Priorities in a modern tuberculosis program in developing countries

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A MODERN TUBERCULOSIS PROGRAMME in any country can be defined as a concerted official and community effort to reduce and eventually eliminate the needless human suffering caused by tuberculosis by utilising realistically and effectively all the knowledge which is available from the spectacular advances which have taken place in recent years in biomedical, technological and operational research in the fight against tuberculosis. This new knowledge must be applied in a manner which is practicable in and acceptable to the community for whom the program is intended. Above all, the program should ensure the utmost investment value for the effort and funds expended.

Particularly in developing countries which are plagued by many problems other than health and many health problems besides tuberculosis, the overriding need is to develop a Tuberculosis Program which makes minimal demands on the nation's limited resources and yet produces the maximal epidemiological impact on the tuberculosis problem without sacrificing any of the basic objectives of the program. In order to meet this pressing and inescapable need, it is imperative to establish definite and precise priorities which must be strictly adhered to under all circumstances.

The basic objectives of a modern Tuberculosis Program require that at least three-quarters of the eligible population should be protected with BCG vaccination and at least two-thirds of the infectious cases in the country should be identified and, of these, at least 95% should be rendered permanently non-infectious by adequate treatment. Anything short of these minimum requirements renders the program ineffectual; the desired impact on the problem is not obtained and the effort expended in pursuing such a sub-minimal program is wasted.

The topmost priority in any developing country which is desirous of embarking on a modern Tuberculosis Program is to correct the grave disparity which exists in the provision of basic health services between the urban and rural population. The pattern of health service structure in almost all developing countries, certainly in Asia, is heavily biased in favour of the grossly over-pampered tiny minority which lives in the large towns. In the rural areas, where more

than three-quarters of the population live, where indisputably more than three-quarters of the tuberculosis problem can be found, basic health services are either non-existent or pitifully patchy and meagre. Obviously, this gross imbalance in the provision of basic health care for the community must be corrected before any public health program like the Tuberculosis Program can hope to succeed.

The Tuberculosis Program can succeed only if it is able to reach the entire population. In the affluent technologically advanced countries of the West, this does not pose a problem as the infrastructure of community medical and health care facilities are already in existence and well established. They are widely and adequately distributed to permeate all segments of the population in every section of the country so much so that good medical and health care is available to each and every member of the community no matter where he is living, whether it be in the city or in a remote rural area. In developing countries on the other hand, no such infrastructure exists except possibly in the capital cities and large towns.

All the developing countries in Asia are becoming increasingly alive to the urgent and pressing need for basic health services to cover the entire population and they are indeed striving hard to meet this need. The success they are achieving is generally poor because they are severely hampered by the tyranny of long-established tradition which discriminates heavily in favour of a vertically patterned urban-intensive medical and health policy. The rural areas, where the vast majority of the population lives and where the bulk of the nation's health problems can be found, receive but scant attention from the appointed guardians of public health who continue to pamper to the needs of the already over-medicalised urban minority.

It will need imagination and courage to break away from established practice and to withstand the pressures of urban-intensive forces. The solution is really simple. All that is necessary is to re-examine the national health budgetary provisions on a strict cost/benefit basis and to re-allocate the available financial and manpower resources to ensure the highest benefit for the greatest number of people.

If this is done, the development of a basic health service where none exists or the strengthening and extension of what little there is in order to cover the whole population can be undertaken with no appreciable increase in the health budget. Such a basic health service, which does no more than meet the felt health needs of the rural folk and requires only trained technicians and para-medical personnel to man it on the ground with only periodic professional supervision by visiting teams, would amply provide the necessary infrastructure to mount and prosecute effectively and realistically most, if not all, the public health programs a developing country considers desirable.

Once the basic health service is established, the Tuberculosis Program is automatically provided with the ideal machinery for its operation. BCG coverage of at least three-quarters of the eligible population can be achieved by direct indiscriminate vaccination of all persons under the age of 20 years. The network of primary multipurpose health centres, providing a basic health service almost at the doorstep of every member of the community, cannot but ensure the desired coverage. Initially it may be necessary to mount a campaign, possibly with additional personnel, to hasten the coverage of the eligible population. After this has been achieved, all the primary health centre is required to do in the continuing phase of the BCG program is to cover only the yearly crop of newborn babies in the area.

Identifying at least two-thirds of the sources of infection in the area served by the primary health centre and ensuring that 95% of them are rendered permanently non-infectious by adequate treatment is well within the competence of the health centre. Nor does it throw an inordinately heavy load on the primary health centre if the real and basic objectives of the Tuberculosis Program are strictly kept in mind and full use is made of the new knowledge now available to perform these tasks efficiently and reliably.

We now know that an infectious case is one who has a cough and is excreting tubercle bacilli in his sputum demonstrable on direct smear microscopy. Cases whose sputum is positive on culture only are not infectious and, therefore, do not pose a danger to the community. Cases diagnosed on radiography alone with negative bacteriology are certainly non-infectious and in all probability not suffering from tuberculosis.

The conventional method of case-finding by periodic systematic screening of the healthy population is quite ineffectual as the yield is painfully small, the effort expended prohibitively excessive and new cases keep cropping up during the intervening period between the screening rounds.

We also know that radiography as a case-finding tool is quite unreliable and cannot be recommended.

It has no place in the Tuberculosis Program in a developing country.

Direct smear microscopy of sputum produced by symptom-motivated persons suffering from a cough of more than two weeks duration is the only reliable way of identifying sources of infection. Studies have shown that more than 90% of all the infectious cases in a community have symptoms and would voluntarily seek relief of their symptoms in a health centre if they had confidence in it and the service provided was readily available, convenient, courteous and free. A consumer-oriented basic health service offered by a primary health centre constitutes the key to a successful case-finding program.

Sputum collection and examination techniques have been so simplified and standardised for mass application that junior technicians can be trained in a few months to perform these tasks efficiently and reliably under periodic professional supervision.

While sputum collection can, and should, be undertaken by trained staff at all primary health centres, it is desirable that the actual examination of sputum is conducted in a larger or secondary health centre where adequate and reliable facilities are available for direct smear microscopy.

Case-finding, or rather the identification of sources of infection, can and should be developed, not as a specialized program but as an integral part of the basic health service.

The third objective of the Tuberculosis Program which is to render permanently non-infectious with effective treatment all the infectious sources identified can also be efficiently handled at the primary health centre level. There is now no justification whatsoever in a Tuberculosis Program to maintain expensive specialist institutions for the treatment of infectious cases. Simple standardised drug regimens have been evolved which can be applied on a mass scale with more than 90% effectiveness by trained nurses and technicians working in a multipurpose primary health centre. All they require is regular periodic professional and technical supervision.

Experience has shown, however, that self-administration of medicaments by the patient is quite undependable, particularly after distressing symptoms have been controlled. Entirely supervised chemotherapy is the only way to ensure that the drugs are definitely administered in the correct dosage. In offering treatment facilities close to the patient's home suiting his every convenience, the primary health centre makes entirely supervised chemotherapy possible and operationally feasible.

Isoniazid and Streptomycin are the two most potent specific drugs available to-day and the best chemotherapeutic regimen is one which employs both these drugs in combination. The best and most effective drug regimen which can be applied on a mass scale by trained para-medical personnel in a Tuberculosis Program at the primary health centre level is initial intensive chemotherapy with daily Isoniazid and Streptomycin for four to six weeks, followed by intermittent twice weekly Isoniazid and Streptomycin for one year. Evidence is accumulating which strongly suggests that Isoniazid alone for one year may prove adequate after initial intensive chemotherapy with daily Isoniazid and Streptomycin.

It is, of course, quite evident that in all community health programs embarked upon by the government of a developing country whose responsibility it undoubtedly is to undertake them, the general public for whom these programs are meant must respond by coming forward to take full advantage of them. This desirable participation of the public cannot be taken for granted. Experience has clearly exposed the folly of such a premise. Many community programs in developing countries have failed dismally because this very important requirement has been ignored. In a Tuberculosis Program, however, such a pitfall can be avoided if National Tuberculosis Associations play the role expected of them, which is essentially to rally public support for the program by instituting realistic measures to ensure active community participation in it. Being voluntary bodies organised by the community, they are best equipped to undertake this task and indeed, if they did nothing else, their contribution in this respect alone would easily match that of the official bodies in terms of effort and achievement.

In order to do this effectively, voluntary bodies need to extend their activities beyond the ivory towers of urban-based committee rooms. They must seek direct involvement and identification with the community at the ground level, much in the same way as the basic health service pervades every section of the country and permeates all strata of society. Their responsibility is to support and supplement official effort in all spheres and at all levels of activity by motivating the community to take the correct action to safeguard its health. If they are to play this vital role effectively, they must adhere strictly to this basic objective and desist from engaging in any activity which has even the remotest possibility of duplicating official effort.

It is abundantly clear that a modern Tuberculosis

Program in a developing country needs to be firmly structured on and fully integrated with the basic health service if it is to be effective. The operational expertise of a realistic program has been perfected to the last detail. If it is applied correctly with the basic objectives kept clearly in mind and the priorities firmly established, it is manifestly possible for any developing country, however thread-bare its economy, to embark on a modern Tuberculosis Program which will ensure the maximal epidemiological impact on the problem.

It is, therefore, rather depressing to report that, by and large, in the developing countries of Asia a wide and yawning gap still continues to separate the new knowledge available to fight tuberculosis effectively from its actual application on the ground. There is much bold talk and most impressive plans on drawing boards to bridge this gap but the actual attempts made are feeble and fall hopelessly short of target.

The Tuberculosis Program remains firmly fettered to the existing health service structure and operates essentially as a specialised service covering mainly the capital cities and large towns and catering consequently to the needs of only a small privileged segment of the population. Whatever the claims made for it, the program can only be as good as the health service on which it is structured. It is painfully evident that it certainly does not reach the entire population. The basic health services, if they exist at all, are at best patchy and meagre, ill-equipped and understaffed with poor logistics support and inadequate professional supervision, except for the bustling pilot projects which never seem to grow out of the pilot stage but continue to function almost indefinitely as permanent show-pieces to advertise the aspirations displayed on the drawing boards of national health planning.

It does seem, therefore, that it will be a long time before these glaring anomalies are corrected adequately enough to enable developing countries in Asia to set up the proper infrastructure of basic health services for mounting a modern Tuberculosis Program. The gallant attempts they are making to overthrow the tyranny of traditional health service policy do not match the strength of their convictions that such a deliverance is a compelling necessity. The only heartening note is that a move in the right direction is clearly discernible and that the pressures which are building up from enlightened opinion within the more progressive of these countries and from world opinion, exerted by international agencies like the World Health Organisation and the International Union Against Tuberculosis, will tip the scales and force the desired break from the shackles of outmoded and discriminatory conventional practice. There is every hope, therefore, that a modern Tuberculosis Program may materialise in some of the developing countries of Asia much sooner than seems possible at the present time.

SUMMARY

A modern Tuberculosis Program in a dveloping country is a concerted official and community effort to control tuberculosis by applying the available operational expertise in a manner which makes minimal demands on the nation's limited resources and yet produces the maximal epidemiological impact on the tuberculosis problem.

The basic objectives of the program must be clearly defined and kept constantly in mind. Definite and precise prior ties must be established and strictly adhered to.

The minimum requirements of the program are: firstly, that three-quarters of the eligible population should be protected with BCG; secondly, that two-thirds of the infectious cases in the country should be identified; and thirdly, that at least 95% of these infectious sources should be rendered permanently non-infectious with adequate treatment.

The program can achieve these basic objectives only if it is able to reach the entire population through an efficient network of primary health centres adequately distributed to serve all segments of the population in every section of the country.

All the developing countries in Asia are striving hard to provide such a basic health service but they are severely hampered by the dictates of traditional practice, which is biased heavily in favour of pampering to the needs of the already over-medicalised urban minority, leaving the vast majority of the population, which lives in the rural areas where the bulk of the nation's health problems can be found, virtually devoid of health care. The correction of this grave disparity must command the highest priority in the development and operation of a modern Tuberculosis Program. This can be accomplished if developing countries are prepared to overcome the pressures of urban-intensive forces and re-allocate their available financial and manpower resources on a strict cost/benefit basis which ensures the highest benefit for the greatest number of people.

The three basic objectives of the program can be achieved with complete success by the application at the primary health centre level of simplified, stan-

dardised highly effective procedures and techniques which can be undertaken with extreme competence by trained technicians and para-medical personnel working under periodic professional supervision.

The desired BCG coverage of the eligible population can be obtained by conducting direct indiscriminate vaccination of all persons under 20 years of age.

The conventional method of case-finding by systematic periodic screening of the healthy population is quite ineffectual and should be abandoned.

Cases whose sputum is positive on culture only are not infectious. Cases diagnosed on radiography alone with negative bacteriology are certainly non-infectious and in all probability not suffering from tuberculosis.

Radiography as a case-finding tool is unreliable and has no place in the Tuberculosis Program in a developing country.

Direct smear microscopy of sputum produced by symptom-motivated persons suffering from a cough of more than two weeks' duration is the only reliable way of identifying sources of infection. More than 90% of all the infectious cases in a community have symptoms.

If the basic health service is consumer-oriented, the infectious cases can be identified at the primary health centres from the symptom-motivated patients who come forward to seek relief of their symptoms.

Infectious cases can be rendered rapidly non-infectious by using standard drug regimens which are 95% effective and can be applied on a mass scale by trained nurses and technicians at the primary health centre level.

Self-administration of medicaments by patients cannot be relied upon as defaulting is a common occurrence once symptoms are relieved. Entirely supervised chemotherapy, which is operationally feasible at the primary health centre level, is the only sure way of ensuring correct drug administration.

Active community participation is vital to the success of the official program mounted by government. Tuberculosis associations, being voluntary community organisations, should make it their primary concern to rally public support and foster community involvement in the program at all levels of its operation. To do this effectively, they need to extend their activities far beyond the urban areas to cover the whole community.

The Tuberculosis Programs in the developing countries of Asia are only as good as the health services on which they are structured. By and large, they operate as specialised services catering essentially to the needs of the small urban minority. The basic health services for the large rural majority, if they exist at all, are mostly inadequate on all counts. The infrastructure for a modern Tuberculosis Program is, therefore, lacking and will not become available until the glaring inequalities in the provision of basic health services between the urban and rural communities are corrected. A move in the right direction is, however, clearly discernible particularly in the more progressive countries. There is hope, therefore, that a modern Tuberculosis Program may materialise in some of the developing countries of Asia sooner than expected.