Editorials

This issue of the journal carries the announcement of a proposed International Conference on new findings on Environmental Health Hazards. This is a topic of increasing importance and relevance and the conference should be of interest to epidemiologists throughout the world.

In the western developed countries we have been able to defeat many of the infectious diseases. But now, in our daily lives, we face increasing hazards from environmental pollutants in food, water and air.

We must recognize the enormous contribution epidemiologists can make in this field and we must accept the challenge. The classic contribution of epidemiology to the knowledge of the dangers of cigarette smoking demonstrates the relevance of our specialty in this context. Now, however, our concern must be to detect effects that may take many years to develop, that are of a very much lesser magnitude than those of smoking, and that may only affect certain susceptible individuals.

If we do not become interested and involved in this field, we will be superseded by engineers and by human and animal biologists, none of whom would be able to apply the necessary expertise to the problem. As epidemiologists we are able to study the effects of an agent on human beings and to assess the influence of factors such as age, sex, social class and other environmental considerations. Social scientists and economists also have an important part to play in investigating the behavioural and economic aspects of pollution.

This International Conference then raises a subject of great importance and opportunity, and epidemiology must meet the challenge and be well represented. Pollution, after all, is a problem of public health in which we are all involved.

Shot-gun Prevention?

Are we yet ready to attack coronary artery disease through prevention programmes in the community?

In 1972 the World Health Organization held a symposium to discuss the identification of individuals and population groups at high risk for coronary artery disease and various other conditions. Professor Alwyn Smith summarized the meeting in the February issue of the WHO Chronicle (1). He listed six key questions requiring positive answers before a prevention programme should be loosed on the public. Briefly these were: Is the disease important? Would treatment of high risk individuals modify the risk favourably? Do most potential cases fall in the high risk category? Is there evidence that the intervention is of benefit? Can the programme be integrated into existing health services? And, finally, is the use of resources justifiable in the face of competing demands? If, Professor Smith continued, an affirmative answer cannot be given to all these questions, there is a need for further research and development.

In the same issue of the WHO Chronicle, Dr. Pekka Puska described an attempt at community prevention of cardiovascular disease in North Karelia, Finland (2). This project was the outcome of a WHO meeting held in Rome in 1970 in which the methodology for multifactorial preventive trials was discussed.

North Karelia is a county in the eastern part of Finland, in an area where coronary heart disease is particularly common. Its 185,000 inhabitants work mostly in farming and forestry and live in the countryside.

Their higher rates of smoking, hypertension and raised serum cholesterol appear to account for their greater mortality from coronary heart disease in comparison with people living elsewhere in Finland. It was with this in mind that a multiple risk factor intervention trial was proposed.

The project has two main aims: to reduce the high levels of risk factors for cardiovascular disease throughout the county and to promote the early diagnosis, treatment and rehabilitation of patients with cardiovascular disease.

The design requires a trial of both primary and secondary prevention. The primary prevention
trial is divided into three large studies; one on the effect of health education on cardiovascular mortality and morbidity, a second on the effect of screening for high-risk individuals who are then given advice, and a third on the effects of antihypertensive treatment. The secondary prevention trial considers the effects of educating the doctors in better management of cardiac cases, of educating the patients in more prudent habits and of encouraging consistent attendance at follow-up clinics. A control population is being studied in a neighbouring county which has similar cardiovascular mortality.

Only four of Professor Smith’s questions receive positive answers when applied to this very ambitious project. Few would deny that cardiovascular disease is important and the treatment, if adhered to, is likely to modify the risk factors favourably. The programme has to a very large extent been integrated into the existing health services. We cannot comment satisfactorily on whether the use of resources is justifiable. The reported cost of only $100,000 may be the result of good management or of heavy dependence upon services funded from other sources.

However, the solutions to the remaining questions—do most potential cases fall in the high-risk category? and is there evidence that intervention is of benefit?—are far from clear. The answer to the first depends on the cut-off points between high and low risk. But, wherever these are, there is likely to be a substantial false positive population in the high-risk category. In the study of London busmen, for example, Morris and his co-workers found that 77 per cent of all new cases of ischaemic heart disease occurring during 5 years of observation fell in the upper quartile of the distributions of either systolic blood pressure or plasma cholesterol. Nevertheless, the individual risk in this group was only 1 in 7.

The second question is very closely associated with the first. Even if we could identify future cases far more accurately than at present, do we know enough about the effects of lipid lowering diets and reduction of moderately raised blood pressure on morbidity and mortality rather than on risk factors alone? The results of numerous types of controlled trials of diet have been so varied that it is not yet possible to recommend any particular action with confidence. The effect of lowering moderately raised blood pressure has not been adequately investigated for firm recommendations to be given to individuals, far less to communities. And an effective method of persuading populations to give up or reduce smoking has yet to be found.

Moreover, we must also learn much more about how to get the general population to persist with irksome preventive treatment. Good adherence after 5 years in the Anti-Coronary Club (4), judged on follow-up clinic attendance, was less than 20 per cent, and in the National Diet-Heart studies (5) was about 25 per cent for only 20 weeks of study.

We know little enough about why people who are ill frequently fail to take their medication; we know practically nothing about how to persuade a community to adhere to a treatment for a disease for which they have no symptoms. Thus, even if we were far more certain of the effects of preventive treatment, we would still be faced with the problem of how to make the treatment acceptable over a long period.

If adherence is really as low as suggested by the results of the Anti-Coronary Club and National Diet-Heart studies, what can we expect for our money? Assuming that the overall five-year incidence of coronary artery disease in middle-aged men is 1 in 14 (found for London busmen), that proper treatment will reduce morbidity and mortality by 50 per cent and that good adherence will be achieved by 20 per cent of the population, then in 1,000 middle-aged men one might expect to save seven from overt disease. If this rather simple calculation is even remotely correct, we must ask very seriously whether the funds and diverted resources required by the shot-gun approach to prevention are being used to best effect.

References