Clinical Melioidosis

Melioidosis is an endemic tropical disease and is fast becoming an emerging global concern. Its clinical mimicry with several other common diseases has made its diagnosis and treatment difficult. This book identifies a gap in the literature and represents the management and diagnosis of this fatal but potentially curable disease. It also provides detailed coverage of its history, epidemiology, the latency of the agent, pathogenesis, manifestations, clinical clues for detection, microbiological diagnosis, treatment, prevention, and environmental aspects. This book is for clinicians, infectious disease specialists, microbiologists, and public health professionals in countries where melioidosis is endemic.

Key Features:

- Provides practical guidance on clinical diagnosis, management, and prevention of melioidosis.
- Features high-quality radiological and clinical photographs for clinicians and professionals.
- Explores the latest techniques and advancements in laboratory diagnosis.
Clinical Melioidosis
A Practical Guide to Diagnosis and Management

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To my heavenly Parents, wife Prof. Baijayanti, and children Ritik and Vaidehi, whose accomplishments have been a source of my pride and joy.
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Melioidosis has historically been considered a fascinating but rare tropical disease from southeast Asia and northern Australia. The last decade has seen an expansion of the global map of endemic melioidosis to include an increasing number of countries in Asia, Africa, and the Americas. Notable has been the recent exponential increase in publications of case reports and case series from India and Sri Lanka. Modelling estimated that India might account for more than 50,000 of the 165,000 cases of melioidosis predicted globally for 2015 and more than 30,000 of the predicted 89,000 global fatalities from melioidosis. Given the complexities of diagnosing and treating melioidosis, these estimates are very concerning and make this book very timely and valuable for clinicians and laboratory and public health staff—from those who are first hearing and wondering about this enigmatic ‘great mimicker’ to those experienced with its manifestations, diagnosis, and therapy but seeking more information and up-to-date advice.

Laboratory diagnostic technologies and genomic advances are revolutionizing the capacity for diagnostic and epidemiological answers at both individual patient and population levels. Nevertheless, access to such resources remains grossly inequitable for much of the world and this includes South Asia. The vast clinical diversity of melioidosis and the complexities of laboratory diagnosis and treatment make it truly a sentinel disease for highlighting the continuing global disparities in access to and provision of healthcare. This book shows us what is possible for diagnosis and therapy of melioidosis and to what we all as nations and a global community must continue to aspire.

Bart Currie
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Foreword

Melioidosis is an infectious disease in tropical countries with varied clinical manifestations, a great mimicker, and a hidden killer. This book identifies a gap in the literature and represents the management and diagnosis of this fatal but curable disease. It provides detailed coverage of its history, epidemiology, the latency of the agent, pathogenesis, manifestations, clinical clues for detection, microbiological diagnosis, treatment, prevention, and environmental aspects. This book is the first clinical book on melioidosis that discusses clinical diagnosis and management from the clinician’s perspective. The book is published at a pivotal moment when melioidosis is becoming a threat even in the non-endemic areas. The clinicians, post-graduates, and researchers working in melioidosis-endemic regions recognize a need for such a publication.

Faculty have devoted their valuable time to their contributions. They endeavoured to provide a comprehensive insight into the disease by discussing the various aspects of clinical melioidosis, from presentation to prevention, in this book.

The difficulties of diagnosing melioidosis and treating it are very concerning, and this book will be valuable for clinicians, laboratory, and public health staff—from those who are first hearing and wondering about this enigmatic disease to those who experienced its manifestations, diagnosis, and therapy, but are seeking more information and up-to-date advice.

My best wishes and congratulations to the multidisciplinary panel of 22 faculty members of All India Institute of Medical Sciences, Bhubaneswar, Prof. DAB Dance of the UK, and Bart Currie of Australia, who contributed to creating this important and first clinical book on melioidosis. I feel proud to see my team of faculty members who have made significant contributions to increasing awareness and better management of such fatal infectious cases in tropical countries.

Prof. Ashutosh Biswas
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Preface

Throughout human history, infectious diseases have been the leading cause of human morbidity and mortality. There has been an increase in infectious diseases over the last 25 years. I have experienced reasonable numbers of patients clinically mimicking an aggressive type of tuberculosis (never proving to have tuberculosis), becoming very sick in days. Many had died of sepsis and multi-organ abscesses without a specific microbial diagnosis.

There are likely many undiagnosed and unreported cases in tropical countries where endemic melioidosis is rarely clinically suspected. A predictive modeling study of the global distribution of melioidosis by Limmathurotsakul and colleagues estimated 165,000 melioidosis cases and 89,000 deaths worldwide in 2015. Melioidosis has been ‘severely under-reported in 45 countries in which it is known to be endemic’ and ‘probably endemic in a further 34 countries that have never reported the disease’.

On the other hand, early intensified case detection and proper case management can decrease the case fatality rate of melioidosis from 90% to less than 15%, as reported in Australia. Key efforts remained to increase awareness for clinicians and public health workers by educating them to remain aware of potential clinical presentations and outbreaks.

We have gained a new perspective over the years and learned, with the support of microbiologists, that the disease increased after strong cyclonic weather events; all these facts incited us to develop the concept of this book, Clinical Melioidosis: A Practical Guide to Diagnosis and Management. This is probably the only clinical book that discusses from basics to bedside for every clinician, researcher, and healthcare professional. This book focuses on the integrated, holistic, essential clinical diagnosis and management of the dreaded disease in addition to introductory chapters. This book has elucidated treatment methods and best practices. We aim to fill the gaps in the knowledge of the physicians and surgeons on the clinical aspects of the disease, a great mimicker of many diseases. As an infectious disease, it is fully treatable with appropriate early management and preventable with due precautions. The information presented in this book is not only an up-to-date review of melioidosis, but also provides a comprehensive clinical insight into each aspect.

We published papers and review articles, including the latest in Lancet Regional Health, ‘Burden of melioidosis in India and South Asia: Challenges and ways forward’, to increase awareness and prevention of the disease. Investment in research for melioidosis lags far behind other neglected and emerging tropical diseases. There have been significant gaps in understanding this enigmatic disease’s molecular epidemiology, transmission, and unpredictable behavior.

All the authors have devoted their valuable time to bring about their contributions. With the support of all the contributing authors, we discussed the various aspect of clinical melioidosis, from presentation to prevention, in this book.
This compilation has brought together a multi-disciplinary clinical faculty of authors who have summarized the updated literature to produce a complete clinical book on the subject.

I thank all the authors and their departments for contributing with devotion to this book. We express our gratitude and appreciation to the staff members of CRC Press (Taylor & Francis Group) for bringing this book to life. The CRC press brought the neglected tropical disease to the scientific societies through its publishing.

Prasanta R Mohapatra
Acknowledgement

I want to express my gratitude to the faculty and residents of the All India Institute of Medical Science, who made me realize the need for a clinical book on melioidosis.

My special thanks to Professor DAB Dance, University of Oxford, UK, and Professor Bart Currie, Director, Tropical and Emerging Infectious Diseases, for their contributions and constant encouragement.

I am thankful to all the contributors and faculty who supported me largely by giving constant encouragement and input. I am grateful to all the authors for giving their valuable time despite their busy schedules. I am appreciative to the support of all the faculty, staff, nursing officers, and faculty of my department for this work. My notable thanks to Dr. Biswanath Behera, Assistant Professor, Dermatology, AIIMS, Bhubaneswar, for their contribution to skin photography.

I express my immense gratitude to Prof. Pinaki Panigrahi, Director of International Microbiome Research, Georgetown University, Washington, DC, and Dr. Ena Mahapatra, Rush University, Chicago, USA. I further recognise Prof. Shyam Biswal, Johns Hopkins Bloomberg School of Public Health, USA, Dr. Suman Kumar Das, Stepping Hill Hospital, Manchester, UK, and Dr. Satya Mohan Mishra, John H. Stroger Jr. Hospital of Cook County, Chicago, USA, for their encouragement and needful input for this book.

I have no words to express my appreciation for my wife Dr. Baijayanti, son Ritik, and daughter Vaidehi, who have immensely cooperated with me throughout the process.

I am grateful to CRC Press for accepting my proposal to publish this book for a great cause. My sincere thanks to Ms. Shivangi Pramanik, Senior Editor-Medicine, and Himani Dwivedi, Editorial Assistant, for all their cooperation and positive efforts. I extend my thanks to all those who helped me bring this book to fruition.

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About the Editor

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Dr. Mohapatra is The Dean (Academic) of All India Institute of Medical Sciences, Bhubaneswar and has been Professor and Head of the Department of Pulmonary Medicine and Critical Care at All India Institute of Medical Sciences, Bhubaneswar, since April 2013. He is a Fellow of the Infectious Disease Society of America (IDSA) as well as an active Fellow of 16 scientific societies, including the Fellow of National Academy of Medical Sciences, the Royal College of Physicians of London and Glasgow, and a Fellow of the American College of Physicians, Fellow of the American College of Physicians, American College of Chest Physicians, and American Thoracic Society.

He has over 270 publications to his credit. He has been the Principal investigator of many projects and worked as Regional Editor for *Lancet Respiratory Medicine* (2015–2017). He was a committee member of several national guidelines, including the National Guideline Committee on Adult Vaccination 2019–2021.

He is the founder faculty of his department and a key clinical person for melioidosis work in his institution. He handled many cases from his setup and was instrumental in the melioidosis awareness services. During COVID-19, he has served as Chief Clinical Expert to the state and central team members in Maharashtra and Odisha. His leadership has focused on improving quality and delivering value to patient care, research, and teaching.