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Principles of effective tuberculosis control in Nepal

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Tuberculosis is one of the foremost public health problems in Nepal, causing an enormous burden of suffering and death. Although national tuberculosis control activities first began in Nepal in 1965, the effect on the disease has been negligible, and the incidence continue to rise. Recent international experience has demonstrated that the introduction of Directly Observed Treatment Short Course (DOTS) as a revised strategy for TB control, is a highly cost effective intervention for disease control and will reduce transmission, morbidity and mortality from TB.

Key Words: Tuberculosis, Tuberculosis Control, Directly Observed Treatment Short Course, National Tuberculosis Programme

HISTORY OF TUBERCULOSIS CONTROL ACTIVITIES IN NEPAL

Although Nepal has a long history of activities designed to combat the menace of TB, achievements have been below expectations in defeating this disease, and the incidence of TB continue to rise. Historically four eras in TB control can be identified in Nepal.

a. The Pre-chemotherapy Era: 1934-1950

The first organised attempts to control tuberculosis in Nepal began in 1934 with the construction of the Tokha sanatorium.[1] The sanatorium movement began in Europe in the early 1840's[2] partly to provide treatment for people suffering from TB, but also to isolate them from the general population and prevent infection. The effects of isolation on the global TB epidemic are disputed,[3] and certainly the establishment of just one hospital for the thousands of TB sufferers in Nepal would have had a negligible effect on the epidemiology of the disease in this country. The sanatorium finally closed in 1976.

b. The Standard Chemotherapy Era: 1951-1989

Following the discovery of streptomycin in 1946, and the recognition that monotherapy quickly led to drug resistance,[4] regimens that combined isoniazid (H), Para Amino Salicylic Acid (PAS) and streptomycin (S) were introduced in many countries of the world. In the early 1950s treatment for TB became available at a small number of hospitals in Nepal. In 1951, the Gyanendra Mohan Ur Chikitsalaya (Central Chest Clinic) was established to provide curative TB services, including free treatment for the poor.[1] However, the primary role of treatment in controlling tuberculosis was not widely recognised, and BCG vaccination continued to be promoted as the main TB control strategy.

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In 1965 the Tuberculosis Control Project (TBCP) was established with the help of WHO and UNICEF, with the main function of providing BCG vaccination to the population. This vertical programme achieved a high coverage of vaccination in many districts. In the same year treatment with standard chemotherapy (18-24 months of isoniazid and thiacetazone, supplemented by 3 months of streptomycin injection was also introduced). This regimen was later modified to a 12 month regimen.

c. The short course chemotherapy era: 1986-1995

Although some private doctors had been using short course chemotherapy regimens for several years, it wasn't until 1986 that SCC was introduced as a TB control strategy, in Kaski and Kathmandu. In the early 1990s SCC was adopted more widely, mainly by several non government organisations (NGOs) including the Britain Nepal Medical Trust (BNMT) and the International Nepal Fellowship (INF). In 1989 the TBCP and the Central Chest Clinic were replaced by the National Tuberculosis Centre (NTC), and operational research with the support of the Japanese Advisory Team (JAT) commenced in Chitwan and Dhading districts. Results of these operational research demonstrated that good cure and completion rates could be obtained with SCC, even in remote hill districts,[5] and SCC was extended to several other districts of the central region.

In 1993 a regimen of SCC was adopted as the national drug regimen,[6] but with limited funds it was not possible to implement it more widely. This coincided with the declaration by WHO of a Global TB Emergency in April 1993, which lent further impetus to the fight against TB in Nepal. In 1994, with generous support from the Japanese Pharmaceutical Manufacturers Association (JPMA) and the Japanese government, SCC drugs became more widely available, and 40 districts are now covered with SCC.

d. The DOTS era: 1996 onwards:

Initial optimism about TB control in Nepal following the widespread introduction of SCC in the early 1990s was tempered by the findings of a joint HMG/WHO review team consisting of international experts, NTP staff, and NGO representatives. The team concluded that only 30% of infectious cases were registered for treatment in the NTP, and only 40% of these then went on to complete treatment.[7] These figures were far lower than the global targets of 70% case detection rate and 85% cure rate endorsed by WHO member countries at the World Health Assembly in 1993. In order to avert the potentially disastrous situation caused by the uncontrolled use of anti-tuberculosis drugs, the team recommended that the NTP should prepare a 5 year plan for TB control in Nepal.

On the basis of recommendations made by the review team a 5 year plan, based on the WHO framework for Effective Tuberculosis Control,[8] with a policy of supervised treatment, or DOTS - Directly Observed Treatment, Short Course[9] was prepared, and then approved by HMG in August 1995.[10] The implementation of DOTS requires considerable training resources, and it was fortuitous that the Norwegian Heart and Lung Association (LHL) agreed to support training activities in the NTP from mid 1995.

In late 1995 eight districts; Kailali, Kanchanpur, Nawal Parasi, Tanahun, Chitwan, Parsa, Morang and Jhapa began to implement DOTS. However, initial results were not as good as expected, mainly because of the sudden collapse of laboratory services in most of the districts, following the retirement of development staff from the previously vertical disease control programmes. Other problems in implementation were also identified, and in April 1996 four national demonstration and training centres were identified in Bhaktapur, Birganj, Dhangadhi and Parasi. These centres are implementing a strict policy of supervised treatment, and will be used as training centres for expansion to other parts of the country over the next few years.

NEED FOR EFFECTIVE TUBERCULOSIS CONTROL PROGRAMMES

Tuberculosis is an immense problem in Nepal, causing great suffering and death. Recent estimates suggest that about 60% of the adult population is infected with the tubercle bacillus, and each year about 50,000 people develop TB, over 20,000 of whom have infectious sputum smear positive disease.[7] Globally, tuberculosis kills more people than any other single infectious disease.[11]

Tuberculosis control is not only important because of the threat it causes to the public health, but also because it is a cost effective strategy. Studies in several developing countries have demonstrated that short course chemotherapy, given under strict supervision, can achieve cure rates in excess of 85% of patients treated.[12,13,14] Under these conditions, TB control is one of the most cost effective interventions available in primary health care,[11] comparable with such well accepted strategies as oral rehydration therapy and child immunisation and bettering most other communicable disease control strategies (Figure 1).

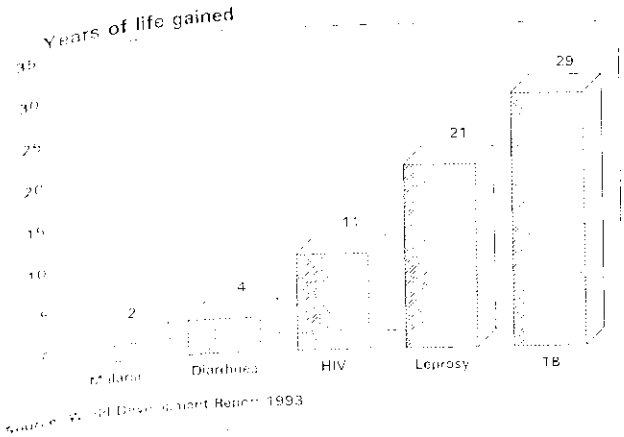

Figure 1. Cost Effectiveness of TB treatment.

A third factor which makes the establishment of effective TB control programmes imperative is the rising incidence of tuberculosis in many countries of the world, developed as well as developing.[15] This awareness culminated in the declaration of a global tuberculosis emergency by the WHO in 1993, a declaration never previously or subsequently made for any other disease. The rising incidence has been attributed to inadequate funding to TB control initiatives by governments, poorly designed TB control programmes, population growth, and the HIV pandemic. In addition, the spectre of multi drug resistance, defined as resistance to isoniazid and rifampicin,[16] has created great concern.

Principles of effective tuberculosis control

Modern methods of TB control rest on the treatment of patients with infectious tuberculosis. Other strategies such as preventive therapy, BCG vaccination and isolation are less effective, or not feasible on the scale required to have an impact.

Treating patients with infectious tuberculosis is a simple strategy that has a profound effect. Treatment with an effective short course chemotherapy regimen rapidly renders the patient non infectious, and therefore breaks the cycle of transmission. The community benefits, and so does the individual. Identification of people with infectious tuberculosis is simple and accurate, since sputum smear examination is a reliable test, with a very high specificity and sensitivity for infectious tuberculosis.[17] Complaints about the inability of smear examination to identify patients with smear-negative and extra-pulmonary tuberculosis are only justifiable in the context of the individual patient since these forms of tuberculosis are almost non infectious, and therefore of little public health significance.

The principles behind an effective tuberculosis control programme were first developed in several model programmes supported by the International Union Against Tuberculosis and Lung Disease in countries in Africa and South America.[17] These models, based on a strategy of DOTS, have been adopted and adapted by

WHO, and DOTS has been accepted as policy in most countries of the world.

The principles of effective TB control are described in the WHO publication "Framework for Effective Tuberculosis Control",[8] and have been used widely as a basis for revising tuberculosis control programmes in many developing countries.

Revised strategy of tuberculosis control in Nepal

Based on the "Framework" document a revised strategy for tuberculosis control in Nepal has been prepared, with the overall goal of reducing the mortality, morbidity and transmission of tuberculosis to such a level that it is no longer a public health problem. Because of difficulties in defining what "no longer a public health problem" means, and the long term nature of TB control activities, two short term objectives have been developed and widely accepted. These are (a) to detect 70% of new cases of sputum smear-positive tuberculosis, and (b) to cure 85% of these detected cases.

This WHO framework for the revised tuberculosis control strategy aims to achieve these objectives and consists of 5 basis principles and 10 essential components (Figures 2 and 3).

Box 1. Elements of the WHO Policy Package for Tuberculosis Control

1.	Government Commitment
2.	Passive Case Finding
3.	Standardised Regimens of Short Course Chemotherapy
4.	A Regular Drug Supply
5.	Monitoring System

If all of these principles are followed, and the components fulfilled, then tuberculosis control should become a reality in Nepal. The five year development plan for the national tuberculosis programme in Nepal is based on this framework.[10]

Box 2. The essential components of a revised national tuberculosis programme

1.	National Tuberculosis Programme with a Central Unit
2.	Programme Manual
3.	Recording and Reporting system
4.	Training programme
5.	Microscopy services
6.	Treatment services, providing DOTS
7.	Regular supply of drugs and diagnostic materials
8.	Supervision Plan
9.	Project Development Plan

Directly Observed Treatment, Short Course (DOTS) in Nepal

The introduction of a policy of DOTS in Nepal has been greeted with some scepticism, because of the difficulties in observing patients on a daily basis. It has also been suggested that DOTS should not be used as a way of punishing people for the failures of the health service. However, this is a misunderstanding, since the main of benefit of DOTS is that it improves the performance of the health services, which is of great benefit to the patient. It would be a foolish patient who chose a health service that only offered a 40% chance of success when a service that offered an 85% chance was available !

It is obvious that implementing DOTS will be difficult, but it is hard to see any realistic alternative. Failure to increase the cure rates, without control of anti-tuberculosis drugs, will unquestionably lead to high levels of drug resistance, and a return to the pre-chemotherapy era, when effective drugs were unavailable. The twin threats of HIV and drug resistance make it imperative that urgent steps are taken to improve cure rates in Nepal. Several challenges remain to the NTP in Nepal. These include the implementation of DOTS in remote hill and mountainous regions, and the involvement of the private sector in tuberculosis control.

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