

# Leptospirosis



## Laboratory Manual



Regional Medical Research Centre  
Indian Council of Medical Research  
Port Blair



World Health  
Organization

Country Office for India



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## Foreword

Leptospirosis is an important public health problem of India. Recently there has been frequent resurgence of this malady coinciding with the natural calamity. In spite of considerable advances in the management of this condition, timely and accurate diagnosis is often difficult, owing to its atypical presentation and similarity of signs and symptoms with other infectious diseases.

It is indeed a matter of great satisfaction to learn that RMRC, Port Blair in collaboration with WHO is bringing out the much needed manual on laboratory diagnosis of leptospirosis. This manual is a crystallization of more than a decade of experiences and endeavour of the scientists of RMRC Port Blair working in the field of leptospirosis. This is a meticulously planned manual presented in a simple way for its use in the laboratory for the diagnosis and characterization of leptospirosis. This book will be of significant utility and will prove to be a ready reckoner for the clinicians and the laboratory personnel as well.

I sincerely compliment the joint efforts of RMRC, Port Blair and WHO in bringing out this manual which I am sure will serve as a useful guide for early detection of the disease, and thus reducing the morbidity and mortality associated with leptospirosis.

(N.K. Ganguly)  
Director General





# Preface



Leptospirosis is becoming an increasingly significant public health problem, particularly in tropical developing countries. The whole of Southeast and South Asia are endemic to the disease. Frequent outbreaks are occurring, many of which in the aftermath of natural disasters. Yearly upsurges and outbreaks are common in rice cultivating regions as a large number of farmers get exposed to contaminated wet environment. Complications such as severe pulmonary haemorrhages and renal failure are being reported more frequently. Once these complications set in, it is difficult to save the patient even in most well-equipped hospitals and the case fatality ratio becomes very high.

In most of the developing countries where leptospirosis is endemic, no specific control programme is in operation and the surveillance is often incomplete. Therefore, the disease outbreaks continue unchecked and even an estimate of the disease burden is missing. Being a zoonotic disease with a large spectrum of animal carriers and the difficulty in preventing exposure of the people, whose subsistence depends upon small scale farming and other occupations closely linked to the environment, it is difficult to devise an effective control strategy. In this situation, early case detection and treatment becomes very important for reducing the morbidity and mortality.

The two obstacles for early case detection are the lack of awareness of the people and medical professionals about the disease and the unavailability of laboratory support for diagnosis. Because of the frequent occurrence of the disease either in the form of outbreaks or as sporadic cases, awareness, at least among the medical professionals is increasing. However, lack of laboratory support and trained laboratory manpower is still an important issue in leptospirosis surveillance and control. Several rapid test kits has become available in the market in the recent years. However, there is no uniform standard or algorithm for laboratory diagnosis. There is a need to systematically evaluate these commercially available tests and evolve a diagnostic algorithm.

This Centre has been carrying out research on leptospirosis for about one and a half decades now. Since 1999 it is working as the National Leptospirosis Reference Centre and since 2003 as WHO Collaborating Centre for Diagnosis, Research, Reference and Training in Leptospirosis. As part of these activities, the Centre has also been conducting Hands-on-Training Workshop on laboratory diagnosis of leptospirosis on alternate years.

We at this Centre thought it worthwhile to bring out a document based on the information generated by the research activities of the Centre and the Collaborative efforts of this Centre and WHO. This manual is a result of this. The primary objective is to briefly present the existing knowledge about the disease and its pathogen and draw guidelines for procedures for laboratory diagnosis and characterization of leptospire. I hope this document jointly published by the Regional Medical Research Centre (ICMR), Port Blair and WHO will address some of the current issues in leptospirosis diagnosis, surveillance and control.

**P. Vijayachari**

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