



Chronic diseases

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INTEGRATED WHO NON-COMMUNICABLE DISEASE
 PREVENTION AND CONTROL PROGRAMME

Report on a consultation

by

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1. Introduction

The Commission on Chronic Illness in 1957 promoted the "common denominator" concept of chronic illness: "... it appears highly desirable to substitute this single concept for the prevailing pattern of health education directed toward preventing each single disease. The traditions of medical practice as well as the appeals of fund-raisers and the actions of budget experts have combined to thwart the development and testing of the generic approach which appears to have so much value".¹

More than 20 years later not much progress appears to have been made. A report from a Symposium on the State-of-the-Art of Disease Prevention, arranged by the American Health Foundation, includes the following remark by an unidentified gentleman from the audience:

¹ Chronic Illness in the United States, Vol. 1, Prevention of Chronic Illness, Cambridge, Massachusetts, 1957.

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"I would like to speak as a member of the public. I've heard recommendations by each of the panelists of three items that were of importance to them. They tended to speak from a disciplinary point of view, and as a citizen I don't consider myself a series of disciplines. I would look for a synthesis.....".²

It is easy, of course, to find examples of successful joint ventures: blood pressure measurements, or blood sugar, added on to tuberculosis surveys, or questions on cardiovascular symptoms added on to a study of cancer epidemiology. But frequently such cooperation only means that different research groups have found it convenient and economical to exploit the same field apparatus. There is no attempt at joining forces in a control programme.

In the past few years WHO has played an important role in stimulating various approaches towards a more unified action against chronic diseases. Mention should be made here of the "Comprehensive Cardiovascular Community Control Programmes", formulated in 1969.³ This concept has been instrumental in launching, maintaining, and developing field trials in several countries. Needless to say, field trials of comprehensive programmes will have to adapt to the realities of the national health care system and may therefore differ considerably in detail from country to country.

The term "cardiovascular" might suggest that we are dealing with a closely-knit group of diseases which would be suitable for a disciplinary approach. From an epidemiological point of view, however, hypertension and its complications are very different from the atheromatous diseases. It is doubtful whether they have life-style risk factors in common. On the other hand, hypertension and diabetes are both overweight-related, and coronary heart disease and lung cancer have their smoking association in common. It seems reasonable, therefore, even before the comprehensive cardiovascular programmes have been finally evaluated, to consider the possibility of even more general approaches in the fight against chronic non-communicable diseases. Here, again, a WHO initiative may be mentioned: the consultation in study on the links between cardiovascular diseases and other chronic diseases. The consultation was arranged by EURO in cooperation with the Irish Heart Foundation in Dublin in June 1978 and produced working papers on, for instance, the relationship between cancer and cardiovascular diseases and between diseases of the digestive and cardiovascular system.⁴

In the light of this development it is not surprising to find that the Medium-Term Programme of WHO Headquarters for the prevention and control of cardiovascular diseases includes the activity: "Development of methodology for comprehensive CVD/NCD community control programmes". In the EURO Medium-Term Programme one finds: "Study of the links between CVD and other chronic diseases".

Finally, it should be mentioned that as a WHO Temporary Adviser, Dr I.S. Glasunov has produced a thoughtful report on an "Integrated WHO Non-Communicable Disease Prevention and Control Programme".⁵

² Symposium on the State-of-the-Art of Disease Prevention, Panel Discussion, 12 April 1978, Preventive Medicine, 1978, 7: 447-448.

³ EUR/RC/19/7/1969. Nineteenth Session of the Regional Committee for Europe, Budapest, 1969.

⁴ EUR/ICP/CVD O20(1). Links between CVD and other chronic diseases, Dublin, 26-27 June 1978.

⁵ OND/ICDCP/79/1. I.S. Glasunov, Report on a consultation on an integrated non-communicable disease prevention and control programme.

2. The role of WHO

WHO leadership can be discussed from two apparently dissimilar but related points of view: 1. Health promotion; and 2. Comprehensive control of non-communicable diseases.

2.1 Health promotion

Increased emphasis on health promotion will require fundamental readjustments of national policy: upgrading of the role of the general practitioner and public health personnel, and revision of curriculae in the whole educational system from elementary school to teachers' and medical colleges. Such readjustments will not come easily, particularly if doubts are expressed on the soundness of the advice to be promoted.

In one of the WHO consultations, for example, such an approach as to form task forces on smoking control and on food and nutrition is suggested.⁶ The outcome of such high-powered international effort is likely to be of value for developing as well as for the more developed countries. Much work is of course already going on, with which any new endeavour will have to be coordinated. One example may suffice: the joint FAO/WHO report on "Dietary fats and oils in human nutrition" (1977)⁷ will greatly influence the content of health educational programmes all over the world. The report considers the role of fat not only from the point of view of early development, but also in the prevention and treatment of cardiovascular diseases, obesity and diabetes mellitus. It does not explicitly discuss the risk of various types of cancer, however. In addition to the task forces mentioned by the consultation on primordial prevention there may be room for similar task forces on hypokinesia or on alcohol.

The recommended task forces, however, would have to concern themselves not only with the content of the message, but also with the techniques of delivery. This leads up to the suggestion by Dr Glasunov to develop "... new elements of the health systems structure The delivery of these non-medical components of health care can be most effective if coordinated by existing health care services, but their principal providers might be of non-medical background"

It will not be feasible to work out health promotion systems which are universally applicable. Every country, or even every province within the same country, may have to work out its own solution, depending on the educational level of the country, the quality and the coverage of the mass media, the effectiveness of voluntary health associations, etc. What WHO can do is to keep track of the activities and bring to international attention any venture which proves to have been successful.

It has already been shown in several countries that it is indeed possible to deliver a health promotion message successfully. Here too, an example from California might be referred to.⁸ In Sweden there is at present great interest in health promotion ("Friskvård"). It is felt, however, that research is needed to find the most effective way of delivery under Swedish conditions, and that this can best be done by randomized trials. In Norway a research proposal has been submitted, suggesting extra health educational efforts in randomly selected municipalities in the northern part of the country. The detailed protocol remains to be worked out, however, and presents formidable difficulties in terms of methods of delivery and of evaluation.

⁶ CVD 79.1. Report of WHO consultation on primordial prevention in developing countries, Geneva, 4-6 December 1978.

⁷ FAO food and nutrition paper No. 3. A report of an expert consultation organized jointly by FAO and WHO, Rome, 21-30 September 1977.

⁸ Farquar, J.W., et al. Community education for cardiovascular health. Lancet, 1977, 4 June, p. 1192.

Advice on healthy living is simple in content. But to do simple things - however beneficial - does not always carry prestige. This is particularly so if the givers of simple advice have too limited a training to answer questions on, say, the meaning of a certain symptom - questions which may easily arise in the course of any discussion on health. Also, there are strict limits to the amount of advice that can be given without fear of contradiction from some member or other of the medical or scientific community. This is particularly so for dietary advice, but even the harmful effect of cigarette smoking on the arterial system is still being publicly questioned. Non-medical health educators, and those who train them, are therefore at a considerable risk of frustration. They will probably get nowhere without the active support of nearly the entire medical establishment. More emphasis has recently been given to public health matters and life-style problems in the training of medical students in many places. But enthusiasm is difficult to sustain.

In the developing countries the non-communicable diseases may not at present be the major threat to the population. But it will be unwise to wait for people to start to die from chronic diseases to such an extent that the mortality is generally perceived to be a health problem. Health education is inexpensive, compared to sophisticated clinical medicine. Also, in developing countries it may be easier to train and obtain an effect from non-medical educators, such as teachers and community leaders. Well-designed health promotion trials may contain lessons for the more developed nations as well, since the effect of truly primary - or primordial - prevention is never easy to demonstrate convincingly.

National efforts in this area tend to be spasmodic, and it seems a task for WHO to transmute these efforts into a more steady progress. The Organization might have to solicit further advice. One possibility is to call together a group of non-medical health educationists. The group would have to consider, for instance, whether further developments should include specially designed field projects and, if so, within what scope.

A basic difficulty about health promotion is that we know too little about too many important problems, as, for instance, the effect of diet on the risk of the various types of cancer or chronic rheumatic diseases. One set of recommendations which is certain to come out of all the task forces mentioned above is to increase research into such matters. Longitudinal epidemiological studies, measuring life-style aspects and covering in principle all major diseases, will be one way to attempt this. We are still far from able to say how such studies should best be designed, and much trial and error must be accepted. Certainly, a service element must be a component of such epidemiological studies, and probably randomized preventive trials of various types. A suitable designation for the conglomerate might be "Integrated non-communicable disease control programme". Some comments will be given below.

2.2 Comprehensive control of non-communicable diseases

2.2.1 As already indicated, the existing cardiovascular community control programmes deal with epidemiologically distinct diseases. It might therefore seem natural to encourage these projects to further extend their programmes to one or more non-cardiovascular diseases. In doing so, however, it should be borne in mind that most of these projects are already striving hard to keep their heads above water. As an example of what can be attempted the Appendix gives a summary of the type of information currently being collected in the second Tromsø cardiovascular survey. It should be realized that the first Tromsø survey in 1974, with ensuing follow-up, was much too limited in scope to be a good illustration of a comprehensive community programme. Even the present programme is by no means well balanced, neither in services rendered, nor in diseases covered. The structure is largely determined by interests and available resources at the local University clinic. In particular, one notes that breast and genital cancers are not included.

The Tromsø study can also be seen as a development of the concept of multiple screening. That comprehensive community control on this basis is not a new idea can be seen from the following quotation from 1953: "In the final analysis, of course, screening can be evaluated only by its results, such as reduced morbidity, disability, or mortality. Its ultimate value in the local community will be achieved as it becomes an integral part of a well-rounded chronic disease programme".⁹

⁹ Kurlander & Carroll, Public Health Reports, 68: 1035-42.

We have a better chance of approaching this goal in 1979 than in 1953, first of all because of the progress in methods of data handling. In Tromsø the 1974 information is linked with that of 1979 and - hopefully - that of future population surveys. At the same time, a nearly automatic mortality follow-up is available. Postal follow-up questionnaires can - at a cost - be automatically addressed.

2.2.2 If none of the existing cardiovascular community programmes are found to be suitable for expansion, it seems reasonable to search for populations where an integrated NCD programme can be set up from scratch. One would presumably have to start with pilot projects - from 1 to 5 in number. Pilot projects can be on a small scale, covering, say, a total population of at least 10,000. It will be essential, however, to avoid the introduction of technology or medical resources which cannot, at least in principle, be introduced on the national level. The duration of the pilot phase should be long - preferably several years - in order to test whether it is possible to keep up a sustained effort and to give effects of the programme a reasonable chance to become visible.

Health promotion, risk factor intervention, early diagnosis, treatment and research, would all have to be part of the programme, but the relative emphasis would have to depend on local conditions. The fact that the pilot project is going to be evaluated makes it by definition a research project, but it will probably be advisable to spell out several narrow, but long-term, scientific problems which can be answered if the project is carried through to its intended end. On the other hand, one should not give in too easily to local academic interests if these are seen to distort the integrated approach with its emphasis on primary prevention. Towns with medical schools have obvious advantages as pilot project areas, but may also be dangerous.

The diseases which should be covered by the project, and the examinations to be performed on the individuals of the community, will again depend on local circumstances. It will also depend on the conclusions of the reviews suggested by Dr Glasunov: analysis of existing prospective epidemiological studies for the purpose of the evaluation of the commonality of various NCD risk factors, and a review of the control programmes directed at life-style changes. The more important cardiovascular diseases and cancers would have to be included, as well as diabetes and alcohol-associated diseases. There are numerous other possibilities: peptic ulcer, arthritis, skin diseases, oral diseases, or even traffic and home accidents. In particular, recent progress in immunology has been such that it seems urgent to explore the possibilities of early diagnosis and treatment of arthritic diseases.

The evaluation of the pilot projects can be performed in different ways: acceptance by the public and by professional workers, consultation rates by diagnosis at hospital out-patient departments, and changes in risk factor levels. Precise and accurate measurement will probably not be easy, and there is always the problem of an adequate standard of comparison. Some sort of control area (reference area) should probably be designated at the start of the pilot study, even if it may be impossible to get strictly comparable measurements of all the indexes in intervention and control areas.

2.2.3 A number of technical problems in community control of chronic multifactorial diseases need clarification. Such problems could be attacked prior to or in conjunction with the pilot projects just mentioned. Here are a few examples:

- i. in Tromsø we have found that 20 ml of blood, divided in two test tubes, is the most that can in practice be obtained in a mass survey. One would then ask how the best possible use could be made of these 20 ml from the point of view of risk factor measurement, early diagnosis, or pure epidemiological research;
- ii. what can be said about the diagnostic and prognostic value of repeated measurements, say 5 years apart, of the same variable in the same individual? How should our rules be constructed for selecting high-risk individuals for clinical follow-up?;
- iii. is a non-fasting blood glucose value better than no blood glucose value at all? Is it worth while questioning a non-fasting subject about the number of hours since the last meal?;

- iv. under what circumstances can a simple family history improve our selection of high-risk individuals?

2.2.4 The information system to be set up involves a whole set of difficult problems. Years ago Dr E.D. Acheson formulated the concept of a "National register of hospital diagnoses and causes of death". More recently, a much more ambitious scheme has been outlined.¹⁰ It foresees a computerized data bank, identifying persons as well as families and recording every contact with health and social services in the widest possible sense of the word. Even the eminently sensible proposal of Dr Acheson is far from realization today, however. There may be many reasons for this, concerns about confidentiality being one. Also, little progress has been made in developing procedures which ensure that hospitals record the right type of diagnostic information at discharge. "Right type" here means information which is suitable both for routine statistics, clinical research, and epidemiological research. The international certificate of causes of death has remained unchanged since 1948, obviously inadequate for the study of chronic disease in an aging population, but with no improvement in sight.

Even if the conceptual problems could be solved, it will always be laborious - and costly - to keep a high national standard of diagnosis recording and reporting. In some countries quality may have been allowed to slip, perhaps because health administrators do not have much use for detailed and accurate diagnostic information. The consequences are serious, however, for all types of epidemiological activities. Until health statistics are upgraded nationally there will be limits to what integrated community control programmes can achieve.

Research aspects of the pilot projects may of course require an ad hoc information system which need not be extendable to the national level. However, much thought must be given to what information system will be necessary in a national programme. Realistic trials, giving realistic estimates in terms of personnel and money, will be difficult to design, but may be considered an important parallel activity of the pilot projects.

2.2.5 Despite all the difficulties it is necessary to make a start. In fact, it may be said that there is no such thing as a single disease project when life-style changes are involved. In Dr Glasunov's paper one of the steps mentioned in the programme development is: "Contacts with studies on non-pharmacological prevention of high blood pressure". At first sight, this might appear to be a very narrow problem in the context of an integrated NCD control. Yet, it will hardly be possible to design a scientifically fully adequate trial of the effect on blood pressure of, say, any one dietary component without measuring and taking into account the simultaneous changes that take place in other aspects of life-style: diet, weight, physical activity, smoking, alcohol. Also, it will be necessary to study the effect of the intervention not only on blood pressure, but on the total pattern of morbidity. In other words: the problem requires the setting of an integrated NCD programme if it is to be studied adequately. If one restricts the study to persons with above-the-mean pressures it might be possible to get away with less than a community control programme. However, a really fundamental study would investigate the possibility of shifting the entire population distribution towards a lower level of pressure, and so would study the effect on the population as a whole.

3. Conclusions

WHO should continue to press forward in the field of health promotion. In particular, non-medical health education will be essential for developing countries if they are to contain the future increase in chronic disease mortality. Well-designed field trials, however, may contain lessons for more developed countries as well.

WHO has already stimulated promising efforts in the area of comprehensive cardiovascular disease control. Even more general approaches should be attempted if suitable pilot areas can be located. Reference (control) areas will be highly desirable, even if the problems of comparable measurements may be formidable. Once the pilot project areas have been located, the detailed study protocol will have to be developed by local health authorities, assisted by WHO and consultants.

¹⁰ WHO Technical Report Series No. 587, Statistical indices of family health, 1976.

Any progress in comprehensive chronic disease control on the national scale may depend upon an upgrading of the national health statistics system. Progress in methods of data handling may have tended to obscure difficulties in selecting and recording the essential pieces of information, A fresh approach is needed by WHO to these problems.

APPENDIX

Information collected in the second cardiovascular survey in Tromsø, Norway.
The survey covers residents at age 20-54, a total of about 15,000.

HISTORY

Existing or previous known diseases: M.I., angina pectoris, other heart disease, atherosclerosis obliterans, diabetes, stroke, peptic ulcer, gall stone, urinary stone, cancer, psoriasis, allergic eczema, rheumatoid arthritis, infectious disease during the past fourteen days.

Existing or previous symptoms: chest pain and calf pain; and their association with physical activity. Cough and/or phlegm in the morning. Sudden paralysis or numbness in one side of body or face, in hand or foot. Sudden loss of ability to speak. Sudden loss of eyesight, or sudden double vision. Various questions on gastric pain and discomfort. Back pain for more than four weeks within the past twelve months. Morning stiffness of back, lasting more than thirty minutes. Pain for more than three months within the past three years in any of the following joints: knee, elbow, proximal finger joints, others. Morning stiffness of joints, lasting more than thirty minutes. Insomnia, and if so, at what time of the year. Difficulty sleeping during the past two weeks. Unhappiness or depression during the past two weeks, inability to cope with difficulties.

Medication: nitroglycerine, treatment for hypertension, iron tablets within the past two weeks, frequency of pain-relieving drugs, use within the past two weeks.

Previous X-ray of colon?

Psycho-social: usually shift or night work? Home from work daily? Weekly? Periodically long working hours? Moved for employment reasons within the past year? "Housewife" your main occupation? Unemployment assistance within the past year? Present sick pay or disability pension? Years of formal education? How was the economical situation in the family during your childhood? (Four alternatives) Ethnic group (Finnish, Lappish, Norse)?

Menstruation status. Use of oral contraceptives?

Physical activity at work: four alternatives.

Physical activity at leisure: four alternatives. Change in leisure activity within the past five years?

Tobacco: various questions on present and past smoking.

Alcohol: present frequency of drinking beer, wine, and spirits. How often been intoxicated within the past year?

Diet: type of bread usually consumed, number of slices per day? Type of butter or margarine, amount per slice of bread? Type of milk and amount? Frequency of use of fish, fruit or vegetables, or processed meat? Change in consumption (less, more, as before) within the past five years of each of the following: ordinary margarine or butter, skimmed milk, whole milk, fat meat, lean meat?

Known diseases in parents and siblings: M.I., angina pectoris, stroke, diabetes, rheumatoid arthritis, cancer, urinary stone, psoriasis, peptic ulcer.

Hours since last meal.

EXAMINATION AT SCREENING

Height, weight, miniature X-ray, blood pressure. Blood samples to be examined for: cholesterol, HDL, triglycerides, glucose. Sub-samples to be examined for: haemoglobin, etc., trace elements, HLA. Serum to be frozen.

Follow-up examinations will be made on a limited number of persons, based on questionnaire responses and screening findings. They will take place at the University Clinic departments of cardiology, gastroenterology, neurology, rheumatology, and dermatology.

For all subjects the census data of 1970 (occupation, place of birth) will in principle be available for analysis.

For most of the males data will be available from the first Tromsø survey in 1974.

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