

The activity of these units has had an immediate appeal to medical and health workers frustrated in their efforts to combat malnutrition outside the sphere of purely clinical treatment. Here was an educational thrust in which they could share as distinct from the mass community approaches of supplementation, fortification, and green revolutions, in which they could play no direct part. Finally, the sections of the population reached on this personal level are either mothers at risk of having further malnourished children or the leaders of the community—both groups worth far more than their mere numerical value. Much can be achieved by a personal appeal from individual to convinced individual, and it is individuals who ultimately make up the community.

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Smoking and lung ageing

Most people who smoke cigarettes reluctantly concede the risk of future lung cancer. Nevertheless, few seem aware of the steadily accumulating evidence which suggests that smoking cigarettes also speeds development of persistent and disabling dyspnoea by damaging lung function in a way resembling ageing of lungs.

Much is now known about the effect of age on lung function.¹ For example, residual volume rises and vital capacity decreases with age; total lung capacity usually changes little; and functional residual capacity also remains reasonably constant throughout life. Moreover, it is now known that the lung volume at which airways begin to close (closing volume) increases with age,^{2,3} and possibly this contributes to the lower resting arterial oxygen tension found in the elderly. These changes largely reflect the fact that lung elasticity falls with age: as elastic retraction decreases the lungs become more floppy with-in a stiffer and less compliant chest wall.

The effects of lungs ageing appear to be relatively uniform and to begin once adult life is reached, and some aspects of ageing appear to be speeded by smoking cigarettes. Fletcher⁴ has shown that the forced expired volume in one second (FEV₁) declines with age more rapidly in smokers than non-smokers, and that this was related to the degree of airways obstruction present at the beginning of the period under observation. Flow

volume curves and closing volume are also aged by smoking,⁵⁻⁷ while smoking cigarettes can produce small airways obstruction in smokers whose FEV₁ is apparently normal and in whom no symptoms are present.⁸

The apparent acceleration of lung ageing associated with smoking cigarettes might be expected to increase the death rate of smokers since some will develop chronic obstructive bronchitis culminating in respiratory failure—and this is indeed the case. The pace of decline in FEV₁ and the development of severe airways obstruction in individual patients, however, remain somewhat unpredictable, for reasons that are not known.^{9,10} An additional factor which may also impair lung function is the development of emphysema, recognised to be a feature in patients who also have homozygous alpha₁ antitrypsin deficiency, in whom the abnormality of lung function is promoted by smoking cigarettes.¹¹ A correlation between cigarette smoking and emphysema has also been shown by studying lungs from healthy persons killed in road traffic accidents.¹² Smoking cigarettes, therefore, may cause an apparent accelerated ageing of lungs by producing both airways obstruction and emphysema, which in turn may lead to disability and death.

The relation between vital capacity and mortality appears to be particularly strong and to persist even when cigarette smoking is taken into account. This has been shown again in a further report from the Framingham study,¹³ in which pulmonary function has been looked at in relation to ageing, cigarette habit, and mortality. This continued the decline in FEV₁ and vital capacity with age but also showed that the FEV₁ per cent (FEV₁/VC × 100) fell only in older age groups and appeared to be relatively independent of age in women. The FEV₁ per cent was reduced by smoking cigarettes, but a fall was clearly evident only in those men who had smoked over 20 “pack years” (equivalent to smoking 20 cigarettes a day for 20 years). Younger men appeared to be more resistant to damage by smoking: this may be because they have generally smoked fewer cigarettes or because smoking affects mainly older people.

This latest study has reinforced our knowledge about the harmful effects of smoking cigarettes on lung function and has given further ammunition to those who campaign against cigarette smoking. The investigation also showed that the rate of decline in lung function was slowed if people stopped smoking—as has been noted by Fletcher⁴ and other workers¹⁴—which gives powerful support to those who argue that our main efforts should be directed towards programmes which stop smoking and identify smokers at particular risk rather than the mass detection of the earliest function abnormalities produced by smoking cigarettes. The fact that lung function ages prematurely when cigarettes are regularly smoked may stop some potential smokers. For those already addicted there is the hopeful news that their geriatric lungs can be rejuvenated by their giving up cigarettes.

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