



BRIEF REPORT

Activities of the Korean Institute of Tuberculosis

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Abstract

The Korean National Tuberculosis Association (KNTA) set up the Korean Institute of Tuberculosis (KIT) in 1970 to foster research and technical activities pertaining to tuberculosis (TB). The KNTA/KIT had successfully conducted a countrywide TB prevalence survey from 1965 to 1995 at 5-year intervals. The survey results (decline in TB rates) established Korea as a country that had successfully implemented national control programs for TB. The KIT developed the Korea Tuberculosis Surveillance System and the Laboratory Management Information System, both of which were transferred to the Korea Centers for Disease Control and Prevention after its establishment. The KIT functions as a central and supranational reference TB laboratory for microbiological and epidemiological research and provides training and education for health-care workers and medical practitioners. Recently, the KIT has expanded its activities to countries such as Ethiopia, Laos, and Timor-Leste to support TB control and prevention. The KIT will continue to support research activities and provide technical assistance in diagnosing the infection until it is completely eliminated in Korea.

1. Introduction

The Korean National Tuberculosis Association (KNTA) was established on November 6, 1953, to fight against tuberculosis (TB), which was the most serious public health problem during and after the Korean War. The KNTA was formed by the integration of pre-existing organizations such as the Chosun Anti-Tuberculosis Association, Anti-Tuberculosis Association, Missionary Doctor Committee, and Committee for Tuberculosis Prevention (Ministry of Health). At present, the KNTA has 12 branches and four specialized TB clinics known as the Double Cross Clinic.

The KNTA joined *The International Union Against Tuberculosis and Lung Disease* in 1954, and from then onward, it started developing into an international organization.

Since then, the KNTA has successfully conducted seven countrywide TB prevalence surveys from 1965 to 1995 at 5-year intervals and carried out campaigns and active TB case-finding activities, while also providing laboratory services to the national TB control program (NTP) to improve treatment for TB patients and supporting TB-related studies for improving the services of the NTP.

The KNTA decided to set up the Korean Institute of Tuberculosis (KIT) in 1970 to foster TB-related research

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and technical activities. The KIT included a bacteriology department (formerly known as the *Central TB Laboratory Department*), a training department for TB health-care workers, and an epidemiology department (formerly known as the *Medical Department*). Since its inception, the KIT has improved consistently and is now a leading institute for TB research in Korea that provides a scientific basis for TB control.

2. Achievements of the KIT

2.1. Domestic achievements

Under the NTP, the KIT has provided laboratory diagnostic services as well as training and education for health-care workers. In addition, it played an active role in policy development for TB control and eradication before the establishment of the Korea Centers for Disease Control and Prevention (KCDC). The KIT also conducts microbiological, epidemiological, and operational research.

Laboratory diagnosis is essential for the confirmation and treatment of TB. The KIT carried out 2831 microbiological examinations in 1962 and this number increased to 363,089 in 2012, including 9040 cases of drug-susceptibility testing (DST) and 163,121 culture examinations (Table 1) [1]. The KIT has provided laboratory technical support and reagents for microscopic examinations to public health centers in Korea. In addition, the KIT also provides laboratory services to the private sector. The KIT performed 108,706 microbiological examinations for the private sector, including 17,826 cases of DST. The KIT conducted almost two thirds of DST in 2013.

To provide technical support to the NTP, staff at the KIT performed supervisory visiting to public health centers until 2007. The KIT developed and constructed the Korea Tuberculosis Surveillance System and the Tuberculosis Laboratory Management Information System, which were transferred to the KCDC following its establishment. In addition, the KIT operates *web-PACS*, a web-based healthcare service developed by the KIT that supports radiological diagnosis of TB in public health centers. The number of public health centers that participated in the web-PACS was 202 in 2013 and 176,201 radiographic images were read by central and regional reading centers.

The number of research articles published reflects the research activities carried out and scientific achievement. So far, the KIT has published 163 articles in 48 Science Citation Index journals.

2.2. International part

Since 1979, the KIT has been organizing international TB training courses sponsored by the World Health Organization (WHO), the Korea International Cooperation Agency (KOICA), and other organizations. In 1984, the KIT joined as a member of the Tuberculosis

Surveillance and Research Unit, which was founded by the WHO and the International Union Against Tuberculosis, and hosted two annual meetings in Korea. A total of 728 health workers, mainly medical doctors, participated in the 73 training courses conducted until 2013 [1].

In 1995, the KIT was designated as a WHO collaborating center and joined with the Supranational Reference Laboratory Network in 1994. The KIT also played a vital role in overseeing quality assurance activities for TB laboratory services and technical support to countries such as Vietnam, China, and the Philippines.

Since 2010, the KIT has expanded its activity globally under the official development assistance (ODA) projects for directly and indirectly supporting TB control and elimination in countries such as Ethiopia, Timor-Leste, Laos, and the Philippines.

3. Current roles and activities

3.1. Laboratory service

The Department of Laboratory Medicine provides microbiological laboratory services for the NTP and quality assurance as the TB reference laboratory in Korea (Table 1).

The KIT and various branches of the KNTA conduct microbiological examinations such as smears, cultures, strain identification, DST for *Mycobacterium tuberculosis*, and nontuberculous mycobacteria detection. In addition, for the rapid diagnosis and identification of drug resistance among the various strains of *Mycobacterium*, the KIT carries out molecular testing methods such as real-time polymerase chain reaction and Xpert MTB/RIF assay (Xpert assay; Cepheid, Sunnyvale, CA). The KIT also produces media for culture, strain differentiation, and DST, and provides the materials to public and private laboratories.

3.2. Research and development

The Department of Research and Development (Taiwan) actively studies molecular epidemiology, maintains data on various *Mycobacterium* species, develops new diagnostic tools for early detection of TB, and carries out other academic studies related to TB.

- *Molecular epidemiology*: Molecular epidemiological studies for TB started out as a laboratory research project in the late 1990s. A database of the various epidemiological study results was established in 2005. The initial purpose of the study was to verify the transmission link among TB patients in schools by DNA typing of the strains. Nowadays, these molecular epidemiological technologies have become an essential part of the investigation on TB outbreaks in Korea. The molecular epidemiology studies helped in identifying the transmission link

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