

MEMORANDUM: WHAT CAN BE DONE TO AVOID CORONARY HEART DISEASE?

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In seeking to recommend what the general public should do to avoid, or to reduce proneness to, coronary heart disease, the following points denote the present situation.

Among South African Whites coronary heart disease is extremely common, the mortality rate being about the same as that in the USA.¹ In the middle-aged and elderly, the disease accounts for about one-third of all deaths.²

Some of the enormous increase in mortality that has occurred is due to the older age structure of populations; evidence indicates, however, that most of the increase is absolute.³ Numerous prospective studies have identified a number of risk factors which are associated with a high mortality from the disease, namely, high serum cholesterol level, overweight, elevated blood pressure, smoking, a sedentary life and stressful contexts. It must be recognized, however, that the degree by which each of these factors is related causally to coronary heart disease has not been established.

Arising from the foregoing observations, many studies have been undertaken to determine whether appropriate changes in environmental factors, particularly diet, can retard the risk of persons developing new or additional coronary episodes. The results have varied. Studies pursued in Britain, which involved a reduced fat intake,⁴ and also the use of soya oil,⁵ yielded negative results. On the other hand, studies carried out in New York⁶ and Oslo,⁷ both of which included reductions in fat and cholesterol intakes, provided results sufficiently favourable to encourage recommendation of the dietary changes employed.

While some still regard the risk factors associated with coronary disease as wholly circumstantial, others are convinced of their causal relationship and consider it almost mandatory for authorities to recommend and to facilitate retarding measures, at least among young adults. There are two crucial questions: Firstly, what remedial measures can be advocated with a measure of confidence, and urged by physicians and local health authorities? Secondly, is the time now opportune for clinics to be set up to identify those at greatest risk from the disease?

OUR PRESENT KNOWLEDGE

On which of the associated factors mentioned is our information most sound?

Overweight

It may be regarded as established that reduction in weight by the overweight in a short time confers on them the reduced mortality attached to those at standard risk.⁸ The extent to which the increased expectation of life is mediated by a fall in mortality from coronary heart disease is not known. The frequency of overweight in western populations is little appreciated. In Britain, middle-aged men weigh 15 lb. more than did those of the same height 30 years ago.⁹ In the USA, the adult male weighs about 20 lb. more than the average British male.¹⁰

Smoking

It is now beyond dispute that cessation of smoking reduces the risk of dying from cancer of the lung.¹¹ The extent to which giving up smoking causes a fall in mortality from coronary heart disease is not known.^{12,13}

Elevated Blood Pressure

There is evidence that efforts to reduce hypertension (whether by diet, salt restriction, or antihypertensive drugs) have been associated with a fall in mortality from 'strokes'.¹⁴ However, an associated fall in mortality from coronary heart disease has not been demonstrated.

Concerning *activity* and *stress*, there is no proof that improvement or reorientation in these respects will alter the course of life in the middle-aged and elderly. At present, therefore, only the measures concerning weight, smoking and blood pressure can be urged with some degree of confidence that the outcome will be an increased expectation of life. It must be reiterated, however, that the benefits to be derived do not necessarily involve a fall in the prevalence of or mortality from coronary heart disease.

ASSESSING PATIENTS AT RISK

Despite admitted uncertainties, we believe that it is now propitious for steps to be taken to identify the most vulnerable members of our population. What factors should be assessed? In a careful study of risk factors in coronary heart disease it has been shown that measurements of (i) weight (observed/desirable weight ratio above 1.15), (ii) blood pressure (exceeding 90 mm.Hg diastolic pressure), (iii) cigarette smoking (10 or more *per diem*) and (iv) serum cholesterol (250 mg./100 ml. or above), will identify nearly half (44%) of persons likely to experience a 'heart attack' within the next 10 years.^{15,16} Certainly 100% discrimination would be ideal; but this is virtually unattainable in respect of a disease of such multifactorial aetiology. The proportion could be raised, of course, by careful clinical examination, electrocardiography after exercise, assessment of behaviour pattern, and assays of serum triglyceride, beta-lipoprotein, glucose tolerance, and other laboratory procedures. However, the factors of time and cost will permit only a very limited number of measurements to be made when large numbers of persons are concerned.

Screening procedures for the early detection of disease have already been carried out in a number of centres, and are being adopted extensively in private practice, as well as by large organizations. In an investigation made in Glasgow¹⁷ in 1965 on men aged over 45 years, tests included measurements of weight, height, blood pressure, urine (for the presence of sugar), haemoglobin concentration, vision, and an X-ray of the chest. The study, which took place in the evenings of 9 week-days, 'was certainly a success', judging by the attendance (4,372 persons) over that period. No evaluation of the benefits derived from the screening has as yet been published. In the extensive cardiovascular screening study carried out in Albany¹⁸ in

1965 - 66, on New York State civil servants, 8,512 persons were examined in respect of weight, height, blood pressure, ECG, chest X-ray, serum cholesterol, haematocrit, and urine (for sugar and protein). All the tests were performed by non medical workers; only the ECG and X-ray films were assessed by medical personnel. The authors concluded: 'Data useful in the assessment of cardiovascular risk factor status of large groups can be obtained relatively easily and inexpensively through screening programs. Such information is essential for the identification of individuals who may be eligible for programs designed to mitigate risk factors as well as for the evaluation of such efforts. A considerable number of persons will apparently support such programs and are, based on this experience, willing to participate in more extensive examination procedures.' However, the prophylactic value of these tests, in respect of coronary heart disease, has not been established. The examinations recommended to be undertaken in South Africa will require careful deliberation. If the information on weight, height, blood pressure, smoking habits and serum cholesterol is to be obtained—the screening confined at the beginning to men over 35 years, and the tests repeated every 2 years—we believe that the securing of this information on a mass scale will be entirely feasible in our larger centres. Those detected as being very prone to develop the disease can then be warned and advised appropriately in respect of the risk factors mentioned. The probability that a proportion of those tested will become unduly and unnecessarily 'heart conscious' cannot be avoided.

The question of whether changes in diet in the middle-aged and elderly can retard the development of coronary heart disease is highly controversial. In a Leading Article in the *Lancet*²⁰ it is stated, 'Many doctors and patients are confused about the value of special diets in the treatment of coronary heart disease. It has recently been stated, "There are two extremes: diet is nonsense: and diet is crucial. No-one has irrefutable evidence of either. Thus, human beings currently are presented with the choice of following a daily pattern of special living, which is far from easy, or forgetting the whole thing. A great majority of people follow the latter choice."²⁰ Except for reduction of excess weight, the facts at present indicate that they may well be right.' Authoritative American bodies have recommended changes in diet only to those who are unduly susceptible, for example, persons with elevated lipid levels, and then only under the guidance of physicians.²¹ On the other hand, authorities in Scandinavian countries have recently made concrete suggestions directly to the public at large.^{22,23} These suggestions include greater consumption of lightly-milled cereal products, vegetables and fruit, with a reduced intake of calories, and lower intakes of animal fat and cholesterol. This pattern certainly does not constitute a 'special' diet. In pattern, it was the diet of our ancestors and also of a number of war-time populations.^{24,25} It is further the pattern of diet of African and other less privileged populations, among whom coronary heart disease is far less of a problem than is the case with sophisticated populations. It is proposed that these Scandinavian recommendations, suitably amended for South African conditions, should be made available for the persons tested, for their families, and indeed for anyone interested.

Facilities for testing, recommendations regarding weight reduction, etc., should also be made available to the South African Indian population, who stand equally in jeopardy with Whites in their proneness to coronary heart disease.^{1,2}

It is probable that few of those identified as high risk persons will make alterations of the necessary magnitude in diet or manner of life.²⁶ This certainly does not lessen the obligation of responsible authorities to urge the screening of populations and to give appropriate advice.

It is imperative to appreciate that at present it cannot be promised that the carrying out of this or that particular recommendation will necessarily lessen the risk of developing coronary heart disease. It may be very many years before assurances can be given. Nevertheless, we cannot accept current uncertainty as a reason for a wait-and-see policy. We look upon the setting up of screening procedures, and the recommendations made regarding weight reduction, etc., as commonsense measures, which cannot conceivably do harm, and whose implementation can scarcely be other than beneficial.

SUMMARY

Coronary heart disease is the major cause of death in White and Indian populations in South Africa. The problem of what can be done to lessen, or at least to defer, mortality is an acute one.

It is suggested that screening procedures should be instituted at the main population centres to detect the most prone subjects, as assessed from the presence of known associated risk factors.

It is considered that if advice is given even only regarding reducing the prevalence of overweight, elevated blood pressure, and smoking, then mortality from degenerative disease and other diseases could be reduced or deferred.

Suggested changes in the dietary pattern should be recommended to those subjects (and their families) considered to be at risk.

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