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CONTROL OF CIGARETTE SMOKING

Report on Measures taken in the Americas to Control the Advertising of Cigarettes

(Resolution XXXIV, "Control of Cigarette Smoking," XIX Meeting of the Directing Council of the Pan American Health Organization)

I. Extent of the Problem

If any reasonable doubt existed in regard to the seriousness of the health hazard of cigarette smoking, it has been dissipated by the evidence accumulated over the last twenty years.[1] The list of diseases occurring most frequently in inveterate cigarette smokers includes various forms of cancer (lung, larynx, lips, oral cavity, esophagus, bladder and other urinary organs), chronic bronchitis, emphysema, coronary heart disease, cirrhosis of the liver and stomach ulcer. Approximately one-third of the deaths occurring in men between 35 and 60 years of age are "excess" in the sense that they would not have occurred if cigarette smokers had the same death rate as non-smokers. It has also been estimated that in the United States of America life expectancy in young men who are heavy smokers (more than two packs a day) is reduced by approximately eight years, the risk being greatest in those who began smoking earliest. A survey conducted by the National Center for Health Statistics of the Public Health Service of the United States has shown that workers smoking at least one pack of cigarettes a day spend a third more time away from their jobs because of illness than those who never smoke. This "excess" of time lost from work represents 20 per cent of annual absenteeism for reasons of illness in workers between 17 and 44 years of age.[2]

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[1] Lecture by Sir George Godber (Annex I)

[2] The Facts about Smoking and Health, United States Public Health Service Publication No. 1712 - Revised January 1970 (Annex II)

In Latin America, as communicable diseases are being controlled and life expectancy is increasing, chronic diseases are emerging as a serious public health problem. This was brought out in the study of the characteristics of urban mortality conducted by the Pan American Health Organization early in the last decade in 12 large cities.[3] All in all, in the 10 Latin American cities studied, 20 per cent of all the deaths occurring in males between 35 and 64 years of age were attributable to diseases related to the cigarette-smoking habit. The investigation also showed that the 10 cities appeared to constitute three groups: La Plata, São Paulo and Caracas were ahead with 33.4, 28.9, and 28.5 per cent, respectively; Bogota, Lima, Cali, Mexico, Riberão Preto and Santiago (Chile) came next with 20.6, 17.3, 16.0, 15.6, 15.3, and 15.0 per cent, respectively, while Guatemala, with 9.7 per cent was in the enviable last place.

The contribution of tobacco to the economy and the tax revenue of many Latin American countries cannot be ignored, but these advantages certainly lose some of their value in the face of the harm done by loss of wages, prolonged incapacitation, cost of lengthy medical care, and above all the damage in terms of human life.

II. PAHO and WHO Resolutions

Clearly the problem is reaching a point where it calls urgently for vigorous action to prevent morbidity and mortality associated with the smoking habit from attaining the high levels observed today in many of the more developed countries. It was this recognition that cigarette smoking contributes substantially to the cause of premature deaths from lung cancer, coronary diseases, chronic bronchitis and chronic respiratory insufficiency that led the Directing Council of the Pan American Health Organization at its XIX Meeting in October 1969 to adopt a resolution calling for an inquiry into the measures being taken in the Region for the control of the smoking habit.[4] Similar reasons led to the adoption of the resolution, "Health Consequences of Smoking" at the Twenty-third World Health Assembly (May 1970),[5] which called the attention of all Members and Associate Members to the report submitted to the Director-General by two eminent experts, and urged the need for examining the advantages of implementing some of its recommendations.[6]

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[3] Puffer, R.R. and Griffith, G.W., Patterns of Urban Mortality. PAHO/WHO Scientific Publication No. 151, May 1968

[4] Resolution XXXIV: "Control of Cigarette Smoking," XIX Meeting of the Directing Council of PAHO, XXI Meeting of the Regional Committee of WHO, 1969 (Annex III)

[5] Resolution "Health Consequences of Smoking," World Health Assembly, May 1970 (Annex IV)

[6] Fletcher, C.M. and Horn, D., Smoking and Health. Report to the Director-General of WHO, 1970 (Annex V)

III. Survey Procedure

In compliance with the instructions given him in the Resolution, "Control of Cigarette Smoking," at the beginning of the current year the Director of the Pan American Sanitary Bureau requested the health authorities of all the Member and Observer Countries to transmit to him "any pertinent information about the measures that have been adopted and activities that have been carried out by official agencies and private institutions in your country to control cigarette smoking." The letter containing the request referred to "an account of programs for the same purposes which are being planned, as well as any other suggestion for more effective activities against the smoking habit."

The replies received by about the beginning of March this year made it possible to compile information, incomplete at times but definitely valuable, on the present situation in 17 Member Countries and Canada. An ad hoc questionnaire was then sent to all the Member States at the end of March with a view to supplementing this information.[7] The questions asked in the questionnaire were formulated with a view to assembling data on the following points: (1) Whether there are legal controls over the production, sale, advertising, and smoking of cigarettes; (2) The extent and status of campaigns or programs to combat the smoking habit; (3) The future policy planned by the health authorities in regard to this problem; and (4) The trends in tobacco consumption over the last two decades.

IV. Information Compiled

The questionnaire evoked replies from 24 countries, 13 of which had already replied to the request made at the beginning of the year, while the other 11 replies were additional to the initial list. All of them were helpful in collecting and analyzing the data from a total of 28 countries. Annex VII gives in tabular form, following the arrangement of the survey, the combined information from the initial request and the questionnaire.

In six countries the government authorities exercise some control over tobacco growing and processing, but it should be pointed out that the regulation is ordinarily in the hands of the Ministries of Finance, Commerce, or Agriculture, and apparently there are no standards governing tar and nicotine content of the product offered for sale.

Eight countries furnished information on the consumption of tobacco over the last few decades; six gave specific data on the sale of cigarettes. In all instances increases were recorded in cigarette smoking, varying from 8 to 113 per cent for the last ten years and between 59 and 188 per cent for the last twenty years. This increase coincides with a drop in the sale of

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[7] Survey conducted pursuant to Resolution XXXIV: "Control of Cigarette Smoking," of the XIX Meeting of the Directing Council of the Pan American Health Organization (Annex VI)

cigars at a rate fluctuating between 9 and 62 per cent over the last decade. It should be pointed out that these figures are based on the collection of taxes and do not take account of illegal imports and home-made cigarettes, which can be presumed to account for a fairly high percentage of consumption in some countries.

Only one country reported the existence of regulations governing the sale of cigarettes, and these refer only to the payment of taxes and the need to obtain a license for the sale of cigarettes. It can be assumed that the sale of tobacco is also subject to tax and requires a license in all the other countries. Restrictions on smoking in public places exist in 14 countries of the Region. The provisions are mainly dictated by the need to prevent fire, and in most cases they only cover public transport vehicles and certain places of public entertainment such as movies and theaters. In Mexico a program has been started recently restricting cigarette smoking in the hospitals and other medical institutions belonging to the three bodies responsible for most of the medical care given to the public. The report from the United States of America shows a decline in cigarette smoking in public places and states that this is due to increased concern for the comfort of non-smokers, but it points out that the trend is attributable more to educational effort than to any coercive measures.

During the first four months of the current year, the Governments of Argentina, the United States of America, Panama, and Peru have adopted legal restrictions on the advertising of cigarettes.

In Argentina, all advertising of cigarettes on television and radio and in cinemas has been prohibited for a year. The pertinent law also provides that cigarette manufacturers, importers, and merchants must submit a quarterly statement of the sums spent on publicity and promotion of cigarettes. A bill approved by the Congress of the United States of America bans all advertising of cigarettes on radio and television as of 1971, and the warning "Cigarette smoking may be hazardous to your health" which since 1965 has had to be printed on all cigarette packages for sale within the country will be replaced by "Warning: the Surgeon General has determined that cigarette smoking is dangerous to your health," as being more forceful.

The Government of Panama has enacted a Decree which provides that any advertisement for cigarettes shall include a warning on the dangers of smoking, and all local manufacturers of cigarettes are required to print on packs and cartons "Warning: smoking is dangerous to health."

A Supreme Decree of the Peruvian authorities prohibits any advertisement for cigarettes which fails to alert the public on the health hazards inherent in smoking, and all advertising by radio and television is banned from 8 PM onwards. Cigarette manufacturers are also required to print on cigarette packs and cartons the warning: "May be injurious to health."

The Canadian authorities have hitherto relied essentially on propaganda to combat cigarette smoking and on voluntary restrictions self-imposed by the tobacco industry and advertisers in the face of this pressure, e.g. not to make any publicity after 9 PM. Both the national campaign and private television companies make short anti-smoking announcements as a public service, and have been doing so since 1967. Last year the Canadian Broadcasting Corporation decided to suspend all advertising of tobacco, and its example was soon taken up by other private companies. While the possibility of adopting legislation restricting the advertising of cigarettes still further is being considered, the Government continues to place the emphasis on educational programs designed both to help cigarette smokers to give up the habit and to prevent youngsters at school from taking it up. Other activities include surveys on the extent of smoking and the motivation for taking it up, and the analysis and periodic publication of the content of tar and nicotine residues in cigarettes. All these activities have the strong support of private organizations such as the Canadian Cancer Society and the Canadian Medical Association.

Among the activities promoted and supported by the Public Health Service of the United States of America are surveys on the extent of the smoking habit and studies on public motivations and attitudes, the organization of clinics for smokers wishing to break the habit, educational programs in schools and through the mass communication media, and the establishment of the National Clearinghouse for Smoking and Health. In all these efforts the health authorities have had valuable collaboration from the public through the American Cancer Society and the American Heart Association. Professional organizations such as the American Medical Association and the American Public Health Association also contribute substantially to the campaign against cigarette smoking. The last-named has on several occasions publically taken a more and more vigorous stand against cigarette smoking and has promoted the foundation of the National Inter-Agency Council on Smoking and Health, in which 30 organizations interested in public education are involved, and the periodic distribution of the Medical Bulletin on Tobacco in 500,000 copies.

In addition to Canada and the United States of America, four other countries of the Region have indicated that they are undertaking educational programs to combat cigarette smoking. Information collected in a previous survey on health education to combat cancer makes it possible to add several other States to this list, but it should be pointed out that programs of this kind are still very limited in their scope and influence. A total of 14 countries are definitely planning the organization of activities to combat cigarette smoking through programs which place the emphasis on educational activities and in some instances the adoption of restrictive controls on cigarette advertising.

Finally, it should be pointed out that the concerted efforts of health authorities, private non-profitmaking organizations and professional associations in Canada and the United States of America over the last few years are beginning to show positive results, since the latest surveys indicate a steady falling off in cigarette consumption since 1966.

V. Survey on the Smoking Habit in Latin America

The investigation "Patterns of Urban Mortality" carried out by the Pan American Health Organization in the early 1960's in 10 cities of Latin America and two in English-speaking countries made it clear that diseases connected with smoking are a serious public health problem in many of the countries of the Region. The Pan American Health Organization is convinced that any program designed to reduce the incidence of these diseases (including cancer of the respiratory system, coronary heart disease, chronic bronchitis and chronic respiratory insufficiency among the most important) should have as one of its objectives a substantial reduction in the actual consumption of cigarettes by the population. Clearly also, to ensure that activities designed to achieve this objective have a real chance of success it is essential to plan them on the basis of a reliable estimate of the extent of the habit and accurate information on the attitude of the general public towards cigarette smoking and its effect on health. For this reason, the Pan American Health Organization decided to carry out the necessary studies to obtain such basic information. Since the budgetary situation would not allow an investigation embracing all the countries of the Region, and including both urban centers and rural areas, it was felt that it would be best to limit the survey for the time being to eight cities in Latin America where the study "Patterns of Urban Mortality" recorded highly reliable mortality rates which could be correlated with the findings of the survey.

It may be mentioned that the American Cancer Society has made an initial grant of US$7,500 for planning the survey, and it is quite possible that it will contribute substantially to its financing at the operative stage. At the present time, negotiations are going on with the United Nations Development Program (Technical Assistance) for additional funds.

The survey will be carried out on a representative sample of the population of the cities selected, and the analysis of the findings will provide information on the prevalence of smoking and the social, cultural and demographic characteristics of smokers. The investigation undertaken will thus help the health authorities in the countries of the Region to formulate policies and programs on the use of tobacco, and will also indicate what should be the starting-point for a correct evaluation of the effectiveness of control programs.

Annexes

HAROLD S. DIEHL LECTURE 1969

SMOKING DISEASE:
A SELF-INFLICTED INJURY

Lecture given by Sir George Godber, Chief Medical Officer, Department of Health and Social Security, British Ministry of Health, at the General Session of the Ninety-Seventh Annual Meeting of the American Public Health Association held in Philadelphia, Pennsylvania, 11 November 1969.

SMOKING DISEASE: A SELF-INFLICTED INJURY

I have the great privilege this evening to carry out a task you have entrusted to me in honour of Dr. Harold Diehl whom I first knew 20 years ago as Dean of Medical Sciences and Professor of Public Health at the University of Minnesota. I had the privilege then of visiting him in Minneapolis and since his retirement 11 years ago I have been deeply interested in his work for the American Cancer Society and especially on smoking and health. This year his book "Tobacco and Your Health" has been published and has provided all of us concerned with this desperately urgent health problem with the most compact and yet comprehensive account yet available. For that reason I have taken the same subject for this lecture, even though I know what I have to say must suffer in comparison with his full and lucid exposition.

The sub-title of Dr. Diehl's book is "The Smoking Controversy" and I want first to call attention to the way in which the nature of that controversy has changed in the last 20 years. The story really begins with Wynder and Graham in 1950 and Doll and Bradford-Hill in 1952, firmly demonstrating the association of cigarette smoking with cancer of the lung. Since then an enormous volume of evidence has accumulated which has long since put beyond reasonable doubt the direct causal relationship between cigarette smoking and lung cancer. Epidemiological studies on the most extensive scale have confirmed in every respect the association then demonstrated. There is no need to repeat it all; it is enough to say that no valid evidence against the thesis has been put forward despite the manifest interest of many individuals and large commercial undertakings in casting doubt upon the claim, if it could be reasonably done. The epidemiological picture is convincing in itself. From the early years of this century the use of manufactured cigarettes has become general, at least in what are called in other contexts the developed countries, and has progressively increased in amount. Given a causal agent to which a long period of exposure is required, the epidemic of lung cancer which really began in men in the 1930's has developed as it might be expected to develop and a comparable phenomenon is now in progress in women who started their use of cigarettes many years later and have not yet reached the same level of consumption as men. We are not yet at the top of the curve in Britain or in the United States and unless some radical change occurs in the smoking habits of men, it will be many years yet before the increase in deaths comes to an end. During that period deaths among women may be expected to increase proportionately faster than amongst men. In the last 10 years the crude death rate from cancer of the lung amongst men in Britain has increased by more than a quarter and amongst women by nearly three-fifths.

It has been shown that the histological condition of the bronchi of heavy smokers shows changes such as might be expected from exposure to an irritant which can go on to produce malignant change. It has been shown that the distillates from cigarette tar contained carcinogens which

can produce malignant change when applied to the skin of mice. Similar changes can be produced in the respiratory system of animals exposed to cigarette smoke, even though they cannot experience the length of exposure to which the longer-lived man commits himself voluntarily. The only thing lacking is the unimaginable controlled experiment in which matched groups of humans are prospectively exposed or not to cigarette smoke. Surely the volume of the evidence which has accumulated of the results of voluntary exposure, and now the benefits of voluntary withdrawal, are sufficient to justify the statement that we no longer need to study whether cigarette smoking causes lung cancer but only how. British doctors reduced their cigarette smoking by half and their death rate from lung cancer by a third while other British men were smoking more and their rate increased by a quarter.

A series of authoritative reports from the Royal College of Physicians of London and from Committees set up by the Surgeon General in this country have demonstrated during the last decade the even greater mortality from other causes than lung cancer attributable to cigarette smoking. Denmark, Canada, Norway and the Netherlands, to name only four have their own reports. As might be expected, cancer of the larynx and esophagus are substantially more frequent in cigarette smokers of middle age than in non-smokers and to a lesser extent the same is true of cancers of the pancreas, liver and biliary passages and urinary bladder. The disparity between cigarette smokers and non-smokers is not so great for these other sites, but for the lung at least 90% of cancers are attributable to smoking. Even pipe and cigar smokers have rates twice as high as non-smokers and for cancer of the buccal cavity, esophagus and larynx the disadvantage is greater than this. There have been many attempts to suggest other causes for the increase in lung cancer in the last 40 years, especially atmospheric pollution and fumes from internal combustion engines in particular. Whatever part these other factors may play, it is again the cigarette smokers who suffer and if the other contaminants contribute, it is only as adjuvants to the real danger, cigarette smoke. Even asbestos workers and uranium miners who have exceptionally high rates, only show this great disparity if they are also smokers.

Finally, the degree of risk is demonstrably associated with the quantity smoked and the duration of exposure and probably also with such factors as inhalation and smoking to a short butt so that all the potentially damaging constituents are volatilized and inhaled. Perhaps the conclusive point in this epidemiological picture is that the curve of incidence rises rapidly with age in the smoker and rises also in the non-smoker, but much more slowly. If the smoker desists, the risk he experiences no longer rises with age and indeed remains almost stationary to the point where many years later he experiences no more than the risk of the non-smoker at the same age.

The epidemiology of the smoking disease as evinced in lung cancer runs parallel with that of the other manifestations in cardiovascular and respiratory disease. Chronic bronchitis is known to many as the

English disease. Even allowing for a difference in terminology, it is certainly more prevalent than in this country or in Scandinavia where similar studies have been done. Deaths registered to bronchitis are nearly as numerous in Britain as to cancer of the lung and many of the deaths attributable to pneumonia or to heart disease may be associated with chronic bronchitis. Emphysema as recorded in this country is probably often described on certificates as bronchitis in Britain. At least half of these deaths are attributable to cigarette smoking and a substantial number of deaths certified as due to heart diseases particularly ischaemic heart disease at younger ages are also attributable to cigarette smoking. There is evidence that men aged 40-49 who smoke cigarettes heavily have an almost fourfold mortality from coronary disease compared to non-smokers. Studies in the last few years have attempted to identify the proportion of deaths from a variety of conditions attributable to the smoking disease and estimates in this country have been as high as 300,000 deaths. The number in Britain certainly exceeds 50,000 a year. It is doubtful whether we gain much by attempting greater precision in this, but it is perhaps sufficient to say that at least one tenth of all deaths each year in Britain now occurred in that year because of the smoking disease. Lung cancer, bronchitis and emphysema and coronary atherosclerosis of course all occur in non-smokers and the frequency increases with age. The important point about cigarette smoking is that it accelerates the onset as well as increasing the incidence. It cripples and kills at a much earlier age than need otherwise occur.

It is obvious that the lesions that produce such a number of deaths have also produced disability preceding death. Bronchitis in Britain is given as the certified cause of one tenth of all sickness absence from work in an average year. The 1967 report on Smoking and Health by the US Public Health Service gave more detailed evidence of the amount of disability amongst cigarette smokers and non-smokers and showed that cigarette smokers suffered about one fifth more sickness absence than non-smokers. Again the cigarette smoker was at far greater disadvantage than the smoker of pipes and cigars. The findings on respiratory disease are perhaps hardly surprising. The irritant effects of inhaled tobacco smoke are well enough known and the "smoker's cough" is the obvious disability which everyone recognises in the heavy smoker. Studies in Britain have even shown that the incidence of cough and phlegm in school boys who smoke is greater than in those who do not. Even the association with cardiovascular disease is not entirely surprising since such conditions as Buerger's disease have been linked with smoking long before the lung cancer story emerged. Moreover an increase in mortality from coronary disease in younger men has been noted in parallel with the increase in lung cancer. It has now been shown that the extent of atheromatous change in the aorta is related to cigarette smoking and to the amount smoked. Cardiovascular disease and respiratory disease other than lung cancer are common from other causes than smoking. We all have

to die from something and cardiovascular disease is the commonest occasion. But chronic bronchitis, with its long history of steadily increasing disability, and coronary disease in middle age are more serious factors in the loss of working life than cancer of the lung.

The fatal outcome of the smoking disease comes thus in a variety of ways and some of them are common to smokers and non-smokers alike. The argument of many smokers is that they must die of some cause anyway, but the measure of the loss of life is not simply the 50,000 or so incidents of deaths at all ages attributable to smoking, it is in the lost years of active life; at least 150,000 years are lost in this way as a result of death before the age of 65 in Britain annually. If our loss of working time from sickness is in the same proportion as that in the United States, and it might well be higher, at least another 200,000 years of working life are lost a year through certified sickness absence.

There was a time in Britain when nearly 100,000 man years were lost each year through disability from tuberculosis and there were 25,000 deaths, most of them at an earlier age than those due to smoking; that loss has been reduced by nine tenths and it is a grim reflection that the cigarette has undone one of the medical triumphs of this century.

This in summary form is the bill which society now meets each year. It is compounded of a vast number of self-inflicted injuries, the consequences of which manifest themselves in the susceptible in many different ways. As our information becomes more exact, we identify more precisely both mortality and morbidity under the major groupings I have already mentioned. We do not measure the smaller limitation of respiratory function which can be shown to follow smoking of any cigarette nor the possible contribution this may make to other failures. For instance it has been shown that the driver of a car through heavy traffic in London streets takes in and holds as carboxyhaemoglobin far more carbon monoxide from the cigarette he smokes than from the collective pollution of the exhaust fumes of his own and the other vehicles.

You may well think that is a cold-blooded economic analysis; there is much more to be said of the human misery which accompanies these facts. Most of us grow old; we all have to die. Cancer, cardiovascular disease and declining respiratory function and acute exacerbation of respiratory disease are our main executioners at later ages. Dr. Stamler's paper on cigarette smoking and atherosclerotic heart disease and the review in part II of the June issue of this Association's journal bring out in the most striking way the cigarette smoker's self imposition of earlier onset of these aspects of aging and of risk of death from these causes. There can be other contributory factors - atmospheric pollution, obesity, physical inactivity, exposure to asbestos or uranium,

but every one of them is potentiated and magnified by the use of the cigarette. The commonest pictorial advertisements of cigarettes portray their supposed contribution to youthful good living or outdoor virility. They are a macabre inversion of the truth; the cigarette is a direct contribution to disability and earlier death.

We at this conference are concerned with preventive medicine. In the last century and the earlier part of this, the great contribution to human health was made by preventive rather than by curative medicine, as McKeown has well shown. In the last 20 years active immunization has greatly reduced morbidity and mortality from a large group of infectious diseases while effective drugs for the treatment of other diseases, notably tuberculosis, have both reduced morbidity and mortality and the spread of the infections themselves. These gains have been secured by action against harmful things in the environment or by relatively simple, single procedures for which the individual's acquiescence was easily obtained. Our present problem is totally different, for it involves the modification of an almost general pattern of behaviour which not only gives individual gratification but forms part of ordinary social intercourse for a majority of adults. There is nothing else quite like it, since the use of alcohol is harmful only in excess and overeating is also an excess for a minority of individuals. Yet there are only two ways of preventing the injurious effects of cigarette smoking, either the abolition of the cigarette or the production of a relatively innocuous form. We know that the first of these courses would be effective; we do not even know if the second is practicable and it would be many years before we could know if any measure of this kind had been successful. Undoubtedly the greatest single contribution to the promotion of health in this country, in Britain and in many other countries, would be the total abolition of cigarette smoking. No other single factor could offer an increase in the expectation of life for cigarette smoking young males of four years or remove the causal factor in at least one tenth of the annual deaths and one fifth of the working time lost through sickness by the general population. If we were campaigning against some injurious factor in the environment, say, excessive exposure to asbestos dust, we would unhesitatingly aim at total removal if we could. The reason perhaps is reflected in the Norwegian report "Influencing Smoking Behaviour" which includes the sentence "Data are also scarce on what motivates certain individuals to reject smoking altogether, even if this group of persons in our present society must be considered to be an interesting group of deviates". Nearly four fifths of the doctors in this country and seven tenths of the doctors in Britain are such deviates, at least so far as cigarettes are concerned. Many others are converts and every year many others, not of our profession, are also converted; in Britain there is already evidence that the well to do smoke less and suffer less from smoking diseases. Yet the successes we have achieved against the smoking disease are pitifully small. As a result of the efforts of the last 6 years perhaps a

million fewer people are smoking in Britain. With a greater effort, better co-ordinated, in this country the gain has been greater, but not enough to check the rise in mortality and morbidity.

A study by the British Social Survey just published shows that boys who start smoking usually know of the association with lung cancer and half of them want to stop. But group pressures and an acquired taste are too strong. There is credit to be had from one's peers in being seen as tough, precocious and unmindful of conventional achievements. The subversive message is there in the pattern of the adult world and it will remain so until the truth is presented at least as often as the false. People like most of you and me are the minority of deviates - the non-smokers. But our message that smoking is damaging now and dangerous later must go out from every authoritative source, no longer in a still, small voice.

In no field of preventive medicine is the case more clear, but we have to convince not managing authorities, as with such a preventive exercise as the fluoridation of water, but many millions of individuals. We doctors convince ourselves and perhaps our social contacts, but not the world at large.

To my mind we cannot hope for a major success against cigarette smoking so long as it is constantly presented to the public as a desirable activity for the individual with the skill and persuasiveness that commercial advertising well understands. The Norwegian report to which I have referred contrasts the pitifully small amount of exposure the individual can receive to arguments against smoking compared with the enormous amount of persuasion in the opposite sense, not only through effective commercial advertising but much more through the personal example of so many others in the social group and of presentation in films, television and even literature. Investigation in English school children suggested that in taking up smoking they sought to improve their own self-image. In Britain, at least, a great part of the advertising of cigarettes presents young people in situations implying social advantage to the smoker. The influence of parents, teachers and younger people in the public eye is known to be powerful and certainly the children from smoking households are more likely to start than others. I cannot see how we can hope to break into this vicious circle until the image of the cigarette smoker is somehow changed. We may make slow and painful headway, but we are trying to change attitudes against a background of behaviour in quite the contrary sense. The almost automatic publicity for any suggestion that cigarette smoking might after all not be as harmful as we know it is, shows only too clearly how the public want to react.

The National Clearinghouse for Smoking and Health of the US Public Health Service and the National Inter-Agency Council on Smoking and Health have to my mind demonstrated most clearly the advantage that strong positive action

can bring. I think you are making more progress here, although you started later, than we have achieved in Britain. Yet I believe that more must yet be done. The Norwegian report which gives an admirably balanced review of the needs and possibilities, reaches the conclusion that there must be an educational programme for school children and young people, physicians and other health personnel, teachers, youth leaders, parents of children of compulsory school age. That is a tremendous undertaking and the need for it is underlined by an investigation of the smoking habits of students in Britain which revealed that medical students, who should surely be most susceptible to the message, actually smoked more in the later years of their training than in the earlier, a strong reminder that it should be the duty of teachers in our medical schools to emphasize this lesson to their students. In Britain only the Royal College of Physicians has really been active and I wish that the recommendations of the American College of Physicians last year had been paralleled by similar action by professional organizations in Britain. The European Committee of WHO two months ago asked its members to refrain from smoking at meetings and last month the Regional Committee of the Americas did the same. Ten years ago the British Medical Journal ceased to accept tobacco advertisements, as also annual meetings of the Association exclude smoking. Two years ago the BBC's paper "The Listener" decided to refuse cigarette advertisements and the Independent Television Authority had earlier excluded all TV advertising of cigarettes. After this year the New York Times has announced it will refuse cigarette advertising unless it is accompanied by a statement of the risks involved. We desperately need other support such as the Federal Communications Commission gave here.

The Norwegian report also recommended restriction on advertising, labelling of cigarette packages, the control of the size of cigarettes and physical changes and particularly emphasized the need for restriction against smoking in public transport so that priority should be given to the convenience of the non-smoker. To my mind rightly, they did not advocate strong restrictive action against smokers. There are restrictions in Scandinavia and in Britain on television advertising and an agreement has been announced here for its reduction. In Italy advertising has also been restricted. In Britain promotion by the use of gift coupons promptly filled the gap left by television advertising and an attempt to control cigarette advertising voluntarily has failed. Perhaps the strong resistance against a requirement to incorporate a warning of the health hazard in any advertising of cigarettes shows what might be the most effective method of driving the message home. That is a matter for Governments, but the technique of making the opposition carry its own warning is a well known instrument of propaganda. Public Health Notes in June this year reviewed various methods of "smoking cessation" without finding much encouragement.

The Norwegian report reviews the work of tobacco weaning clinics and courses and suggests their continuance and wider use not because of their striking success, but because any success may be cumulative in its

effect. A later report also from Norway records a small favourable result from a disproportionately great effort. Our experience in Britain has not been wholly favourable, but it is true that we may have been too much influenced by the immediate result and certainly this is a subject worthy of closer study. McKennell's work in Britain suggests that those who do not want to stop are often just the people who could and vice versa.

We cannot hope to eliminate smoking in the short run, but we could perhaps hope to do more by persuading people that cigars and pipes are safer than cigarettes. The Norwegian review does not favour this, but it was published before the evidence assembled in the Surgeon General's report. We certainly know now that smokers of cigars or pipes are far less severely affected than smokers of cigarettes. We have less clear evidence that conversion from cigarette to pipe or cigar reduces the risk to the extent complete abandonment of smoking altogether will, but it is a good working hypothesis that it would help. It is reasonable to urge such action not only because the expectation of reduction of the hazard seems sound on general grounds, but also because any reduction of cigarette smoking amongst those who have the habit now must reduce the influence on younger people in favour of the cigarette. Unless and until a safe cigarette can be found, any measure which reduces the number of cigarettes sold and smoked must be welcomed in the public interest.

There is already evidence that reduction of the tar content is of value and confirmation that reduction of the nicotine content does not lead to the smoking of more cigarettes. Both these matters need further study, but there no longer seems justification for holding back from endorsement of action to reduce both tar and nicotine. There is also some prospect of a tobacco substitute which would produce far less tar and irritant and in which the nicotine could be adjusted. If this became a practical possibility, there would be presumptive ground for adopting it, though obviously not yet proof.

The Norwegian Committee concluded that it would not "express great hopes with regard to the effect of the various measures, separately or in combinations. The implicit smoking-positive influence taking place in connection with use of tobacco is strong and persistent. The problems that many smokers have in giving up smoking are such that they leave no reason for exaggerated optimism. Still the Committee is of the opinion that the recommended measures if implemented will have positive effects." That was written 2 years ago. The key to it seems to me in the second sentence. We have somehow to reduce "the implicit smoking positive influence." We can contribute to that through the educational programme and we need more research on motivation and method. Restrictive measures can only be taken by a Government. We have a little still to offer on the therapeutic side. We have made some impact already. It <u>is</u> possible to induce a general change in public opinion. Whatever the obstacles,

surely we cannot fail to pursue that objective. Dr. Diehl in his book this year has put together the most comprehensive and cogently argued case yet published. This talk has done no more than extract some of that lesson to which I would refer all of you who have not yet perused it.

The Facts about smoking and health

CIGARETTE SMOKING is a serious health hazard. This fact is accepted by the overwhelming majority of physicians in this country, by the American Medical Association and many other professional organizations, and by the Congress of the United States through its enactment of the Federal Cigarette Labeling and Advertising Act. There is no indication that any medical or scientific body anywhere in the world has taken the position that smoking is not hazardous.

There have been four major affirmations by the Federal Government's health agency that cigarette smoking is hazardous. In January 1964, the Surgeon General of the Public Health Service released the report of the Surgeon General's Advisory Committee on Smoking and Health. This was the work of a group of distinguished scientists, selected by the Government from a list approved by the Nation's scientific community and the tobacco industry. After a year's study, the Committee concluded that "cigarette smoking is a health hazard of sufficient importance in the United States to warrant appropriate remedial action."

Since the 1964 report the Public Health Service has made three followup studies for the Congress. Issued annually, beginning in 1967, these studies affirm and strengthen the 1964 Committee's conclusions.

This leaflet presents a summary of the current knowledge about smoking and health, drawn for the most part from these comprehensive reports. For those who wish to explore the subject in greater detail, the reports may be found in depository libraries and in most scientific, public, and school libraries. Copies may also be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.*

The Public Health Service believes that today's knowledge about the health consequences of smoking cigarettes can be summarized in the following major conclusions:

1. Cigarette smokers tend to die at earlier ages and experience more days of disability than do comparable nonsmokers in the population.

2. If it were not for cigarette smoking, practically none of the earlier deaths from lung cancer would have occurred; a substantial portion of the earlier deaths from chronic bronchitis and emphysema would not have occurred; and a portion of the earlier deaths of cardiovascular origin would not have occurred.

3. If it were not for cigarette smoking, excess disability from chronic respiratory and cardiovascular diseases would be reduced.

4. By quitting or significantly reducing their smoking, people could delay or avert a substantial portion of the deaths which occur from lung cancer, a substantial portion of the earlier deaths and excess disability from chronic respiratory diseases, and some portion of the earlier deaths and disability from diseases of cardiovascular origin.

Research in the field of smoking and health is continuing in this country and throughout the world, addressed to such questions as what substances in the cigarette smoke cause damage to the body and why and precisely how these reactions occur. The Public Health Service is aware of no substantial negative evidence coming out of this research which questions the conclusion that cigarettes are hazardous to health.

smoking research

Our knowledge of the health effects of smoking is based on the following kinds of scientific study:

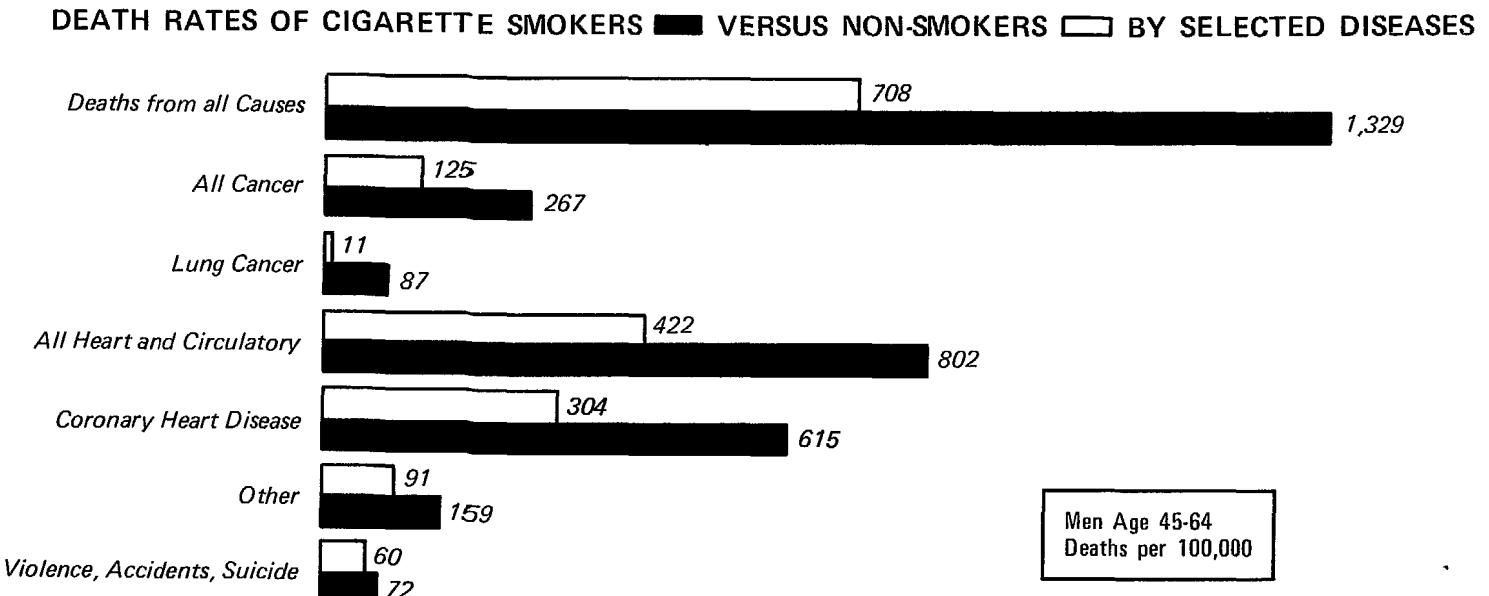
EPIDEMIOLOGICAL STUDIES. A great deal of knowledge about the consequences of smoking cigarettes has come from population surveys in which the smoking habits and health histories of large numbers of people are studied. These studies, conducted over the past 20 years, show that persons who smoke have a greater incidence of certain diseases and suffer earlier deaths than do the nonsmokers.

On page 4 is a chart from the well-known Hammond study of more than 1 million Americans, conducted for the American Cancer Society and published by the Public Health Service in 1966.

The chart shows the death rates of men in the 45-64 age range who reported a history of cigarette smoking as against the death rates of those who never smoked regularly. A much higher mortality rate is revealed for smokers than for nonsmokers—1,329 deaths per 100,000 person years for the smoker, as compared with 708 deaths for the nonsmoker. The rates for one disease, lung cancer, are 87 deaths for smokers and 11 deaths for nonsmokers.

Each year in the United States about 230,000 men 35 to 60 years of age die. It has been estimated—from Hammond's study and from an 8-year study of U.S. war veterans—that approximately one-third of these deaths are "excess" in the sense that they would not have occurred as early as they did if cigarette smokers had the same death rate as nonsmokers.

Although these findings are highly indicative, by themselves they might not be sufficient to prove


DEATH RATES OF CIGARETTE SMOKERS VERSUS NON-SMOKERS BY SELECTED DISEASES
Deaths from all Causes
708
1,329
All Cancer
125
267
Lung Cancer
11
87
All Heart and Circulatory
422
802
Coronary Heart Disease
304
615
Other
91
159
Violence, Accidents, Suicide
60
72
Men Age 45-64
Deaths per 100,000

cigarette smoking a cause of disease and death. However, other converging lines of evidence are available which help establish the hazards of cigarette smoking.

ANIMAL EXPERIMENTS. In these studies, animals are exposed to tobacco smoke and to the various compounds contained in the smoke. Cancer can be produced in animal subjects by exposing them to the substances which are contained in cigarette smoke. Toxic or irritant gases have produced experimentally in animals the same kind of damage found in the lungs and cells of cigarette smokers.

Forty percent of tobacco smoke is made up of particulate matter (known as "tar" and nicotine) and sixty percent is made up of gases. Among the gases are more than 50 elements and compounds, including formaldehyde, hydrogen cyanide, acetaldehyde, acrolein, and carbon monoxide.

In the particulate matter are found the majority of the cancer-producing agents in tobacco smoke. They include at least 7 compounds which have been proved to be cancer-producing in animal experiments, and others which have been found to be cancer-promoting.

CLINICAL AND AUTOPSY STUDIES. Observation of thousands of patients, together with thousands of autopsy studies, shows that many kinds of damage occur more frequently and more severely in smokers than in nonsmokers. Among these are cellular changes, such as the loss of ciliated cells so that the cilia cannot do their work of cleaning the lungs, and the thickening of the basal cell layer and the presence of atypical cells, both of which are considered by some authorities as precursors of cancer. Damage is also found more often in the air sacs and other lung tissues of smokers, as well as in the circulatory and other systems of the body.

cigarette smoking and **death**

These facts about cigarette smoking and death emerge from the Public Health Service reports:

- The risk of death is about 70 percent higher for men who smoke cigarettes than for men who do not. The risk is significantly higher for women who smoke cigarettes than for those who do not.

- The risk of death from chronic bronchitis and emphysema is from 3 to 20 times greater, depending upon age and total amount smoked.

- The risk of death from coronary artery disease —the major killer of smokers and nonsmokers alike—is 70 percent greater for smokers.

- The greater the number of cigarettes smoked daily, the higher the death rate; for men who smoke fewer than 10 cigarettes a day the rate is 40 percent higher than for nonsmokers, for those who smoke 10 to 19 cigarettes a day, 70 percent higher, and for those who smoke 40 or more a day, 120 percent higher.

- Life expectancy among young men is reduced by an average of eight years in heavy (over 2 packs a day) cigarette smokers and an average of 4 years in light (less than ½ pack a day) smokers.

- The risk is greater for those who start smoking at young ages.

- The risk is greater for those who inhale.

- Death rates for cigar and pipe smokers, who usually do not inhale the tobacco smoke, are not greatly higher than those of persons who do not smoke at all.

- A greater risk of unsuccessful pregnancy is experienced by women who smoke then by nonsmoking women.

cigarette smoking and **illness**

In May 1967, a report by the National Center for Health Statistics, a unit of the Public Health Service, revealed for the first time the extent of the relationship between cigarette smoking and illness.

The Center conducts a continuing survey of the nation's health, through interviews with 42,000 families a year. The families are a statistically representative sample of the civilian, noninstitutional population of the United States. In 1965, the Center's national survey showed that:

- Workers who smoke as much as a pack of cigarettes a day spend a third more time away from their jobs because of illness as people who have never smoked.

- Men and women who smoke average 15 percent more days ill in bed than those who have never smoked. For heavy smokers (more than 2 packs a day) the rate is 1½ times higher among males, and 2½ times higher for females.

This survey provides the basis for estimating the number of "excess" days of disability related to smoking—days of disability which would not have occurred if cigarette smokers had the same rate of disability as nonsmokers. The number of days of disability associated with cigarette smoking was estimated to be:

- An excess 77 million days lost from work each year in the United States.

- An excess 88 million man-days spent ill in bed.

- An excess 306 million man-days of restricted activity.

smoking and **disease**

LUNG CANCER. Cigarette smoking is a major cause of lung cancer and the major cause of lung cancer in men. The incidence of lung cancer would be reduced dramatically if people stopped smoking cigarettes.

Lung cancer was a rare disease fifty years ago, and smoking cigarettes was a rare form of behavior. In 1900 per capita consumption in the United States was 54 cigarettes; in 1968 it was 4,195 cigarettes. Meanwhile, deaths from lung cancer in the United States increased from fewer than 3,000 in 1930 to an estimated 59,000 in 1969. Among American men, lung cancer is today the most common cause of death from cancer.

The risk of developing lung cancer increases with duration of smoking and the number of cigarettes smoked per day. Men who are heavy smokers have a 20- to 30-fold increased risk over nonsmokers.

CANCER OTHER THAN LUNG CANCER. Cigarette smoking is a significant factor in the causation of cancer of the larynx and cancer of the oral cavity. These diseases are also associated with pipe and cigar smoking. A strong association has been established between the use of tobacco in its various forms and cancer of the esophagus, pharynx, mouth and cheek, and a cause-effect relationship seems likely. The relationship of pipe smoking as a cause of cancer of the lip appears to be established.

Research data reveal an association between cigarette smoking and urinary bladder cancer in the male. Smokers of more than 20 cigarettes a

day have a death rate from this disease twice that of nonsmokers. An association also exists between cigarette smoking and cancer of the pancreas, and with cancer of the kidney.

RESPIRATORY DISEASES. Deaths from chronic bronchitis and emphysema rose from 2,300 in 1945 to over 25,000 in 1967. Cigarette smoking is the most important cause of chronic bronchitis in the United States and greatly increases the risk of dying from bronchitis and emphysema. To stop smoking is to reduce the risk. Pipe smokers and cigar smokers are much less affected than cigarette smokers.

For the bulk of the population of this country, the importance of cigarette smoking as a cause of respiratory illness is much greater than air pollution or occupational exposures. Also, it has been demonstrated through Swedish and American studies of twins who were smokers and nonsmokers that smoking is of greater importance than hereditary and constitutional factors in connection with respiratory disease.

Cigarette smoking does not appear to cause asthma, nor does there appear to be an association between smoking and infectious diseases. However, cigarette smokers have a moderately increased risk of death from influenza and pneumonia.

Among smokers, coughing and sputum production—and the two combined—are consistently more frequent than among nonsmokers. Even young smokers of college age show an increase in these symptoms as well as other impairments of respiratory functions.

HEART DISEASE AND CIRCULATORY IMPAIRMENT. The Public Health Service report to Congress in 1968 concluded that "cigarette smoking can contribute to the development of cardiovascular disease and particularly to death from coronary heart disease." The following year the agency again incriminated cigarette smoking as an important risk factor in the development of coronary heart disease.

In the total male population, the death rate for coronary artery disease averages 70 percent higher for smokers than for nonsmokers, but in some groups the risk is greater even than this. Among men 45 to 54 years of age, for example, the rate is 300 percent greater for smokers than for nonsmokers, and among women in the same age group the rate is 200 percent greater.

Clinical, experimental and autopsy studies confirm the relationship between cigarette smoking and heart disease and circulatory impairment. Smoking has been found to produce abnormalities of cardiovascular function, and coronary arteriosclerosis is much more frequent among smokers than nonsmokers.

Research suggests that nicotine and carbon monoxide, both present in cigarette smoke, are possible important factors in the mechanism that produces coronary heart disease. Nicotine increases the demand of the heart for oxygen and other nutrients while carbon monoxide decreases the ability of the blood to furnish oxygen.

The 1969 report states that cigarette smoking may be more than an important coronary heart disease risk factor in itself. The joint effects of cigarette smoking, high blood pressure, high serum cholesterol, and overweight appear to be even greater than the effects of the risk factors taken separately.

Encouragingly, those who stop smoking have a lower risk of dying from coronary heart disease than do those who continue smoking, and it appears that some harmful cardiovascular effects

are reversible after cessation of cigarette smoking.

PEPTIC ULCER. An association exists between cigarette smoking and the prevalence of illness and higher death rates from peptic ulcer, especially gastric ulcer.

The number of cases of peptic ulcer reported in the 1967 survey of illness was much higher among smokers than nonsmokers. The differences increased as the number of cigarettes smoked increased.

MATERNAL SMOKING AND INFANT BIRTH WEIGHT. Women who smoke during pregnancy run a greater risk of unsuccessful pregnancies than do nonsmoking women. Exactly why this is so and how smoking acts on the unborn infant is still undetermined. But studies show that, among pregnant women smokers, one out of every five unsuccessful pregnancies would have been successful if these women had the same risk rates as nonsmoking women. Studies also find that women who smoke during pregnancy tend to have babies of lower birth weight than do nonsmoking mothers.

NONCANCEROUS ORAL DISEASE. In general, nonsmokers appear to enjoy better oral health than smokers. Periodontal disease, which affects the gums, bone, and tissue around the teeth, is more common among smokers, although the smoking is usually accompained by poor oral hygiene. There is some evidence that smoking may be associated with gum diseases, tooth loss, oral bone loss, delayed healing after teeth have been extracted, and inflammation of the palate.

SINUSITIS. Sinusitis may seem to be a relatively minor illness but it can be very distressing and disabling. There has long been clinical evidence that cigarette smoking aggravates sinusitis conditions and that meaningful relief can be obtained when the patient stops smoking.

what can be done?

The most obvious way to avoid the increased health risks associated with cigarette smoking is not to smoke. Nearly 60 percent of the nation's population over 17 years old (49 percent of the men and 66 percent of the women) are nonsmokers, either because they never started or because they have stopped smoking.

As more people become convinced of the health hazards associated with cigarette smoking, more people are giving up cigarettes. Even for persons who have smoked heavily and for very long periods of time, to stop is to reduce the risk, unless disease has already set in.

Per capita consumption of cigarettes in the United States dropped after publication of the Surgeon General's report in 1964; it recovered to some extent in the next few years, but has now fallen back to below the 1964 level.

The health hazards posed by cigarette smoking are of such gravity and affect such a vast segment of our population that continued remedial action is necessary.

- There must be a further reduction in the number of people now smoking—a number which amounts to 50 million adults or 42 percent of the adult population.

- Young people must be encouraged not to start smoking. At present as many as 36 percent of the boys and 22 percent of the girls in this country have become cigarette smokers by the time they are 18.

- Work must continue on developing less hazardous cigarettes and methods of smoking, and, concurrently, on developing a climate of opinion so that if such cigarettes and methods are available, smokers will turn to them. There is no other known way to protect those millions of present smokers who may never be willing or able to giving up smoking.

The health of 50 million present smokers is at risk, and the health of today's generation of young persons who have not as yet taken up smoking.

U.S. GOVERNMENT PRINTING OFFICE:1970—O-378-594

*Smoking and Health, 1964, Public Health Service Publication No. 1103; Price $1.25

Health Consequences of Smoking, 1967, Public Health Service Publication No. 1696; Price $.60

Health Consequences of Smoking, 1968 Supplement, Public Health Service Publication No. 1696, 1968 Supplement; Price $.55

Health Consequences of Smoking, 1969 Supplement, Public Health Service Publication No. 1696-2, 1969 Supplement; Price $.50

For sale by the Superintendent of Documents,
U.S. Government Printing Office
Washington, D.C. 20402 - Price 15 cents
$11.25 per 100

RESOLUTION XXXIV OF THE XIX DIRECTING COUNCIL
"CONTROL OF CIGARETTE SMOKING"

DIRECTING COUNCIL

PAN AMERICAN HEALTH ORGANIZATION

XIX Meeting

REGIONAL COMMITTEE

WORLD HEALTH ORGANIZATION

XXI Meeting

RESOLUTION XXXIV

CONTROL OF CIGARETTE SMOKING

THE DIRECTING COUNCIL,

Recognizing, on the basis of the fact, now well established, that cigarette smoking is an important cause of, or a substantial factor contributing to, premature deaths from broncho-pulmonary cancer, coronary disease, chronic bronchitis and chronic respiratory insufficiency;

Considering that cigarette smoking should be presented as harmful to health and that an Organization devoted to promoting health should set an example in this respect; and

Believing that each individual can decide for himself whether to indulge in the habit bearing in mind that his example may invite others to smoke,

RESOLVES:

1. To request the Director to report to the XIII Pan American Sanitary Conference:

(a) on measures which have been taken to control the advertising of cigarettes by restriction or by the inclusion in promotional material of appropriate warnings;

(b) on other possible methods of warning the public; and

(c) on measures which might be taken to control smoking in places of work or in public gatherings.

2. To recommend to persons attending meetings of the Governing Bodies of the Pan American Health Organization that they refrain from smoking.

RESOLUTION WHA23.32

HEALTH CONSEQUENCES OF SMOKING

世界衛生大會 決議
RESOLUTION OF THE WORLD HEALTH ASSEMBLY
RÉSOLUTION DE L'ASSEMBLÉE MONDIALE DE LA SANTÉ
РЕЗОЛЮЦИЯ ВСЕМИРНОЙ АССАМБЛЕИ ЗДРАВООХРАНЕНИЯ
RESOLUCION DE LA ASAMBLEA MUNDIAL DE LA SALUD

TWENTY-THIRD WORLD HEALTH ASSEMBLY

WHA23.32

19 May 1970

HEALTH CONSEQUENCES OF SMOKING

The Twenty-third World Health Assembly,

Having considered the report of the Director-General;[1]

Recalling the resolutions on this subject adopted by the Executive Board and the Regional Committees for the Americas and for Europe;

Conscious of the serious effects of smoking in promoting the development of pulmonary and cardiac disease, including broncho-pulmonary cancer, chronic bronchitis, emphysema and ischaemic heart disease;

Being aware that broncho-pulmonary cancer is at present increasing in all countries of the world where records are available in a form which permits assessment;

Holding that health agencies must now demonstrate their concern for the reduction of the main causal factor in diseases related to smoking;

Considering that smoking of tobacco during meetings may constitute a nuisance to non-smokers;

RESOLVES that:

(1) all those present at meetings of the Assembly and its committees be requested to refrain from smoking in the rooms where such meetings are held;

(2) the Director-General be requested:

(a) to consider the desirability of making the subject for World Health Day "The Health Consequences of Smoking" on the earliest possible occasion;

(b) to call the attention of all Members and Associate Members to the report on limitation of smoking[2] and to suggest that the advantages of applying the recommendations on pages 19 and 20 of that report should be considered in all countries;

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[1] Document A23/P&B/6.

[2] Annexed to document A23/P&B/6.

(c) to consider convening an expert group to recommend further action that might be taken to discourage smoking;

(d) to examine to what extent and by what educational methods young people might be persuaded not to begin smoking;

(e) to bring to the attention of FAO the need for studying crop substitution in tobacco-producing countries;

(f) to report to the Executive Board at its forty-seventh session and to the Twenty-fourth World Health Assembly on the action proposed and the financial consequences for the Organization.

Fourteenth plenary meeting, 19 May 1970
A23/VR/14

SMOKING AND HEALTH

by
Professor C. M. Fletcher
Senior Lecturer
Royal Postgraduate Medical School
Hammersmith, London, United Kingdom

and

Dr. Daniel Horn
Director, National Clearinghouse for Smoking and Health
Rockville, Md., United States of America

(WHO Consultants)

ANNEX

SMOKING AND HEALTH

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INTRODUCTION

Tobacco has for centuries been used all over the world in various ways as a way of increasing the enjoyment of life or as an aid in coping with some of its problems. A new development in the twentieth century has been the increasing use of cigarettes, manufactured chiefly from flue-cured tobaccos. During the last twenty years, it has been clearly shown by many clinical and epidemiological studies, supported by detailed laboratory investigations, that cigarette smoking impairs health to such a serious degree that means for its control must now be developed.

Cigarette smoking has been shown to play a major part in the development of many diseases, the most important of which are ischaemic heart disease, lung cancer, chronic bronchitis, and emphysema. Apart from these diseases, which are major causes of death, cigarette smoking causes widespread and distressing disability from chest and heart diseases and increases the mortality and disability from several other conditions.

The more recent adoption of cigarette smoking by women in developed countries is already associated with increasing mortality and morbidity from lung cancer and other illnesses.

FAO, reviewing the world tobacco economy from 1955 to 1967, reported that: ". . . the outlook is that tobacco consumption will grow further in developed, developing and centrally planned countries. In the past decade the most remarkable feature of tobacco consumption has been the trend towards cigarettes. The manufacture of cigarettes expanded by one half in the developing and centrally planned countries and by 40 per cent. in developed countries. . . The publication of medical reports on the relationship between cigarette smoking and health has not yet resulted in any permanent decrease in cigarette smoking in developed countries but future behaviour appears uncertain. By contrast, tobacco consumption in developing countries has not yet been influenced by health considerations."[1] It can confidently be forecast that, if this trend is not arrested, it will result in increasingly serious impairment of health and rising mortality from diseases of the lungs and heart.

Annex

The health effects of smoking are largely confined to the individual smoker and, although severe, become manifest only after many years of smoking and are therefore not obviously connected with the habit. Since in many countries the economic benefits from growing, manufacturing, marketing, and taxing tobacco products are enormous, governments have hesitated to take firm action against a habit whose dangers are not generally accepted.

In countries where deaths and disability associated with cigarette smoking are already at high levels, much more preventive action is needed. In developing countries, where cigarette smoking is rapidly taking hold, measures are needed to arrest the growth of the habit and thus to prevent the increasing premature deaths and disablement it would inevitably cause.

It is not practicable to impose regulations on an unwilling population in an attempt to bring about a reduction in cigarette smoking. It is, however, essential to take steps that will promote its reduction or discontinuance by smokers and will discourage young people from starting to smoke. These will include ensuring that people are fully informed about the health consequences of smoking and curtailing all forms of sales promotion that encourage the use of tobacco.

EVIDENCE CONNECTING SMOKING WITH DISEASE

Cigarette smoking first became suspect as a cause of lung cancer because of the rising mortality from this form of cancer and the parallel increase in the consumption of cigarettes. While conventional mortality statistics can show broad associations of this kind, the real relationship of smoking habits with mortality and morbidity can be established only by carefully planned epidemiological studies. These have been of two kinds.

1. Retrospective studies, in which the smoking habits of patients with certain diseases are compared with the smoking habits of controls of the same age and sex suffering from other diseases. Retrospective studies are subject to various forms of bias but have contributed much useful information and have been carried out in many countries. Many surveys have also been made of the prevalence of disease in populations of various kinds in relation to smoking habits. These surveys have often employed tests of cardiopulmonary function to elucidate the immediate and long-term effects of smoking.

2. Prospective studies, in which the smoking habits of large numbers of smokers are elicited and their mortality and morbidity are recorded in subsequent years, along with those of non-smoking controls. Such studies have so far been carried out chiefly in Canada, the United Kingdom and the United States of America. These surveys have confirmed the findings of retrospective studies and have provided much accurate information on the association of smoking with total mortality and with the incidence of and mortality from specific diseases.

SMOKING HABITS AND TOTAL MORTALITY

The large prospective studies[2,3,4,5] on men have all demonstrated that:

1. Cigarette smokers, taken as a whole, have an approximately 30-80 per cent. greater mortality than non-smokers (Table 1).

2. The excess mortality increases with increasing cigarette consumption.

3. The mortality excess of cigarette smokers is proportionately greater at ages 45-54 than at younger or older ages (Table 2). The total number of excess deaths in cigarette smokers is greater in older people because of the generally higher death rates at older ages.

4. The excess mortality is greater in those who start smoking at earlier ages than in those who start later in life (Table 3).

5. The mortality is greater in cigarette smokers who say that they inhale than in those who do not.

6. The mortality is lower in cigarette smokers who have stopped smoking than in those who have continued to smoke, the mortality approaching the level found in non-smokers as the duration of abstinence increases (Fig. 1).

7. Smokers of pipes or cigars, taken as a whole, have little or no excess mortality compared with non-smokers (Table 1). They are mostly moderate smokers who do not inhale. Those who smoke heavily or inhale have mortality rates that are 20-40 per cent. greater than those of non-smokers.[3,4]

Only one large prospective study has included women.[3] The findings were similar to those in men, but the excess mortality of female smokers of cigarettes was rather less than that of males. This may be partly because women tend to start smoking later in life, to smoke less, and to inhale less. Even in groups with apparently similar habits in these respects, however, the mortality excess in female smokers appears to be smaller than in male smokers.

DISEASES CAUSING EXCESS MORTALITY OF CIGARETTE SMOKERS

The excess mortality of cigarette smokers is due to the increased incidence in them of many diseases, but about 80 per cent. of the excess shown in the four major prospective studies is due to lung cancer, bronchitis and emphysema, ischaemic heart disease, and other diseases of the vascular system (Table 4).

The mortality of cigarette smokers from many other diseases is greater than that of non-smokers; particular mention may be made of peptic ulcer and of cancer of the larynx, oral cavity, oesophagus, and bladder. But the total mortality rates from these diseases in both smokers and non-smokers are so low that they make only a small contribution to the excess mortality of cigarette smokers (Table 4).

CIGARETTE SMOKING AS A CAUSE OF EXCESS MORTALITY

These are strong prima facie reasons for supposing that the excess mortality of cigarette smokers is due to their smoking habits, since it is closely related to the number of cigarettes smoked, the age of starting to smoke, and the habit of inhalation, and since it decreases when they stop smoking. It has, however, been suggested by some critics that the excess might be due to cigarette smokers inheriting both a greater susceptibility to many diverse pathological processes and a tendency and desire to smoke cigarettes.[6,7,8] They suggest that the single agent of cigarette smoke would be unlikely to increase mortality from so many different diseases. Cigarette smoke is, however, a complex agent containing substances that may have many different effects on the human body, and it is difficult to see how a genetic tendency to die from various diseases could produce such proportionately different excesses of mortality from different diseases as are observed in cigarette smokers compared with non-smokers (Table 5). The genetic hypothesis demands a remarkably close quantitative relationship of disease incidence with the duration and amount of smoking and the type of smoking habit and it can hardly account for the steady decline in the adverse effects of smoking after its discontinuance. It also fails completely to account for the great increase in lung cancer that has followed the adoption of cigarette smoking wherever it has occurred in the world.

Annex

Proof that cigarette smoking causes any disease in man could only be irrefutably established by controlled experiments on a vast and impracticable scale. That smoking increases the incidence or severity of a disease may be accepted if:

(1) the incidence of the disease is quantitatively related to exposure to cigarette smoke;

(2) the incidence decreases in those who stop smoking; and

(3) a mechanism can be postulated by which the disease could be produced or exacerbated by cigarette smoking.

The evidence is strengthened if the disease can be produced in animals by exposure to cigarette smoke or its components.

CIGARETTE SMOKING AS A CAUSE OF EXCESS MORBIDITY

Whether disability is measured by working days lost, by days spent ill in bed, or by days of restricted activity due to illness or injury, the rates are higher in smokers than in non-smokers. It was estimated in the United States of America[33] that because of the higher disability rates in smokers the excess of working man-days lost in the year surveyed was 77 million, of days spent ill in bed 88 million, and of man-days of restricted activity 306 million. For men aged 45-64 years, the excess associated with cigarette smoking represented 28% of the days of disability.

SPECIFIC DISEASES RELATED TO CIGARETTE SMOKING

Lung Cancer

In all countries from which reliable statistics are available, there has been a striking increase in lung cancer mortality in recent decades.[10,11,12] It is greater in men than in women, and in all countries has followed the increasing adoption of cigarette smoking by men and, later, by women.

Quantitative relationship between lung cancer mortality and cigarette smoking

More than 30 retrospective studies in 10 countries[13a,14,15a] and seven prospective studies in Canada, the United Kingdom and the United States of America[2,3,4,5,13b] have shown that the risk of lung cancer increases directly in relation to the number of cigarettes smoked. In heavy smokers it is 15-30 times as great as that of non-smokers (Fig. 2). It has also been shown that the risk is increased by inhalation of the smoke,[2,3,4,13c] by earlier onset of smoking,[2,3] by taking more puffs from each cigarette,[16] by keeping the cigarette in the mouth,[17] between puffs and by relighting half-smoked cigarettes. The dose relationship has been shown in women as well as in men, but in women the rates are lower at the same cigarette consumption than in men.[3]

One recent retrospective study[19] suggested that smokers of filter-tipped cigarettes may have a reduced risk of developing lung cancer as compared with smokers of unfiltered cigarettes.

In several autopsy studies it has been found that cigarette smokers show extensive metaplastic changes in the bronchi whose severity is related to the number of cigarettes smoked and which could be precancerous.[13d] These changes are particularly extensive in patients with lung cancer, while in non-smokers and ex-smokers they are infrequent. In ex-smokers degeneration of metaplastic cells has been reported which might indicate the regression of precancerous changes.

Lung cancer in pipe and cigar smokers

Most of the retrospective and all the prospective studies agree in finding relatively small increases in lung cancer mortality in men who have smoked only pipes or cigars.

It is not known why pipe and cigar smoking should have a so much smaller effect, since the amount of carcinogens is, if anything, greater in pipe and cigar smoke than in cigarette smoke. The explanations generally advanced are that, while a high proportion of cigarette smokers smoke heavily and inhale, pipe and cigar smokers are mostly moderate smokers who do not inhale. But pipe and cigar smokers who say they inhale have a lower lung cancer rate than that of cigarette smokers who say they do not inhale. There are three retrospective studies in Switzerland[20] and Germany[21] in which a risk of lung cancer in pipe and cigar smokers has been found to be as great as in cigarette smokers.

Reduced risk in those who stop smoking cigarettes

Retrospective and prospective studies have all shown a reduced risk of lung cancer in cigarette smokers who have stopped smoking. Among doctors in the United Kingdom who had stopped smoking the risk of lung cancer fell rapidly below the risk among continuing smokers and after 15 years was only three times that of non-smokers (Fig. 3). Between 1951 and 1966 half of all the doctors in the United Kingdom included in a prospective study of mortality who used to smoke cigarettes have stopped smoking while, over the same period, there was little change in the general consumption of cigarettes. Between 1953-57 and 1961-65, while lung cancer deaths among all men aged 35-64 in England and Wales rose by seven per cent., they fell by 38 per cent. among male doctors of the same ages.[22a] This strongly suggests that stopping smoking cigarettes on a wide scale would reduce the general mortality from lung cancer.

Lung cancer and other environmental factors

Lung cancer death rates are higher in urban than in rural areas. This urban/rural difference is greater in cigarette smokers than in non-smokers. Exposure to air pollution, especially by coal smoke, appears to increase the risk of lung cancer, but its effect is small compared with that of cigarette smoking. Men who work in certain occupations,[22,23,24,25,26] particularly those exposed to asbestos dust, chromates, nickel, arsenic, radioactive materials, mustard gas, and the products of coal distillation in the gas industry, have a considerably increased risk of lung cancer. Where smokers have been compared with non-smokers in these industries the increased risk is largely confined to smokers. It appears that lung cancer can develop in response to the inhalation of a wide variety of chemical agents, of which cigarette smoke is the one to which more people are exposed than to any other.

It also appears that cigarette smoking is especially dangerous to people exposed to these various environmental hazards. The contribution of industrial lung cancer to total mortality from that disease is, however, very small.

Experimental evidence[27]

Tobacco smoke contains both cancer-initiating (carcinogenic) and cancer-promoting (co-carcinogenic) substances. Cancer can readily be induced in the skin of experimental animals

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by the application of condensates from tobacco smoke. The carcinogenicity of condensates from pipe and cigar smoke is as great as that from cigarette smoke. Until recently no one had induced bronchial carcinoma in experimental animals by exposing them to inhalation of cigarette smoke. Now, however, dogs who had smoked seven cigarettes per day for 29 months through tracheostomies have been found to develop typical squamous bronchial cancers. Dogs smoking the same number of filtered cigarettes or half the number of unfiltered cigarettes over the same period did not develop squamous cancers but showed extensive metaplastic changes in the bronchial epithelium.[28]

The mechanism of lung cancer production by smoking

Bronchogenic cancer is presumably produced by repeated exposure of the bronchial epithelium to smoke containing both cancer initiators and cancer promoters. The substances that are of prime importance have not been identified but benzo(a)pyrene is the known cancer initiator that occurs in the highest concentration in tobacco smoke. A reduction in the smoke of the concentration of cancer initiators (which occur chiefly in the particulate phase) and of cancer promoters (which occur in both the particulate and the gaseous phase) could be expected to reduce the risk of cancer. So would changes in smoking habits that reduce the exposure of the bronchial epithelium to the smoke.

Conclusion

Lung cancer is uncommon among non-smokers. The evidence that cigarette smoking greatly increases the incidence of lung cancer is now irrefutable. It can therefore be forecast that, if cigarette smoking were to stop or if cigarettes free from the risk of cancer were to be produced, the world-wide epidemic of a disease that at present kills hundreds of thousands of smokers every year would be arrested and begin to recede.

BRONCHITIS AND EMPHYSEMA

Morbidity studies

Many surveys of samples of the general public in 10 or more countries[29] have shown that the prevalence of cough and expectoration in both men and women is closely related to the number of cigarettes smoked. These symptoms usually abate rapidly in those who stop smoking.[30,31,32] Recurrent episodes of respiratory infection are associated with this excess of mucus production and are more frequent in cigarette smokers than in non-smokers.[13e] Pipe and cigar smokers are affected by cough and expectoration only slightly more often than non-smokers.[29]

Every aspect of lung function has been shown to be, on average, less efficient in cigarette smokers than in non-smokers of the same age.[13f,33a] The chief abnormality is progressive narrowing of the airways. There is also impairment of gas transfer and consequent hypoxaemia.[34] When younger smokers stop smoking their lung function usually returns to normal.[31,32,34,35] In patients with moderately severe airway obstruction stopping smoking may result in striking improvement in both breathlessness and cough despite years of smoking, but when bronchitis or emphysema are advanced the damage to the lungs is irreversible and stopping smoking usually results in only slight alleviation of breathlessness.[36] Distressing cough may, however, be relieved.

Mortality studies

As in the case of lung cancer, the large prospective studies have all shown a steady increase in mortality from bronchitis and emphysema with increasing cigarette consumption, with lower rates in pipe and cigar smokers. In smokers of 20 or more cigarettes a day the mortality is some 15 times greater than in non-smokers.

Among doctors aged 35-64 in England and Wales, many of whom have stopped smoking cigarettes, there was a 24 per cent. reduction in bronchitis mortality between 1953-57 and 1961-65, as compared with a reduction of only four per cent. in all men of the same age in England and Wales, among whom there was no reduction of cigarette smoking.[20a]

Pathological studies

Post-mortem studies[9,13,33d] have shown close relationships between the severity of bronchitic and emphysematous changes and the amount of cigarette smoking before death.

Experimental evidence

Tobacco smoke contains many irritant substances which can be shown to arrest the action of the cilia lining the bronchi.[27,38c] Animals exposed to tobacco smoke have been found to develop changes similar to those found in patients with severe bronchitis.[37] Dogs regularly exposed to cigarette smoke developed progressive damage to the lungs by both bronchitis and emphysema.[33b]

Other causes of chronic bronchitis

Other causes of chronic bronchitis include generalized air pollution, especially by smoke from the combustion of coal,[38] and exposure to dust in mining and other industires.[39] These factors predominately affect cigarette smokers.[38,40] In the United Kingdom serious chronic bronchitis or emphysema is uncommon in non-smokers even in heavily polluted areas or among industrial groups exposed to dust inhalation.[41]

The mechanism by which smoking produces bronchitis and emphysema

It may be presumed that irritant substances in tobacco smoke are responsible for the immediate coughing and bronchoconstriction that follow on its inhalation. This reaction is due to substances in both the gaseous and the particulate phase of the smoke.[42] These substances are also presumably the cause of the hypertrophy of the mucous glands, which secrete excessive mucus, expectorated as sputum. The excess mucus and the ciliostasis impair the lung defences against infection, and thus encourage recurrent bronchial infection in the bronchitic smoker.[29] It is not known which substances in cigarette smoke cause the irreversible bronchial narrowing of obstructive bronchitis and the alveolar destruction of emphysema.

Conclusion

Cigarette smoking is a most important predisposing cause of chronic bronchitis and emphysema. If cigarette smoking were to cease most of the prolonged disablement - which is not only distressing but also causes much loss of working time and efficiency - and early deaths from these diseases would be prevented in many thousands of men and women.

ISCHAEMIC HEART DISEASE

Mortality from ischaemic heart disease has been increasing steadily in developed countries in the past three or four decades. Some of the increase may be due to improvements in diagnosis but the continued increase in recent years is almost certainly real. In the United Kingdom and the United States of America one-third of all male deaths between 35 and 64 years of age are due to this disease.

The prospective mortality studies agree in showing that mortality from ischaemic heart disease is greater in cigarette smokers than in non-smokers, increases with increasing cigarette consumption, and is lower in cigarette smokers who stop smoking than in those who continue.

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It is greater in smokers who inhale and in those who started smoking at earlier ages. This association of cigarette smoking with deaths from ischaemic heart disease is quantitatively different from its association with lung cancer and chronic bronchitis. Ischaemic heart disease is frequent among non-smokers, and the proportionate increase of risk in cigarette smokers is relatively small. It is less directly associated with the number of cigarettes smoked, and the increased risk is greater in younger smokers (two to three times the rate of non-smokers) than in older smokers (50 per cent. greater than in non-smokers) (Fig. 4). Since the disease is so common, however, the small proportionate increase in mortality from it among cigarette smokers results in a much larger total increase in the number of deaths from it among smokers than the total increase of deaths from lung cancer (Table 4). Pipe and cigar smokers have little or no increased mortality risk as compared with non-smokers.

Among women, especially before the age of 65, the death rates from ischaemic heart disease are much lower than in men, but the proportionate effect of cigarette smoking is similar to that in men.[3]

In a number of prospective studies the incidence of non-fatal attacks of ischaemic heart disease and of angina pectoris have been recorded in relation to smoking habits.[43,49] Angina pectoris has usually, but not always, been found to be more frequent in cigarette smokers than in non-smokers. Non-fatal attacks are increased in cigarette smokers to a similar extent (about twofold) as are fatal attacks, but attacks of ischaemic heart disease resulting in sudden death have in one study been found to be four times as frequent in cigarette smokers as in non-smokers.[48] In most of these studies, pipe or cigar smokers have been found to have no increased risk of ischaemic heart disease. In one study an increase was found, but without any increase in rapidly fatal attacks.[46]

In four large studies in the United States of America, the frequency and severity of atheroma of the coronary arteries at autopsy has been found to be positively related to previous cigarette smoking.[33e,49] Two surveys have been reported in which no such relationship has been found.[51,52]

Other risk factors

The risk of ischaemic heart disease is increased in people in relation to high blood pressure, obesity, diabetes, raised blood cholesterol levels, physical inactivity, impaired lung function, and personality type. Statistical analyses have shown that cigarette smoking is related to mortality from ischaemic heart disease independently of all these factors.[44,53]

In doctors aged 35-64 in England and Wales who have greatly reduced their cigarette smoking, the reduction of mortality from all cardiovascular diseases was six per cent. between 1953/57 and 1961/65 as compared with a 10 per cent. increase in all males of the same age in the country over this period. There is also evidence from recent insurance statistics of a favourable trend of ischaemic heart disease mortality in doctors in England and Wales as compared with other men.

The mechanisms whereby cigarette smoking may affect the heart

Cigarette smoking or the injection of nicotine has been shown to promote the release of catecholamines from the adrenal glands.[33f] These substances have been shown to increase platelet adhesiveness (thus promoting liability to thrombosis), to increase the concentration of blood lipids (which may promote the formation of atheroma), and also to increase liability to cardiac arrhythmias[55] (which may cause sudden death). Catecholamine release is probably also responsible for the tachycardia, increased cardiac output, and slight hypertension that occur in cigarette smoking.[56a] This is harmless in subjects with normal hearts but has been shown to produce evidence of heart failure in patients who had recently had a myocardial infarction.[57]

Cigarette smokers also have increased levels of carboxyhaemoglobin (up to 10 per cent.) which, though not likely to impair the efficiency of a normal heart, might impair the oxygen supply to ischaemic heart muscle to a critical degree.[33g,56b]

These consequences of cigarette smoking could account for both the increased coronary atherosclerosis of cigarette smokers and for an increased fatality rate after coronary occlusion.

The immunity of pipe and cigar smokers from the harmful cardiac effects experienced by cigarette smokers cannot yet be explained. Few studies have been made of the immediate effects of pipe or cigar smoking on the cardiovascular system, on the blood levels of nicotine, or on catecholamine release.

Conclusion

Cigarette smoking is most probably a contributory cause to disease of the coronary arteries, which is one of the leading causes of death in developed countries. It may be estimated that the death rate from this disease would be reduced considerably in the absence of cigarette smoking, particularly in middle-aged men.

SMOKING AND OTHER DISEASES OF THE CIRCULATION

Smoking does not increase the incidence of arterial hypertension,[13h] but there is evidence that cigarette smoking encourages the formation of generalized atherosclerosis.[33e] This may cause disabling or fatal consequences by impairing the arterial blood supply to the legs or brain. In the large prospective studies in the United States of America smokers have been found to have an increased death rate from strokes and from aortic aneurysm.[33h] Intermittent claudication also affects smokers more often than non-smokers.[48]

OTHER CONDITIONS RELATED TO CIGARETTE SMOKING

Peptic ulcer

A clear association between smoking and the prevalence of both gastric and duodenal ulcers has been shown in retrospective and prevalence surveys.[13] Patients with ulcers often find that heavy smoking increases their pain. Patients who smoke show a poor response to antacid therapy,[58] and the rate of healing of gastric ulcers is delayed by smoking.[59]

The large prospective studies[2,3,4,5] have shown a threefold or fourfold increase in death rates from peptic ulcer in cigarette smokers as compared with non-smokers.

Peptic ulcers are common in non-smokers and have not become more common in many countries over the period during which cigarette consumption has been increasing. It seems that, rather than cause them, smoking in some way delays the healing of ulcers.

Other cancers

Cancers of the mouth, larynx, and oesophagus are associated with cigarette, pipe, and cigar smoking. The mortality rate is increased about fourfold. Papillomata and cancers of the bladder are also commoner in smokers than in non-smokers. There is also some recent evidence of an increased risk of cancer of the pancreas in smokers.[56c]

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Pulmonary tuberculosis

The rapidly declining mortality from tuberculosis in developed countries over a period during which cigarette smoking has been increasing shows that the habit cannot play an important part in aggravating the disease. There is, however, some evidence from mass radiography surveys in the United Kingdom[60,61] and from the prospective studies of doctors in that country[2] and of American veterans[4] that cigarette smokers have an increased risk of developing and of dying from this disease. Two studies have suggested that this may be due to the higher alcohol consumption of smokers rather than to the smoking habit itself.[62,63]

Smoking in pregnancy

The dangers to the unborn child from radiation, rubella, and some drugs are widely recognized. That a mother may also endanger her child by smoking during pregnancy is less well known.

There is now clear evidence from seven large independent surveys that the babies born to women who smoke during pregnancy are, on the average, 150-240 g lighter than those of non-smokers and that smokers have two or three times as many premature babies.[33] By their first birthday, these small babies have caught up with and are as heavy as those of non-smoking mothers.

Recent studies of over 8000 pregnancies have, however, shown that the risk to the foetus from a mother's smoking may be more serious than this, for the babies of mothers who smoked during pregnancy were about twice as likely to be aborted, to be stillborn, or to die soon after birth as the babies of non-smoking mothers. The risk to babies of mothers with pre-eclamptic toxaemia was increased if the mother smoked. In one study it was calculated that one in five of babies lost would have been saved if their mothers had not smoked.[64,65]

It is not known how maternal smoking affects the foetus. The effect is not due to the eating habits of the mothers. It is possible that nicotine might reduce the placental blood flow and that carboxyhaemoglobinaemia might also be harmful to the foetus.[66]

Smoking and body weight

There is little over-all difference between the weight of adult smokers and that of non-smokers but the latter tend, on average, to be slightly heavier.

Smokers who stop smoking often report a considerable gain in weight. Doctors in the United Kingdom who had stopped smoking reported such a gain although many had taken some care with their diet. Their average gain in weight was only 2 kg.[67] This weight gain is normally attributed to an increased food intake, but there may also be metabolic changes resulting in improved utilization of food after smoking is stopped.

It has been suggested that the increased risk of ischaemic heart disease from the gain of weight on stopping smoking may more than offset the reduction in risk achieved by stopping, so that it is safer to continue. That this suggestion is groundless is shown by the steady decline in the mortality excess among cigarette smokers who stop.

Psychological effects of stopping smoking

It has been suggested that an energetic anti-smoking campaign might persuade smokers who are dependent on smoking for its tranqillizing effects to stop, so causing them much psycho-

logical disturbance and leading them to resort to more harmful drugs. A study in the United Kingdom of doctors who had stopped smoking in large numbers revealed that those who had stopped derived more benefit from so doing than they had previously from smoking. As compared with doctors who had continued to smoke, they reported a definite increase in energy and were not more tense, irritable, or prone to worry.[67]

* * * * *

It may be said in conclusion to this section that smoking-related diseases are such important causes of disability and premature death in developed countries that the control of cigarette smoking could do more to improve health and prolong life in these countries than any other single action in the whole field of preventive medicine. It can be confidently forecast that if cigarette smoking continues to spread as it is doing, in developing countries it will bring disability and death in its wake. In developing countries, too, just as much as in developed countries, the prevention of cigarette smoking is an essential part of any programme of preventive medicine.

APPROACHES TO PREVENTION

There has been a tendency to a pessimistic view of the prospect of inducing large numbers of adults to stop smoking or of persuading large numbers of young people not to take up the habit. Since cigarette smoking is of relatively recent origin in most countries and has usually been adopted most rapidly by young adults, most countries have experienced a sharp increase in total tobacco consumption over the years.[68] This has been true even when the rate of taking up smoking has levelled off in successive cohorts of young adults, since these young cohorts are replacing older people among whom fewer smoke and those who smoke tend to smoke less.

In particular, the increased adoption of cigarette smoking by women, which has been much more recent in most countries, tends to result in a continued increase in cigarette consumption, even though substantial numbers of smokers have stopped smoking. Increases in the total population, especially in the adult population, can also produce substantial increases in the total consumption of cigarettes even when the per capita rate stays the same.

There have been scattered reports of limited attempts to influence smokers to stop smoking or to persuade children not to start smoking. In general, these attempts have not been very successful.[69,75] From the health educational point of view this is not surprising, since they have largely been based on the belief that, if someone in authority informs people that cigarette smoking is harmful, large numbers will stop smoking and large numbers of young people who would otherwise take it up will not do so. Such a belief does not take into account the complexity of the process whereby young people take up smoking or adults give it up, or of the factors involved in an individual deciding to take it up or give it up. Both processes are determined by such factors as the individual's basic values, his perception of the threat of the effects of smoking and the weight he places on it, the psychological or social utility of smoking to him, and his social environment encouraging him to start and continue smoking or discouraging him from doing so.[72]

A programme to reduce the death and disability that result from smoking has three main objectives: (1) to encourage young people not to start smoking; (2) to reduce the number of people now smoking; and (3) to encourage the development of less hazardous cigarettes and methods of smoking and at the same time to persuade smokers to turn to them.[73]

The most important approaches at present in combating the health hazards of smoking are as follows:

1. The education of youth not to take up smoking.

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2. The exerting of the influence of health workers.

3. Group approaches to the control of cigarette smoking by adults.

4. Mass approaches to the control of cigarette smoking.

5. Reducing the effectiveness of the advertising and promotion of cigarettes.

6. Less hazardous smoking.

This list does not imply a strict order of priority. An effective programme for the education of youth is necessary, but it is doubtful whether it would be of any value by itself as long as young people live in a world populated by large numbers of cigarette-smoking adults. Experience up to now strongly suggests that effective action must take place more or less concurrently under all the six headings listed above. A programme accomplishing a little under each would probably be more effective than one accomplishing a great deal under one but neglecting the other five.

1. The education of youth to prevent smoking

The encouragement of young people not to take up smoking - as the one certain protection against the health hazards of cigarettes - is of vital importance.

There have been a number of studies on smoking among the young.[74-82] In general, it has been found that many of the children living in an environment in which adults or older children smoke begin experimenting with smoking at a fairly early age. Some go no further than experimenting, a long period elapses before others return to smoking, and for still others there is a fairly rapid progression through a series of stages. These consist of occasional smoking (on relatively infrequent special occasions), fairly frequent smoking (the frequency and variety of occasions for smoking increasing) and, finally, regular smoking, usually characterized by carrying cigarettes. Even regular smoking tends to be at fairly low levels by adult standards, probably because of the combination of the cost and of restrictions in the times and places available for smoking. The age at which each stage takes place and the proportion of children who progress from one stage to the next can vary markedly from one culture to another.

Studies looking for characteristics that distinguish smokers from non-smokers at each age level have found some that appear quite consistently. First, conformity to a family smoking pattern appears to be important; smoking is commoner in children whose parents smoke and in children who have older siblings who smoke. Second is a pattern of low achievement; smoking is commoner among children who do less well at school and set themselves lower goals than among children who do well in school and set themselves higher goals. Third is a pattern of peer group influences; smokers tend to associate with other smokers, but it is not clear to what extent this operates to induce smoking or reinforce its continuation or whether it simply represents a consequence of the gravitation together of people with similar habits. Finally, there is some indication that smoking for some children is a symbol of independence and rebellion against the norms set either by the family or by their peer group. Unfortunately no adequate analysis has yet been reported of how these characteristics vary in their importance as a child progresses through each successive stage in the process of becoming a regular smoker.

There is also evidence to support the view that smoking can take on an important symbolic significance for a young person - usually in terms of his social relationship with his peers. The same factors in relation to the psychological utility of smoking that characterize adult smoking have also been identified in university students. Presumably children who begin to smoke learn that they can use cigarette smoking to heighten their emotional state (to stimulate,

manipulate, or accentuate pleasure, for example), to decrease such negative feelings as anxiety, fear, or insecurity, and even to develop habit smoking, which lacks any significant emotional component. Whether anything resembling the psychological addiction that characterizes some adult smokers can be found in young people who smoke only a few cigarettes a day is open to question.

Another characteristic of young smokers is the high proportion who are personally hardly affected at all by any threat to their health 30 or 40 years in the future. The recent increase in information on the morbidity and disability associated with cigarette smoking, especially that showing the immediate effects of smoking and showing impaired respiratory function in young relatively new smokers, is more relevant.

There are serious difficulties in attempting to influence the young by classroom teaching to adopt behaviour opposed to that encouraged in the larger environment by advertising and the smoking practices of parents of both adult and peer leaders. It is because of these difficulties that the quality of school programmes on smoking as a detriment to health is so important and needs to be improved. Young people should have an opportunity to learn about the health consequences of smoking in their science and health education classes, their social studies programme, their physical education activities, and other appropriate classes.

Since the behaviour of the young is shaped by influences other than purely educational, and since teaching by example is more powerful than teaching by precept, parents and teachers should refrain from smoking. Since outside the classroom, too, many young people are influenced through organized youth activities, knowledge of the dangers of smoking should reach them through those channels and through the example set by the leaders of those activities, who should also refrain from smoking.

It must be emphasized, however, that the education of youth on the subject of cigarette smoking cannot take place in a vacuum; it should form part of teaching that develops a deeper understanding of the whole field of personal health. It is obvious that smoking is only one out of the many choices before the individual that require him to take a decision about his personal behaviour.[83] The decision that gives him the best chance of good health, both in the immediate and in the distant future, depends on many factors. An essential factor, however, is a sound health education programme emphasizing that good health is a priceless asset, that personal decisions on behaviour affect the prospects for good health, and that ill health is not solely a consequence of ill-fortune but frequently a direct consequence of behaviour under direct individual control. Strengthening the basic health education programme in schools and universities is an essential part of strengthening teaching about the effects of smoking.

The first step in strengthening basic health education in the schools and universities is to improve the training of teachers. This needs to be done both in teacher training institutions and in continuing education programmes for teachers. Adequate instruction about the effects of cigarette smoking on health should be a part of the training for both existing teachers and future teachers, and techniques for reaching children with information on this subject should be taught.

2. The influence of health workers

In certain countries many doctors have stopped smoking.[84-87] In some this trend has extended to medical students as well. Health workers now generally appreciate the fact that cigarette smoking is a serious health hazard and that cessation of smoking will prevent a great deal of chronic disease. Because these health workers symbolize health authority and thus influence both individual and community attitudes and behaviour, they may exert considerable effect on the smoking attitudes and practices of their patients. An important part of this influence consists in setting an example by not smoking cigarettes.

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A National Forum on the Office Management of Smoking Problems,[88] sponsored by the American College of Chest Physicians and the United States Public Health Service, was held recently in the United States of America. It made the following recommendations:

"Physicians in their offices should do at least the following:

1. They should inquire about the smoking habits of all their patients.

2. They should inform each patient about the risks involved in continued smoking, and the benefits to be derived from stopping.

3. They should advise strongly against smoking.

This minimum programme can be carried out with little expenditure of additional time over the usual office routine. However, to be maximally effective, physicians must do more; they must actively assist smokers in their efforts to stop."

In addition, the Forum emphasized the opportunities available to the physician to create an office environment conducive to the cessation of smoking by, inter alia, the physician and his staff refraining from smoking. It recommended the systematic use of screening procedures to identify early manifestations of impaired pulmonary function as well as other tests to uncover the early effects of smoking. Its primary emphasis, however, was on the importance of the physician accepting responsibility for the counselling of his patients against cigarette smoking. The report of the Forum included three papers on the subject of helping people give up smoking.[89-91]

If the role of the health workers in patient education is to be increased, it is necessary that their training should include appropriate instruction on the effects of cigarette smoking on health. Even more important is the development among young health workers of a sense of concern and responsibility for the education of their patients on the importance of avoiding disease by not smoking cigarettes.

3. Group Approaches to the Control of Cigarette Smoking by Adults

While a large proportion of the young can be reached through educational institutions, the channels to adults are much more varied. However, most adults function as members of an occupational, religious, or cultural group or of a social, athletic, or civic group and can be reached through them. Attempts to reach smokers in this way have been few and far between and could be used more systematically.

The few efforts to reach people in their normal group affiliations have tended to be limited to the presentation of posters, leaflets, lectures, and films designed to make people aware of the serious consequences that can result from cigarette smoking. The fear of the consequences of smoking so aroused can be so great that the individual who does not feel able to stop smoking is almost forced to stop listening. By and large, evaluations of the limited attempts that have been made have been discouraging.[69,70] It may well be that efforts limited to alarming the public or, on the other hand, offering cessation or withdrawal clinics to the few who have decided to stop smoking and seek help are inadequate to deal with the problem.

At the present time extensive behavioural research is going on into the process whereby people stop smoking, the factors that contribute to behavioural change, and how those factors interact.[92-94] Although this research is far from complete, it is clear that the process of giving up smoking begins with a simple awareness of the dangers of smoking and proceeds through a more thorough perception of and concern with the threat posed by smoking, requiring some kind of conscious decision-making in an attempt to change. Success in stopping smoking requires both an immediate decision to give it up (short-term success) and a continued determination not to resume (long-term success). The factors implicated in the different steps in the process from

awareness to successful long-term abstinence from smoking can vary considerably. It is probably true that the later the stage in the process the more important personal communications become as compared to mass communications. Thus, awareness of and concern about the health hazards of smoking may be effectively increased by mass communications as well as by group and personal communications. But the decision to stop smoking and continuing abstinence from smoking probably depend almost entirely on group and personal support.[83]

There is an extensive literature on the subject of helping those smokers who find it very difficult to stop.[95] Fortunately they represent a minority of those who try to stop. Educational programmes to control cigarette smoking in occupational groups exposed to pollutants increasing respiratory disease in general may be of particular value, since the effect of smoking may be enhanced when combined with other inhalants contributing to the development of lung cancer or other respiratory diseases. In general, groups already at high risk for the diseases in which cigarette smokers have higher rates than non-smokers benefit most when they stop smoking.

From the point of view of controlling smoking, the primary need in most countries is to encourage more people to spend more time thinking about their smoking and to decide to do something about it.

4. Mass Approaches to the Control of Cigarette Smoking

The sheer magnitude of the problem of reaching the large numbers of people who smoke cigarettes in the countries that suffer most from this problem has made the use of mass methods of communication seem very attractive. A review of experience with mass communications, both in other health problems and specifically in health education about smoking, suggests that the use of mass communications needs to be tempered with an appreciation of their strengths and weaknesses.[71]

Although it is likely that both mass communications and personal communications can influence the process of giving up smoking at any point, it is clear that mass communications are normally most powerful at the beginning of the process - particularly in making people aware of the problem, but also in getting them to worry about it - whereas personal communications and support are in general progressively more important towards the end of the process. The interaction of mass communications and personal communications is therefore of great importance.

Furthermore, mass communications, the value of which is their ability to reach large numbers of people, are not very effective if they convey a message that runs contrary to the more personal communications received by the individual. Thus, a person receiving medical information through mass communications will not usually act on it unless it is validated by a person whom he considers knowledgeable on the matter. This is one reason for the importance of obtaining the active support of health workers to confirm mass communications on the effect of smoking on health.

One of the mass approaches used in the United States of America is the requirement since January 1966 that a warning statement should appear on each packet of cigarettes sold in the country. This statement reads: "Caution: Cigarette smoking may be hazardous to your health." Legislation has been passed, to be effective late in 1970, to strengthen the warning. It is impossible to determine what effect, if any, the warning label has had in contributing to the plateau in cigarette consumption that occurred in 1966 and the first half of 1967 and the decline in consumption that began in the latter half of 1967 and has continued at an accelerating rate since. It seems likely that the warning achieved one result: that of answering the commonly expressed argument against the scientific evidence that, if cigarettes were really harmful, the government would do something about it. It may have been a useful first step, although not very effective by itself.

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5. Reducing the Effectiveness of the Promotion of Cigarettes

It is difficult to see how, in the long run, cigarettes, involving the health hazards that they do, can continue to be advertised. As the health consequences of smoking are more widely appreciated, there is growing feeling against the irresponsible promotion of a product that can harm its consumers. In the absence of a complete ban on advertising and promoting the sale of cigarettes, higher standards for cigarette advertising are needed as a first step. It seems reasonable, as a matter of public policy, that cigarettes should not be advertised in such a way that the advertisement reaches large numbers of children and young people. Advertising should not imply that cigarette smoking brings social success or appeals to the opposite sex. It should not be overwhelming in volume and it should give the consumer meaningful information about the product he is asked to buy.

Action to curtail advertising has taken place in a number of countries, sometimes by the government, sometimes by the communications media, and sometimes voluntarily by the tobacco manufacturers. It has tended to be largely limited to television and radio because they reach large numbers of children. Printed advertising is mostly left alone, except where some control is placed on its content. In general, too, outdoor advertising has been left alone, although this also reaches large numbers of children. The problem varies markedly from country to country because of the great variation in the extent to which the advertising and promotion of cigarettes take place.

It is unfortunately difficult to assess the effect of restricting advertising. Advertisers of cigarettes claim that their purpose is competitive, to win a larger share of the market among those who already smoke rather than to recruit smokers among young people. Whatever the truth of this, if restrictions on advertising are to have any effect on the taking up of smoking by young people, it is essential that they should be accompanied by effective health education programmes for youth and by a visible reduction in smoking by the adult population setting an example to youth, such as parents, health workers, teachers, and popular idols.

Probably the most important effect of curtailing or stopping the advertising of cigarettes lies in the fact that the action symbolizes the concern of society for the health of people and so diminishes the social sanction given to smoking.

A brief review of what has been done indicates the variety of action to reduce advertising. Czechoslovakia, Italy, and Switzerland, for example, do not permit the advertising of cigarettes on television or radio. A number of countries such as Denmark, Norway, and Sweden do not permit commercial advertising on television and radio, and consequently have no cigarette advertising. In Finland no advertising of cigarettes is permitted on the air before 9 p.m., and cigarettes may only be shown held in the hand, not being smoked. The Finnish Broadcasting Corporation has recently stated that it plans to eliminate tobacco advertising from television by the end of 1970. In the Federal Republic of Germany there is no television advertising of cigarettes before 7 p.m., and smokers in advertisements may not be seen inhaling. France and the United Kingdom prohibit the advertising of cigarettes on television. The United States of America has recently passed legislation to prohibit television and radio advertising of cigarettes as from 2 January 1971, with a provision discouraging the transfer of the advertising funds to other forms of advertising. Ireland has introduced a phased elimination of cigarette advertising on television and radio, beginning in April 1969 and being complete by March 1972. In February 1969 Argentina banned cigarette advertising on television and radio and in the cinema for a one-year period. In Canada, a restriction on advertising cigarettes before 9 p.m. that has been in effect for several years has been followed by a complete ban by the Canadian Broadcasting Corporation network and by several independent stations. In Iceland, the television advertising of tobacco products is not permitted.

Procedures have been established in a number of countries for reviewing the content of advertisements and establishing codes under which restrictions are placed on, for example, the thematic material, time and place of use, endorsements by prominent public figures, and appeals to youth. These apply to all forms of advertising.

In a number of other countries serious consideration is being given to action of the kind mentioned above. In many countries, however, no action has been taken and there is little evidence of serious consideration being given to it.

6. Less Hazardous Smoking

Since in spite of all attempts to dissuade them some people will continue to smoke, efforts should be made to given them as much protection as possible, while at the same time making it clear that the only certain protection is not to smoke. Research should therefore continue into the development of less hazardous cigarettes and less hazardous ways of smoking,[95] and the knowledge available at present should be widely disseminated. Consideration should also be given to the establishment of limits to the amounts of various harmful substances permitted in cigarettes available to the public. High priority should be given to the identification of these substances and steps taken to reduce their concentrations.

At the present time there are several countries in which efforts are being made to encourage the use of cigarettes with a lower than average content of tar and nicotine. In Canada, Sweden, and the United States of America, the results of standardized tests of the tar and nicotine content of most of the brands of cigarette on sale have been reported to the public. A recent report by a Canadian Committee of Parliament has proposed the establishment of a maximum permissible level of tar and nicotine.[97] In Austria, the tobacco monopoly has reported that it has lowered the tar and nicotine content of domestic cigarettes. In Japan, the semi-public tobacco monopoly has announced plans to introduce three new brands of cigarette in 1970 with markedly lower amounts of tar and nicotine; smokers will also be encouraged to discard the last third of their cigarettes.

In the United States of America the Public Health Service has started an "If you must smoke" campaign aimed at: (1) reducing the number of cigarettes smoked; (2) reducing the depth of inhalation; (3) reducing the frequency of inhalation per cigarette; (4) reducing the portion of the cigarette used by encouraging the discarding of more at the end; and (5) encouraging the smoking of cigarettes with a lower tar and nicotine content. This programme has been carried on actively through television and radio and by leaflets. It has apparently been welcomed by many smokers who are concerned about their smoking but feel incapable of stopping. It has also been criticized by some who feel it may encourage the continuation of smoking by people who might otherwise stop. It is still too early to tell what effect this programme may have, but its supporters feel that it strongly conveys a warning about smoking to a large group of smokers who have hitherto ignored everything that has been said on the subject of smoking and health.

The fact that the average pipe or cigar smoker runs a substantially lower risk than the average cigarette smoker supports the view that less hazardous forms of smoking can be developed.

With the recent reports of several species of animals that have developed cancer and chronic respiratory diseases from the inhalation of cigarette smoke, a practical bioassay system may soon be available for comparing the harmful effects of cigarettes made from various types of tobacco and with various types of additive and filter. In the meantime, most recent evidence continues to support the view that cigarettes with lower amounts of tar and nicotine are, other dosage factors being equal, probably less hazardous than those with greater amounts of tar and nicotine. There is some evidence that this would apply to cigarettes with filters.[97a]

Continuous evaluation of the effects on health of modifications in the constituents of cigarettes is needed. This should be the responsibility of the health authorities.

EXPERIENCE IN ONE MEMBER STATE

Recent experience in the United States of America has shown that it is possible to reduce cigarette smoking substantially. Figure 5 shows the per capita consumption of cigarettes from 1950 to 1969. The rise after the Second World War in the years 1950-52 resulted largely

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from an increase in smoking by women. The drop in 1953 was probably due to the first widespread appearance in the press of reports based on the retrospective studies published in 1950 linking smoking with lung cancer.[98-101] The drop in 1954 reflected the effect of the report by Hammond & Horn[102] on the first large-scale prospective study to present results showing the effect of cigarette smoking on total death rates and including data on the relationship of smoking with ischaemic heart disease and respiratory diseases other than lung cancer. Subsequent studies have suggested that the 1953-54 reduction in cigarette smoking was largely confined to men with a university education.[103-105] Recovery from the low consumption rates of 1954 was slow at first, but then accelerated, passing the previous peak consumption by 1958.

Occasional reports of scientific studies on the subject appeared to have had little effect until 1962 (when the Report of the Royal College of Physicians[106] was followed by a plateau in the curve) and 1964 (when the Report of the Advisory Committee to the Surgeon General[13] was released). This report was given wide publicity on television and radio as well as in the press, and was responsible for a large immediate drop in consumption. The consumption began to rise again in about six months, and almost reached the high per capita levels immediately preceding the appearance of the report. This was followed by a period of about two years during which there was little change in the per capita consumption. This plateau masked the fact that large numbers of adults had successfully stopped smoking, the increases being largely due to increased smoking by successive cohorts of women - about balancing the effect of smokers stopping. Consumption then began to drop, probably in the early part of the second half of 1967, and has now continued to drop at what appears to be an accelerating rate for about two and a half years. The total consumption of cigarettes in the United States of America dropped from 75.2 million packets a day in 1967 to 74.5 million in 1968, then to approximately 72.5 million in 1969, despite a population increase of about three million persons per year (including about two million adults). The per capita consumption of cigarettes corresponding to this dropped from 11.73 per day per person aged 18 years and over in 1967 to 11.44 in 1968 and approximately 10.94 in 1969. The consumption in 1969 represents a 3.7 per cent. drop from the previous highest total consumption and a 7.8 per cent. drop in per capita consumption from the highest level reached after the appearance of the 1964 report.

An extensive prospective epidemiological study in behavioural change is now nearing completion in a representative sample of smokers in the United States of America.[107] It is expected that it will identify the characteristics distinguishing those who have tried to stop smoking from those who have not tried and, among those who have tried, those who have been successful and those who have not. This analysis may provide a better understanding of changes in behaviour in relation to cigarette smoking. The magnitude of the changes that have already occurred is indicated by the estimate that, of the 50 million adults in the United States of America who were regular cigarette smokers in 1966, about seven or eight million have successfully stopped smoking.

It is difficult to be certain of the reasons for this reduction in smoking. Studies in 1964 and in 1966[105] indicated a high proportion of smokers with attitudes that showed a basic readiness for change, yet the change did not start taking place to any large extent until the second half of 1967. During the late spring and the summer of 1967 the press reported extensively on a number of scientific reports on cigarette smoking and on various political and control activities in relation to it. A government decision about that time made it possible to develop short films for television (usually varying from 20 seconds to one minute in length) on the health effects of cigarette smoking. However, although the decline in smoking has sometimes been ascribed to the wide use of these television films, the decline in smoking began before they came in to any considerable degree. It therefore seems more likely that the television films have helped to reinforce and continue a trend that began as a result of other influences. It is probable that, after several years in which public awareness and acceptance of the evidence developed, the effects of a widespread national programme attempting to be active under all six of the general headings listed above began to be felt. Although the decision to stop smoking is a personal one, once enough people begin to stop the impact on their friends and acquaintances helps develop a climate in which it becomes easier for others

to stop. This would account for the apparent acceleration in the rate of giving up smoking and suggests that once the process begins it can be increasingly successful. If this is so, the prospect of bringing cigarette smoking under control is bright.

For a public health activity to succeed, there must be both an effective programme and an organizational structure to carry it out. In the United States of America the organizational structure that has been developed consists of two independent but closely co-ordinated bodies: the National Clearinghouse for Smoking and Health, a unit working within the United States Public Health Service; and the National Interagency Council for Smoking and Health, a loosely knit association of about 30 agencies within the country which co-ordinates the work of its member agencies, exchanges information on programmes, and ensures concerted action when needed. The Council includes among its members professional associations of health workers, voluntary health organizations, educational professional associations, government agencies, and service associations. It provides a means of increasing the effectiveness of the many agencies that are to some extent concerned with the problem of smoking but only as one problem out of many. The Clearinghouse devotes its entire time to dealing with the problem of smoking in all its aspects. It is doubtful whether an effective programme could have been developed without both of these bodies.

RECOMMENDATIONS

In view of the serious health hazards of cigarette smoking, action is required by the appropriate health authorities of Member States, in collaboration with the education authorities, professional health associations, voluntary agencies, and others. It is recommended that Member States should set up control programmes, establishing a central standing committee or other body to prepare specific programmes and to co-ordinate and supervise the work. The programmes should be properly financed and provided with adequate staff and facilities. Among the tasks to be undertaken should be the following:

1. Legislation should be enacted to place the tar and nicotine content on cigarette packets and in advertisements as well as a warning of the health hazards entailed in cigarette smoking.

2. The advertising and promotion of cigarettes should be reduced, with a view to its eventual elimination.

3. Health workers should:

   3.1. themselves set an example by not smoking and encourage patients and their families to stop smoking;

   3.2. discourage young people from starting to smoke;

   3.3. demonstrate, where feasible, the ill effects of cigarette smoking by appropriate screening procedures.

   3.4. urge that action against smoking should form part of all medical and health care programmes and actively participate in health education activities, expressing support for anti-smoking policies.

4. The health authorities and health organizations should support action designed to:

   4.1. discourage cigarette smoking in hospitals and other health care institutions;

   4.2. discourage smoking in clinics, outpatient services, and doctors' offices and consulting-rooms;

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4.3. establish anti-smoking counselling services in hospitals and outpatient departments;

4.4. encourage all health workers to refrain from smoking, and particularly not to smoke in the presence of patients or the young;

4.5. discourage smoking in public places and conveyances; and

4.6. give the maximum publicity to the health hazards of smoking.

5. Medical and other health professional schools should ensure that students are fully informed about the health hazards of smoking.

6. The health authorities should collaborate with the education authorities in preparing, as an important part of the health education programme for schools, teacher training institutions, universities, and other educational establishments, curricula and teaching materials dealing with the health hazards of smoking.

7. Research should be intensified on the effectiveness of health education designed to discourage cigarette smoking, and better use should be made of existing methods.

8. The hazards of smoking should be included as a specific part of occupational health programmes in factories and other places of employment.

9. The health authorities should co-operate with other government departments, the armed forces, professional health organizations, voluntary health agencies, and other organizations such as religious associations, sports clubs, and men's and women's clubs in activities designed to stress the health hazards of smoking.

10. Consideration should be given to the establishment of statutory upper limits for various constituents of cigarettes.

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TABLE 1. MORTALITY RATIOS OF MEN BY CURRENT SMOKING HABITS FROM FOUR LARGE PROSPECTIVE STUDIES

Type of Smoking	Mortality ratio[1]			
	British doctors[2]	US Veterans[3]	Canadian Veterans[4]	US Men[4]
Cigarettes only	1.28	1.84	1.65	1.83
Cigarettes and others		1.51	1.23	1.54
Cigars only)	1.01	1.10	1.11	0.97
)				
Pipes only)		1.07	1.10	0.86

[1] Mortality ratio: death-rate for current cigarette smokers divided by death-rate for those who never smoked regularly.

[2] Doll, R. & Hill, A. B. (1964) Brit. med. J., 1, 1399, 1460.

[3] Kahn, H. A. (1966) In: Haenszel, W. ed., Epidemiological approaches to the study of cancer and other chronic diseases, Bethesda, Md. (Nat. Cancer Inst. Monogr., No. 19).

[4] US Surgeon General's Advisory Committee on Smoking and Health (1964) Smoking and health; report, Washington, D.C., US Department of Health, Education and Welfare (Public Health Service Publication No. 1103).

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TABLE 2. MORTALITY RATIOS BY AGE OF CURRENT CIGARETTE SMOKERS[1]

Study population	Age				
	35-44	45-54	55-64	65-74	75-84
US Veterans[2]	1.83	2.76	1.72	1.67	1.36
US Men[3]	1.89	2.28	1.83	1.51	1.23
US Women[3]	1.13	1.26	1.20	1.17	0.99

[1] From US Department of Health, Education, and Welfare (1967) The health consequences of smoking, A Public Health Service Review: 1967, Washington, D.C. (Public Health Service Publication No. 1696).

[2] Kahn, H. A. (1966) In: Haenszel, W.,ed., Epidemiological approaches to the study of cancer and other chronic diseases, Bethesda, Md., (Nat. Cancer Inst. Monogr., No. 19).

[3] Hammond, E. C. (1966) In: Haenszel, W. ed., op. cit.

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TABLE 3. MORTALITY RATIOS BY AGE OF STARTING SMOKING AND AMOUNT OF CIGARETTES ONLY SMOKED BY CURRENT SMOKERS

Age started to smoke	Number of cigarettes per day				All Smokers
	1-9	10-20	21-39	40+	
US Veterans:					
Under 20	1.60	1.89	2.16	2.45	1.98
20-24	1.40	1.72	1.87	2.23	1.72
25 or over	1.15	1.50	1.47	1.11	1.39
Men in 25 States:					
Under 15	1.79	2.23[1]	2.21[2]	2.15	2.17
15-19	1.75	1.83[1]	2.01[2]	2.38	1.99
20-24	1.25	1.52[1]	1.62[2]	1.93	1.58
25 or over	1.03	1.36[1]	1.45[2]	1.56	1.34

[1] 10-19 cigarettes per day.

[2] 20-39 cigarettes per day.

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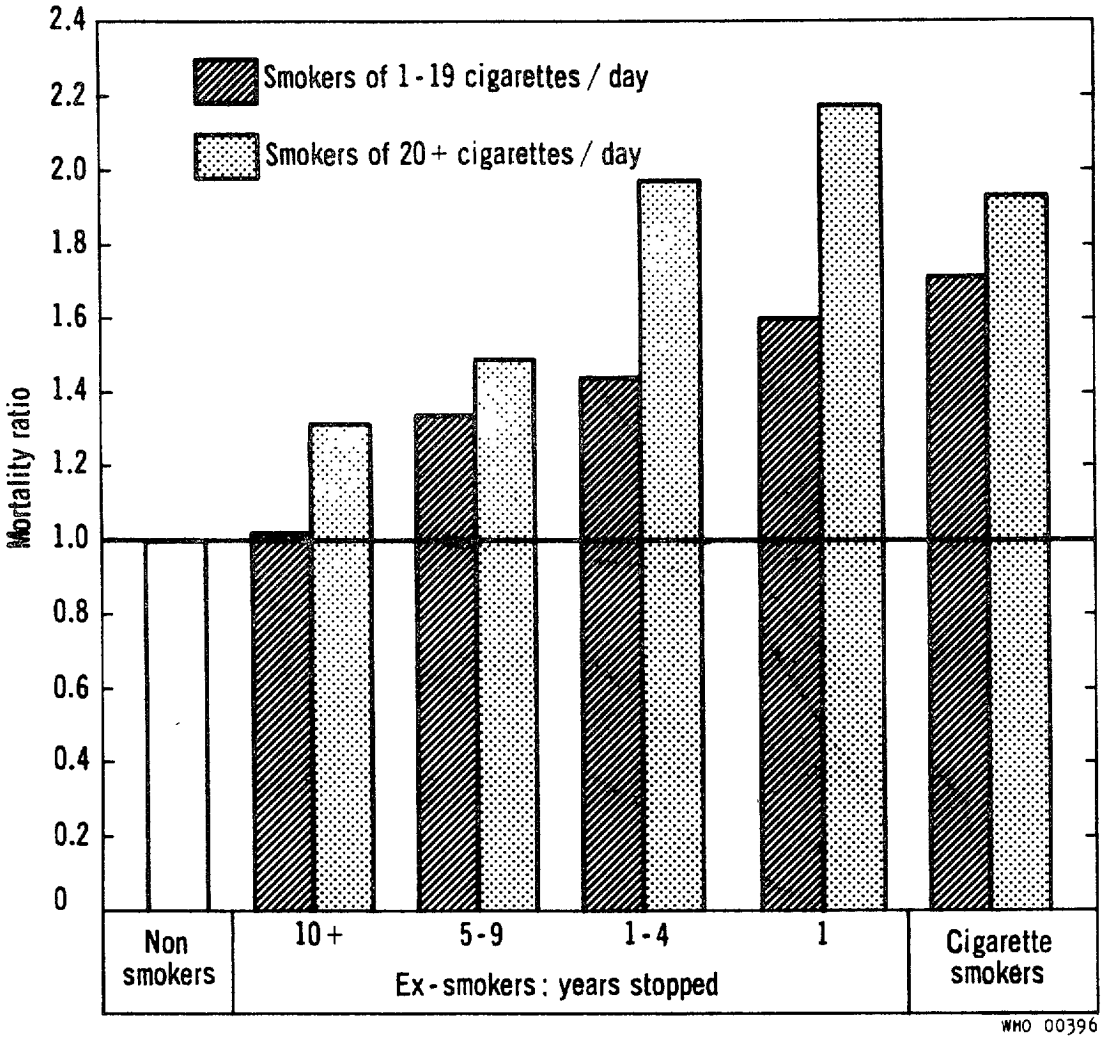
TABLE 4. PERCENTAGE OF TOTAL NUMBER OF EXCESS DEATHS OF CIGARETTE SMOKERS DUE TO VARIOUS CAUSES

Underlying cause	British doctors	US veterans	US men in 25 States	Canadian veterans
Coronary artery disease	32.9	38.6	51.7	44.2
Other cardiovascular diseases	17.8	18.8	13.2	9.9
Cancer of lung	24.0	14.9	13.6	18.3
Cancer of mouth, larynx and oesophagus	3.3	2.7	2.2	2.2
Other cancers	-0.2	8.9	7.2	7.6
Bronchitis emphysema	9.6	4.0	3.8	8.2
Peptic ulcers	2.7	1.4	1.3	2.9
All other causes	9.9	10.7	6.6	7.3

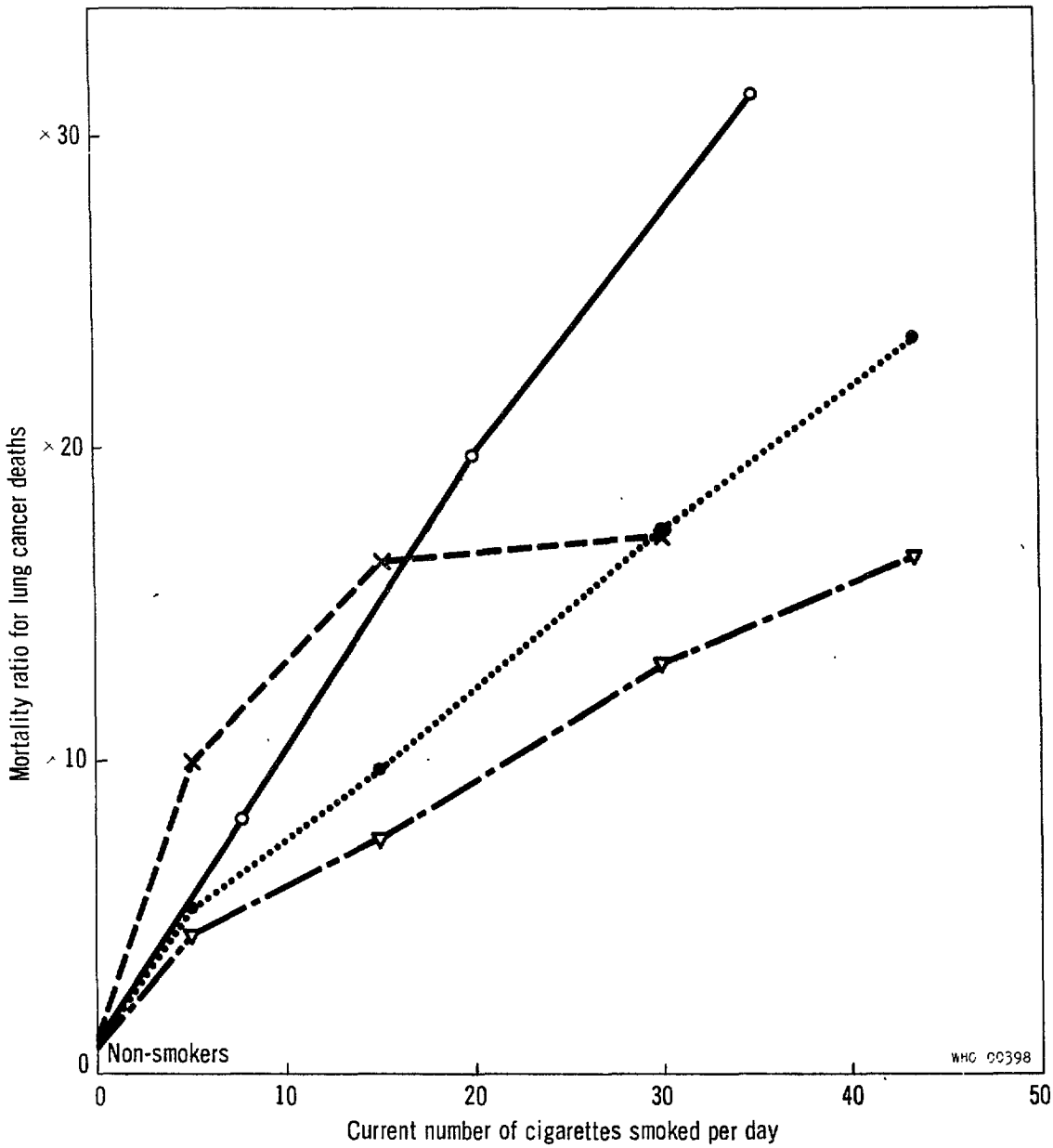
FIG. 1 MORTALITY RATIOS OF PRESENT AND PAST CIGARETTE SMOKES (males)[1]



[1] From Hammond, E.C. (1966). In: Haenszel, W., ed. Epidemiological approaches to the Study of cancer and other chronic diseases, Bethesda, Md. (Nat. Cancer Inst. Monogr. N° 19).

FIG. 2

MORTALITY RATIOS OF DEATHS FROM LUNG CANCER
IN MEN FROM FOUR LARGE PROSPECTIVE STUDIES



British doctors (Doll, R. & Hill, A.B. (1964)) Brit. med. J., 1, 1399, 1460.

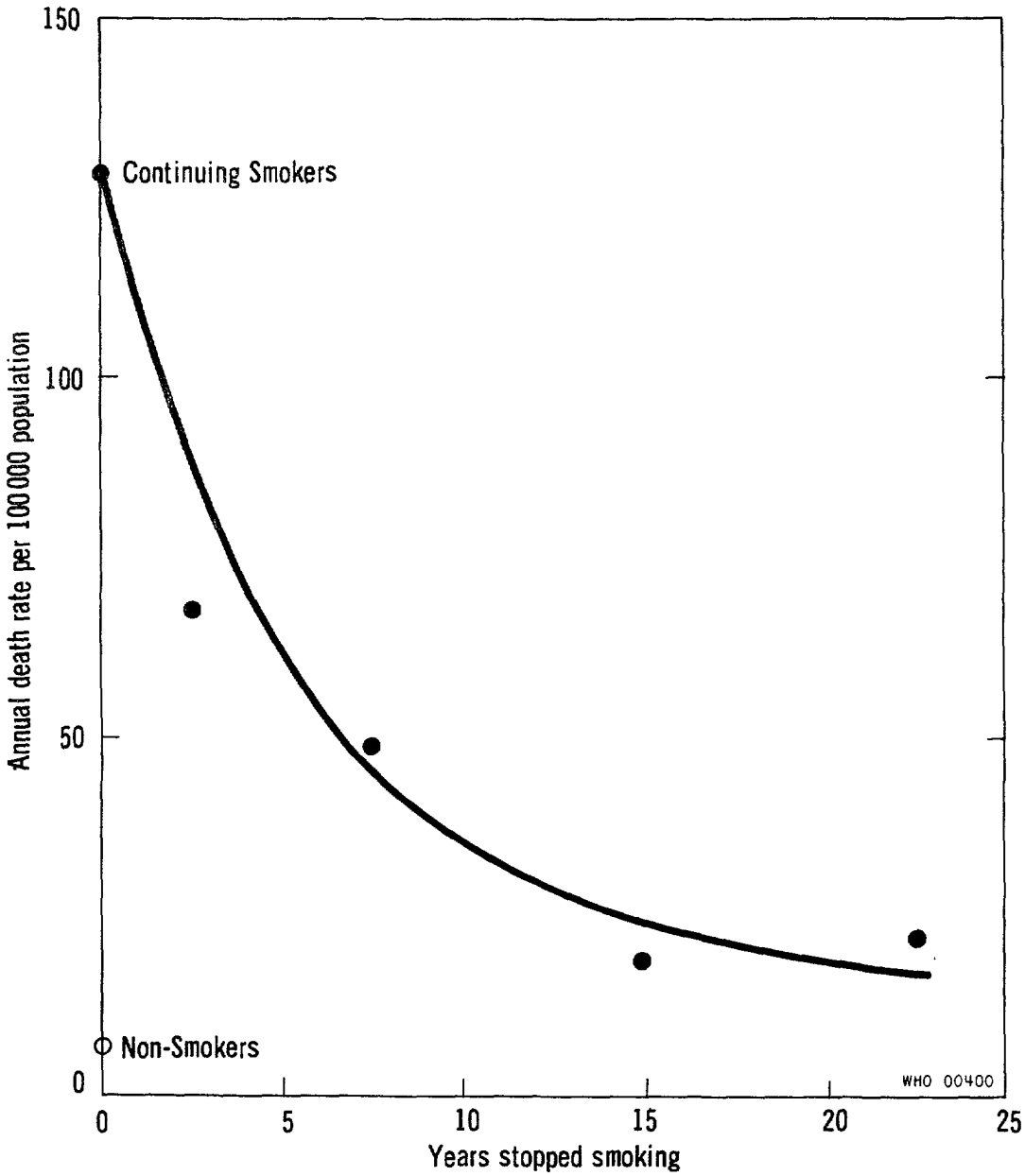
Canadian veterans (Best, E.W.R. (1966)) A Canadian study of smoking and health, Ottawa, Department of National Health and Welfare.

US veterans (Kahn, H.A. (1966)) In: Haenszel, W., ed. Epidemiological approaches to the Study of cancer and other chronic diseases, Bethesda, Md. (Nat. Cancer Inst. Monogr. N° 19)

US men in 25 States (Hammond, E.C. (1966)) In: Haenszel, W., ed. op. cit.

FIG. 3

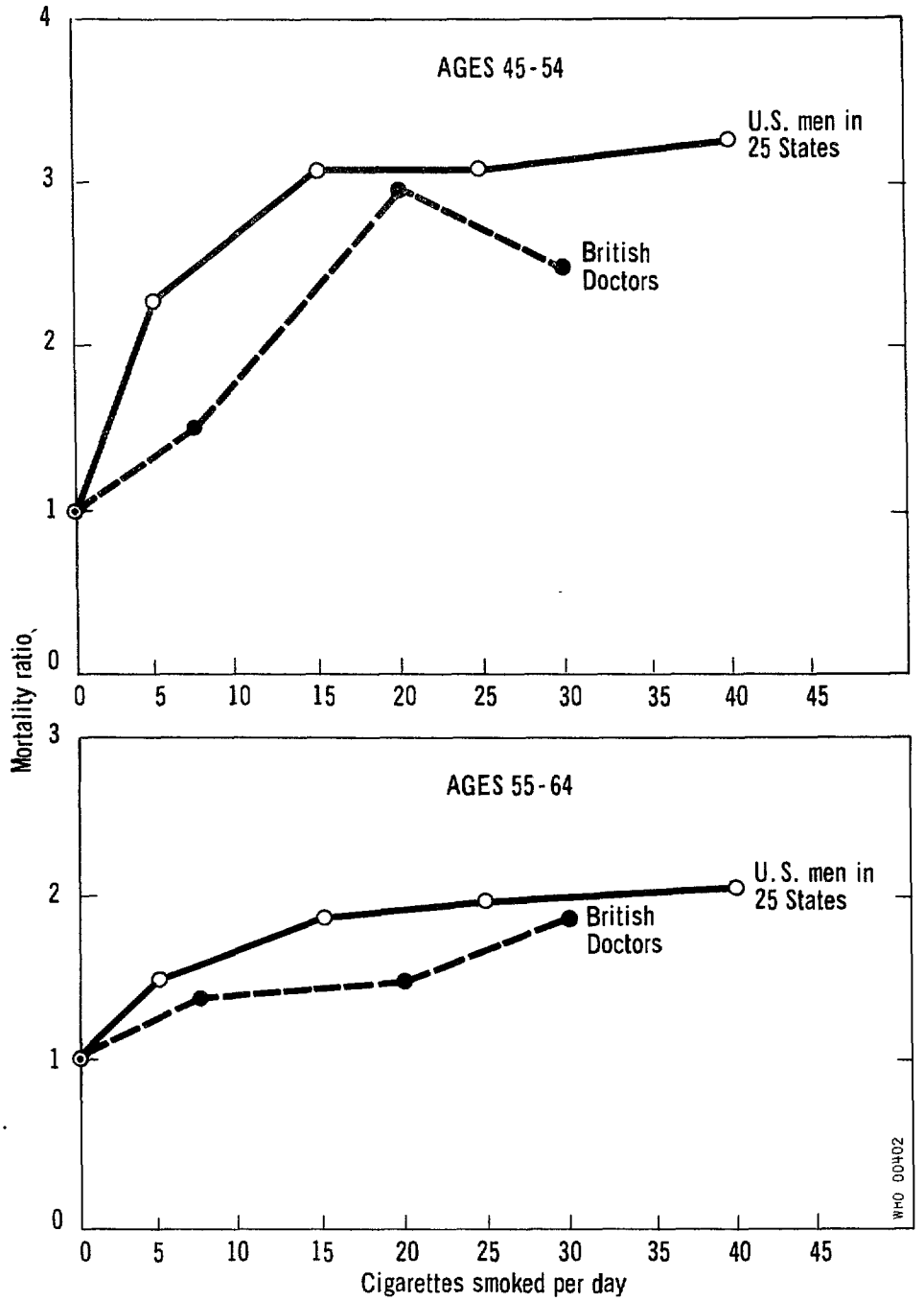
STANDARDIZED DEATH RATES FROM LUNG CANCER FOR CIGARRETTE SMOKERS, EX-SMOKERS FOR VARIOUS PERIODS, AND NON-SMOKERS [1]



[1] Based on Doll, R. & Hill, A. B. (1964) Brit. med. J., 1, 1399, 1460

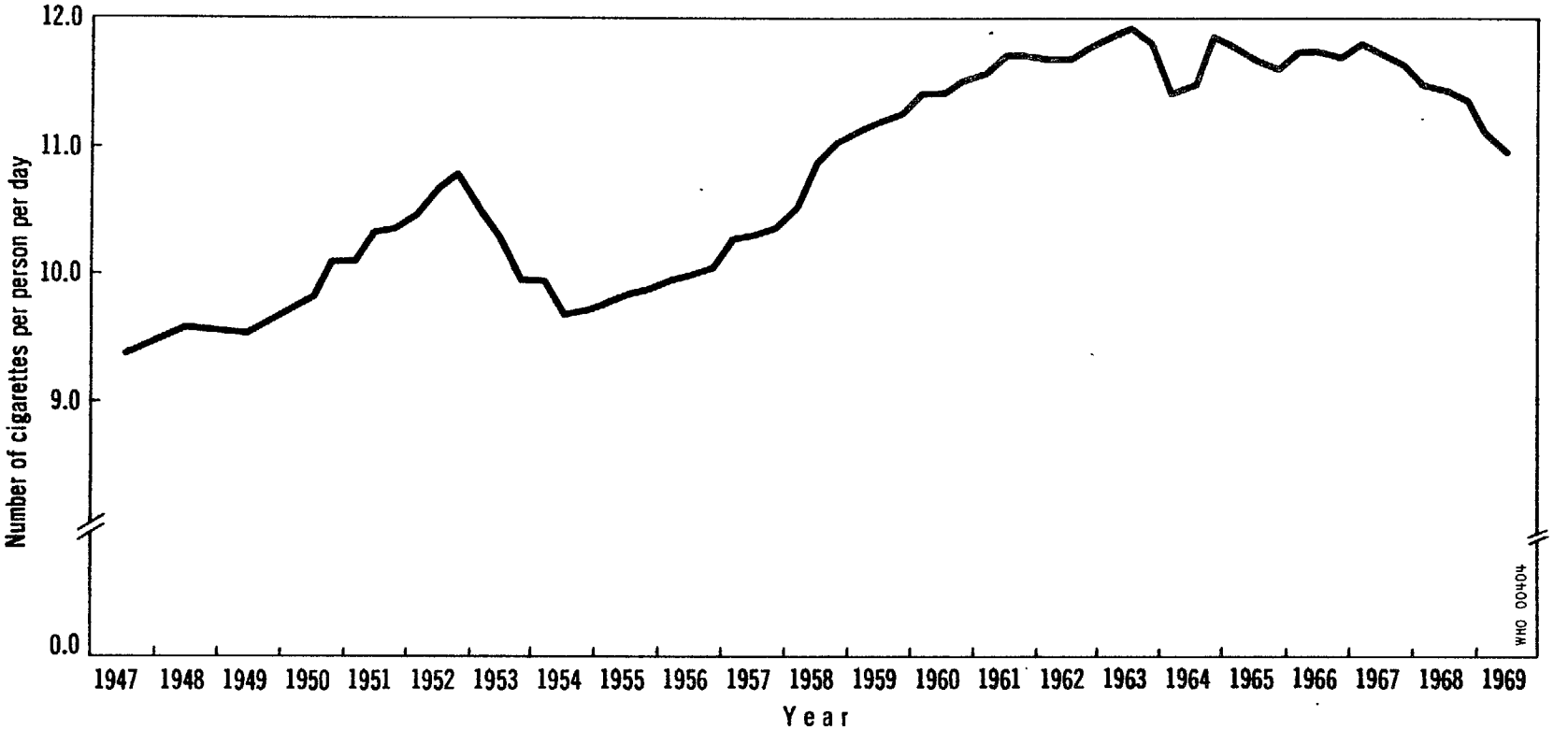
FIG. 4

INCREASE IN DEATH RATES FROM ISCHAEMIC HEART DISEASE IN RELATION TO NUMBERS OF CIGARETTES SMOKED. ABOVE: MEN AGED 45-54. BELOW: MEN AGED 55-64[1]



[1]Based on: Hammond, E. C. (1966). In: Haenszel, W. ed., Epidemiological approaches to the study of cancer and other chronic diseases, Bethesda, Md. (Nat. Cancer Inst. Monogr. No. 19); and Doll, R. Hill, A. B. (1964) Brit. med. J., 1, 1399, 1460

FIG. 5 TRENDS OF CIGARETTE CONSUMPTION PER PERSON (Age 18 years and over) PER DAY IN USA[1]



[1] The figures of per capita consumption are the averages computed over the 12-month period ending on the specified date. In the graph each point was plotted at the mid-point of the 12-month period. Thus the value 9.81 for the 12-month period ending 31 December 1950, was plotted against the mid-point (i.e.,31 June) of 1950, and the value 10.09 for the period ending 30 April 1951 was plotted against 31 October 1950.

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SURVEY CONDUCTED PURSUANT TO RESOLUTION XXXIV "CONTROL OF CIGARETTE SMOKING" OF THE XIX MEETING OF THE DIRECTING COUNCIL OF THE PAN AMERICAN HEALTH ORGANIZATION

SURVEY CONDUCTED PURSUANT TO RESOLUTION XXXIV "CONTROL OF CIGARETTE SMOKING"

OF THE XIX MEETING OF THE DIRECTING COUNCIL OF THE PAN AMERICAN

HEALTH ORGANIZACION

1. Does the Government exercise any control over tobacco growing and processing?

   Yes/__/ No/__/

   If the reply is Yes, please specify the regulatory agency and include copies of the pertinent legal documents.

2. Is there any legislation or legal provision regulating the sale of cigarettes?

   Yes/__/ No/__/

   If the reply is Yes, please send a copy of the pertinent regulations.

3. Are there any legal restrictions on cigarette advertising?

   Yes/__/ No/__/

   If the reply is Yes, please attach the pertinent provisions.

4. Do cigarette packages bare any warning about the risks inherent in the smoking habit?

   Yes/__/ No./__/

5. Is any campaign being conducted against the habit of cigarrette smoking?

   Yes/__/ No/__/

   If the reply is Yes, please list the agencies responsible including voluntary private agencies interested in the problem.

6. Is cigarette smoking in public places, including places of work, controlled in any way?

   Yes/__/ No/__/

7. Is any information available about the consumption of tobacco in the country in the last 20 years?

   Yes/__/ No/__/

   If the answer is Yes, please send us the available information and the source of the information.

8. What activities are the authorities planning for preventing the spread and reducing the prevalence of the cigarette smoking habit in the country?

FINDINGS OF THE SURVEY ON THE CONTROL OF CIGARETTE SMOKING

FINDINGS OF THE PAHO/WHO SURVEY ON THE CONTROL OF CIGARETTE SMOKING, 1970

COUNTRY	Control of tobacco growing and processing	Legislation regulating sale of cigarettes	Legal restrictions on cigarette advertising	Warnings on cigarette packages	Campaign against cigarette smoking	Control of smoking in public places	Information on tobacco consumption over last 20 years	Future action planned
Argentina	no	no	yes	no	no	yes	no	yes
Barbados	no	no	no	no	no	no	yes	yes
Bolivia	no	no	no	no	no	yes	no	no
Brazil	no	no	no	no	no	no	no	no
British Honduras	no	no	no	no	no	no	no	yes
Canada	no	no	no	no	yes	no	no	yes
Chile	no	no	no	no	no	yes	yes	yes
Colombia	no	no	no	no	no	yes	yes	no
Costa Rica	yes	no	no	no	no	yes	yes	no
Dominican Republic	no	no	no	no	no	yes	yes	yes
Ecuador	no	no	no	no	no	no	yes	no
El Salvador	yes	no	no	no	no	yes	yes	no
Grenada	no	no	no	no	no	no	yes	no
Guatemala	no	no	no	no	no	yes	no	no
Guyana	no	no	no	no	yes	no	no	yes
Haiti	yes	no	no	no	no	no	no	no
Honduras	no	no	no	no	no	no	no	no
Jamaica	yes	no	no	no	yes	no	no	yes
Mexico	yes	yes	no	no	no	yes	yes	yes
Nicaragua	no	no	no	no	no	no	no	no
Panama	no	no	yes	yes	yes	yes	no	yes
Paraguay	yes	no	no	no	no	yes	no	no
Peru	no	no	yes	yes	no	yes	no	no
Surinam	no	no	no	no	no	no	no	yes
Trinidad and Tobago	no	no	no	no	no	no	no	yes
United States of America	no	no	yes	yes	yes	yes	yes	yes
Uruguay	no	no	no	no	yes	no	no	yes
Venezuela	no	no	no	no	no	yes	yes	no

PANAMERICAN HEALTH ORGANIZATION

WORLD HEALTH ORGANIZATION

XVIII PAN AMERICAN SANITARY CONFERENCE

XXII REGIONAL COMMITTEE MEETING

WASHINGTON, D.C., U.S.A.
SEPTEMBER-OCTOBER 1970

Provisional Agenda Item 22

CSP18/12 (Eng.)
ADDENDUM I
26 September 1970
ORIGINAL:ENGLISH

CONTROL OF CIGARETTE SMOKING

The attached table should be introduced as page 25 of document A/23/P&B/6, appearing as Annex V to document CSP18/12.

TABLE 5. EXPECTED AND OBSERVED DEATHS AND MORTALITY RATIOS FOR CIGARETTE SMOKERS IN SEVEN PROSPECTIVE STUDIES

Underlying cause of death	Expected	Observed	Mortality ratio	Non-smoker deaths
Cancer of lung (162-3)	170.3	1 833	10.8	123
Bronchitis and emphysema (502, 527.1)	89.5	546	6.1	59
Cancer of larynx (161)	14.0	75	5.4	8
Cancer of oral cavity (140-8)	37.0	152	4.1	27
Cancer of oesophagus (150)	33.7	113	3.4	19
Stomach and duodenal ulcers (540-1)	105.1	294	2.8	67
Other circulatory diseases (451-468)	254.0	649	2.6	170
Cirrhosis of liver (581)	169.2	379	2.2	96
Cancer of bladder (181)	111.6	216	1.9	92
Coronary artery disease (420)	6 430.7	11 177	1.7	4 731
Other heart diseases (421-2, 430-4)	526.0	868	1.7	398
Hypertensive heart disease (440-3)	409.2	631	1.5	334
General arteriosclerosis (450)	210.7	310	1.5	201
Cancer of kidney (180)	79.0	120	1.5	59
All other cancer	1 061.4	1 524	1.4	742
Cancer of stomach (151)	285.2	413	1.4	203
Influenza, pneumonia (480-493)	303.2	415	1.4	169
All other causes	1 508.7	1 946	1.3	1 036
Cerebral vascular lesions (330-4)	1 461.8	1 844	1.3	1 069
Cancer of prostate (177)	253.0	318	1.3	198
Accidents, suicides, violence (800-999)	1 063.2	1 310	1.2	627
Nephritis (592-4)	156.4	173	1.1	98
Rheumatic heart disease (400-416)	290.6	309	1.1	185
Cancer of rectum (154)	207.8	213	1.0	150
Cancer of intestine (152-3)	422.6	395	0.9	307
All causes	15 653.9	26 223	1.68	11 168