relative risk is suggested by equation (1): the risk per cigarette/day remains constant, but the effect of ageing becomes so large in older men that the contribution of smoking to the risk is almost negligible. A more complex explanation does not seem to be required.

When looking for aetiological factors within a population, absolute risks (death rates) are likely to give more realistic results than relative risks.

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**References**

- <sup>1</sup>Townsend JL, Meade TW. Ischaemic heart disease mortality risks for smokers and non-smokers. *Epidemiol Community Health* 1979; **33**: 243-7.
- <sup>2</sup>Doll R, Peto R. Mortality in relation to smoking: 20 years observations on male British doctors. *Br Med J* 1976; **1**: 1525-36.

**Correction**

We regret that the subscription rates printed in the last issue were incorrect. The annual subscription to the Journal by surface mail now costs £15.00 in the United Kingdom and the Republic of Ireland and US \$35.00 in all countries overseas.

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