Commentary: Making tuberculosis treatment available for all

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Tuberculosis is one of the major public health problems that WHO has tackled throughout the last 50 years. During the pre-clinical era treatment consisted of the use of special diets, bed rest in sanatoria, and lung collapse therapy. The case fatality rate 5 years after diagnosis was 50% and treatment in a sanatorium was expensive and available only to the privileged few.

The demonstration in the 1960s that ambulatory treatment of tuberculosis (one year of isoniazid and p-aminosalicylic acid) was as effective for patients and their families as treatment in a sanatorium heralded the beginning of the end of the sanatorium era and the beginning of the era of domiciliary treatment, which could be made widely available to many people with the disease in countries where its prevalence was high. Subsequent refinements in combination therapy led, in the 1980s, to the development of intermittent regimens and, in the 1970s, to short-course regimens following the introduction of rifampicin.

The currently recommended WHO strategy for tuberculosis control is termed DOTS, which is being promoted globally to free the world from this millennia-old scourge.

In the seventeenth century John Bunyan described tuberculosis as “the captain of all these men of death”. Tuberculosis has maintained this unenviable position through the centuries and today is still the leading cause worldwide of death in adults from a single infectious agent. The disease is therefore one of the major public health problems that has been addressed by WHO throughout the past 50 years.

Since the relationship between Mycobacterium tuberculosis and its human host has evolved over millennia, the tubercle bacillus usually lives in a state of mutual tolerance with the host. Disease occurs only in about 10% of cases of infection, when the fine balance between the potential of the bacillus to cause harm and host resistance tips over in favour of the bacillus.

In the pre-chemotherapy era, the aim of treatment of tuberculosis was to strengthen host resistance (through special diets and bed rest in a sanatorium) and to rest the diseased part of the lung (by various techniques of collapse therapy). Tuberculosis case fatality 5 years after diagnosis was about 50%. Sanatorium treatment was expensive and available for only a select few of the many tuberculosis patients worldwide. The development of combination antituberculosis chemotherapy in the 1950s revolutionized the treatment of the disease. Through its potent killing of tubercle bacilli, combination chemotherapy tips the balance very much more in favour of the human host, resulting in a dramatic reduction in tuberculosis case fatality to 5% or less. If patients could receive combination antituberculosis chemotherapy without recourse to sanatoria, the prospect would arise of treatment for the many, rather than only for the few.

Under the joint auspices of the Indian Council of Medical Research, the Madras State Government, WHO, and the British Medical Research Council, the Tuberculosis Chemotherapy Centre in Madras, India, carried out many of the pioneering studies in the 1950s demonstrating the effectiveness of ambulatory, domiciliary chemotherapy against tuberculosis. The Bulletin of the World Health Organization published a series of papers from the Madras centre in the 1960s describing these studies. The article by Kamat et al., published in 1966, represents a landmark study.

The vast majority of patients in the study came from the lowest income groups in Madras city, and lived in poor, overcrowded conditions, with low nutritional standards. In a randomized comparative trial, the investigators measured the effectiveness of chemotherapy (one year of isoniazid and p-aminosalicylic acid) in patients (half of whom were treated in a sanatorium and the other half at home) and the attack rates of tuberculosis over a 5-year period of follow-up of their close family contacts. The bacteriologically confirmed cure rate was about

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90% in both groups. Despite overcrowding, poor diet, and rapid resumption of frequently strenuous activity, the patients treated at home responded just as well to chemotherapy as those treated in the sanatorium with good accommodation, nursing, rich diet and prolonged bed rest. The incidence of tuberculosis (both of the infection and of the disease itself) was no greater among the contacts of patients treated at home than among the contacts of those treated in a sanatorium. The major risk to the contacts resulted from exposure to the patient before tuberculosis had been diagnosed. More patients self-discharged among those treated in the sanatorium than at home. Also, more social problems arose among the families of patients treated in the sanatorium than among those of patients treated at home.

This study showed that ambulatory treatment was practical, as effective as sanatorium treatment, safe for close family contacts, and also convenient for patients and their families. The demonstration of the success of ambulatory, domiciliary chemotherapy for tuberculosis in a difficult setting (urban poverty and overcrowding) in Madras heralded the beginning of the end of the sanatorium era, when treatment was available for a select few, and the beginning of the era of domiciliary treatment, which could be made widely available to many people with tuberculosis in countries where the disease was highly prevalent. The findings also paved the way for refinements in the administration of combination chemotherapy, which facilitated the use of these treatment regimens through nationwide programmes for the detection and treatment of tuberculosis in countries with a high prevalence of tuberculosis. These refinements included, in the 1960s, the development of intermittent regimens and, in the 1970s, of short-course regimens (of 6–8 months’ rather than the previous 12 months’ duration) following the introduction of rifampicin.

The public health challenge presented by tuberculosis is how to organize the provision of its control in order to ensure that all tuberculosis patients benefit from the developments pioneered in the Madras centre and reported by Kamat et al. The currently recommended WHO strategy for tuberculosis control (DOTS) represents the organizational approach to the programme delivery of combination chemotherapy to tuberculosis patients. Through a global alliance of partners, WHO’s Global Tuberculosis Programme is promoting the DOTS strategy worldwide, in order to free the world from the rule of “the captain of these men of death”.

Résumé

Commentaire: Le traitement de la tuberculose rendu accessible à tous

La tuberculose est l’un des principaux problèmes de santé publique que l’OMS s’attache à combattre depuis cinquante ans. Avant l’avènement de la chimiothérapie, on soignait la tuberculose par des régimes spéciaux, par le repos au lit en sanatorium, et par des techniques de collapsothérapie pulmonaire. Le taux de létalité 5 ans après le diagnostic était de 50% et le séjour en sanatorium était coûteux et réservé à quelques privilégiés.

Dans les années 60, il a été démontré que le traitement ambulatoire de la tuberculose (un an d’isoniazide et d’acide p-aminosalicylique) était aussi efficace pour le malade et sa famille que le traitement en sanatorium. Cette découverte a marqué le déclin de l’époque des sanatoriums et le début de l’ère du traitement à domicile, qui a pu être mis à la disposition de nombreux malades dans les pays où cette maladie était répandue. Des perfectionnements de la chimiothérapie ont permis, dans les années 60, de mettre au point un traitement intermittent puis, dans les années 70, des thérapies brèves grâce à l’introduction de la rifampicine.

La stratégie actuellement recommandée par l’OMS pour la lutte contre la tuberculose, appelée traitement de brève durée sous surveillance directe (DOTS), fait actuellement l’objet d’une promotion à l’échelle mondiale dans le but de débarrasser la planète de ce fléau millénaire.