Toman’s Tuberculosis
Case detection, treatment, and monitoring – questions and answers
SECOND EDITION

Edited by
T. Frieden

WORLD HEALTH ORGANIZATION
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Preface to the First Edition

One of the basic functions of the World Health Organization (WHO) is the international transfer of scientific knowledge of direct practical value to countries in solving their health problems. A vast store of knowledge and experience has been accumulated in tuberculosis control. Through WHO-assisted projects, simplified and largely standardized control methods have been developed for general use, even in the remotest rural areas of developing countries. The concept of the “national tuberculosis control programme” was formulated by WHO to enable the new technology to be applied effectively. The Organization’s policy on tuberculosis control, contained mainly in concisely worded reports of the WHO Expert Committee on Tuberculosis, has given rise to a great many questions and requests for further information. It has long been thought, therefore, that a detailed commentary on the scientific knowledge and practical experience underlying WHO’s tuberculosis control policy would be a valuable element of WHO’s technical cooperation with Member States. This book, presented in the form of questions and answers, is a first step in that direction. I hope that it will reach all tuberculosis workers in key positions, the organizers and administrators responsible for tuberculosis control in national programmes, and the field staff concerned with the day-to-day problems of tuberculosis control in the community. The book is also directed towards those who teach about tuberculosis control in medical schools, schools of public health, nursing schools, and similar institutions.

H. Mahler
Director-General
Geneva, 1979
Preface to the Second Edition

For more than two decades, Kurt Toman’s book *Tuberculosis case-finding and chemotherapy: questions and answers* has been the most authoritative reference on the rational basis of diagnosis and treatment of tuberculosis. Few scientific books last so long, particularly in these times of rapid expansion of knowledge. The book has been reprinted many times by the World Health Organization (WHO) in English, Spanish and Arabic, and translated and printed by the International Union Against Tuberculosis and Lung Disease in French and Portuguese.

Unfortunately, despite the availability of low-cost and accurate diagnosis as well as nearly 100% curative treatment for more than three decades, tuberculosis remains one of the leading infectious causes of death globally, killing nearly two million people a year. Tuberculosis accounts for more than one in four avoidable deaths among adults in developing countries. The HIV epidemic is making this bad situation even worse. Many countries in Africa have experienced a two- to fourfold rise in the incidence of tuberculosis since the advent of HIV.

Over the past decade, in consultation with partners and Member countries, WHO has refined and promoted the tuberculosis control strategy known as DOTS. DOTS ensures accurate diagnosis, reliable cure, and systematic monitoring, as well as the political and administrative support required for effective tuberculosis control. However, the basis of the DOTS strategy is sometimes questioned. DOTS is not dogma, but a framework that is based on extensive basic, clinical, and epidemiological research, and that will continue to evolve as new information becomes available. In this regard, the second edition of Toman’s *Tuberculosis* comes at a particularly opportune time. Countries throughout the world are rapidly scaling up DOTS implementation, and programme managers, doctors, medical school professors, and other interested persons often have questions about the basis and background for DOTS strategies and practices.

It must be admitted that the remarkable relevance of a scientific book written 24 years ago is not only a testament to the prescience of Dr Toman, but also a sad testimony to the lack of rapid progress in the field of tuberculosis control over the past two decades. In recent years, there has been renewed interest in tuberculosis. Our understanding of the disease, our ability to diagnose and cure it, and the im-
plementation of effective control strategies should improve sufficiently that much less
time will elapse before the next edition is required!

It is my hope that this invaluable book will provide support to those on the front
lines of the battle against tuberculosis, including programme managers, policy-
makers, doctors, nurses, medical school professors, and members of civil society who
work together to stop tuberculosis.

LEE Jong-Wook
Director-General
Geneva, 2004
Introduction

One section of the first edition of K. Toman’s *Tuberculosis case-finding and chemotherapy: questions and answers* is entitled, “What were the main landmarks in the development of tuberculosis treatment?” It could accurately be claimed that Toman’s text has itself been one of these landmarks. Shortly after publication of the first edition in 1979, K. Styblo and the International Union Against Tuberculosis and Lung Disease (IUATLD) developed a model with all essential elements of tuberculosis control and applied it in several countries of Africa and the Americas. This model, further refined by the World Health Organization, is today known as DOTS, the internationally recommended strategy for effective tuberculosis control. DOTS is based on evidence available from studies and experience gained in more than 100 countries.

Once again, the evidence base for approaches to diagnosis, treatment, and monitoring is presented in a comprehensive and comprehensible form, and is extended in this edition to prevention and control. The information is intended for all persons involved in the diagnosis, treatment, prevention, and control of tuberculosis – clinical specialists and public health practitioners alike.

Toman’s concept was to marshall in one place the scientific basis for WHO/IUATLD recommendations on the detection and treatment of tuberculosis. Much of what Toman wrote 24 years ago remains relevant today; that is why some of the chapters required no updating. Toman’s use of clear, convincing data, lucid explanations, and sensible approach made the book a touchstone for a generation of tuberculosis experts and many general physicians, particularly in developing countries. His description of the effectiveness of respectful, sensitive treatment of tuberculosis patients is as pertinent today as when it was written. The tightly reasoned and impassioned advocacy for the role of controlled clinical trials, and for adherence to the highest scientific and ethical principles in their conduct, could have been written yesterday. Toman’s systematic discussion of drug resistance and of the role and difficulty of treatment with reserve drugs is highly relevant to the current lively discussion of the appropriate role of treatment of multidrug-resistant tuberculosis. And, of course, the entire section on case detection is a classic and brilliant elucidation of the role of acid-fast smears, the role and limitations of chest radiography and culture, and the importance of detection of tuberculosis patients through the general health system.
This second edition of *Toman’s Tuberculosis* has attempted to retain the simplicity and clarity of approach of the first, as well as the systematic scientific background for the answers given. The section on case detection has been updated and sections on human immunodeficiency virus, the tuberculin test, and newer diagnostic modalities have been added. Sections on appropriate case detection strategies are also included. The treatment section has, of necessity, been updated with information on short-course treatment, which had not been established when the original text was published. Updated information on host defences, drug resistance, drug dosages, extrapulmonary tuberculosis, treatment adherence, and direct observation of treatment has been added. Sections on the basis, role, and limitations of treatment for tuberculosis infection have been included, as has a section on monitoring programme effectiveness, based largely on the experience of DOTS implementation in various countries. The recording and reporting system established by Styblo is simple, robust, and effective; it serves as the basis for accountability and programme monitoring.

A final point – from the introduction to the first edition – should be noted: “The information given on any particular subject is far from exhaustive. The aim was not completeness but deliberate selection. From among the numerous questions that are asked, those that recur the most frequently and that appear to be most pertinent have been chosen.”
I am indebted to all those who, directly or indirectly, have made it possible for me to write this book.

I owe much to Dr H. Mahler, who ten years ago conceived the idea of a technical reference manual on tuberculosis control, mainly for non-specialized health personnel in the developing countries.

Grateful thanks are due to the International Union Against Tuberculosis (IUAT). Its former director, Dr J. Holm, and his successor, Dr D.R. Thomson, took the first steps towards the realization of this book and helped in its technical editing; the present director of IUAT, Professor V. Farga, made helpful suggestions. Dr Annik Rouillon, in her various areas of responsibility, gave whole-hearted cooperation. I had stimulating, candid, and fruitful discussions with the late Professor G. Canetti, Chairman of the IUAT Scientific Committees, his successor Dr J.R. Bignall, and the present Chairman of the committees and Director of the Tuberculosis Surveillance Research Unit, Dr K. Styblo. Thanks to the lively interest taken by Dr J. Meijer and the initiative of Dr H.A. van Geuns, the Sonnevanck Foundation, Netherlands, generously met part of the expenses. Dr K.L. Hitze, Chief, Tuberculosis and Respiratory Infections, World Health Organization, lent his active support, counsel and encouragement.

Dr Wallace Fox, Director, Tuberculosis and Chest Diseases Research Unit, Medical Research Council, and Professor D.A. Mitchison, Postgraduate Medical School, Hammersmith, London, who have contributed decisively to the fundamental changes in the treatment of tuberculosis, are to be thanked for their interest and criticism, and for allowing me to draw heavily on their pioneering studies.

Acknowledgements are due to my co-workers and students in developing countries – physicians, health officers, auxiliary workers, educators, and community leaders determined to free their fellow men from unnecessary suffering – who made me realize that tuberculosis and many other health problems can be eliminated only when their cultural, social, and economic interdependence has been understood.

I am grateful to my wife. Without her help and forbearance, this book could not have been written.

K. Toman
1979
This remarkable book remains very much Toman’s Tuberculosis. Kurt Toman conceived and created a book that can only be regarded as a masterpiece. Written in the late 1970s, it addressed essentially all significant questions relating to the diagnosis, treatment, and control of tuberculosis. It summarized the then state-of-the-art scientific knowledge of tuberculosis – and it did so with admirable clarity and brevity. Therefore, by far the greatest debt for the current edition is to K. Toman, whose book this very much remains.

The era of single-author reference books is over, and this edition of Toman’s Tuberculosis required the input and assistance of many individuals. It is a remarkable tribute to the esteem and affection in which this text is held by tuberculosis experts around the world that every person asked to write or revise a section readily agreed.

Dr Fabio Luelmo provided the initial impetus for a revised edition, helped conceptualize the outline, contributed many of the new and revised sections, and carefully reviewed the entire manuscript. Other colleagues from WHO in Geneva, including Drs Mario Raviglione, Ian Smith, and Marcos Espinal, provided input to the book as a whole and also contributed many sections. Drs Anthony Harries and Hans Rieder gave generously of their time and considerable expertise to write or revise a substantial number of sections and they, as well as Dr Martien Borgdorff, reviewed the entire manuscript. Many staff of the United States Centers for Disease Control and Prevention (CDC) contributed new and revised sections. We were fortunate to have expert assistance and participation from staff of the Tuberculosis Research Centre, Chennai, India. Other authors/revisers are indicated in the table of contents and the list of contributors; their efforts are greatly appreciated. All worked with good grace to a tight publication schedule. Pre-1965 reference materials were obtained with assistance from CDC, Atlanta, GA, USA; the Medical Library, Chulalongkorn University, Bangkok, Thailand; and the Tuberculosis Research Centre, Chennai, the National Tuberculosis Institute, Bangalore, and the Tuberculosis Association of India, New Delhi, India. Byword Editorial Consultants provided overall project coordination and editorial support.

In 1979, the year in which the first edition of this book was published, Dr Karel Styblo and his colleagues from the International Union Against Tuberculosis and Lung
Disease and the Royal Netherlands Tuberculosis Association began implementing the strategy that has come to be known as DOTS. Notable aspects of this strategy are the remarkably robust monitoring system and the DOTS management package, which has enabled widespread application of the effective diagnostic, treatment, and monitoring strategies described in this book.

The editor has benefited greatly from many hours of discussions with tuberculosis workers in India and throughout south-east Asia, whose keen interest and critical approach helped to identify key questions to be addressed or re-addressed.

Many individuals contributed in many ways; responsibility for errors must rest with the editor.

_Thomas R Frieden_
New Delhi
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