

Indonesia

Persahabatan Hospital, University of Indonesia

**Collaboration Program with the Private Sector
for Disseminating Japanese Technology for
Disease Management System for Tuberculosis
Patients in Indonesia
Final Report**

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1. Executive Summary

1.1. Background of the Program

Otsuka Pharmaceutical Co., Ltd. developed delamanid, one of only two new anti-tuberculosis (TB) drugs in the last 40 years.[1] Delamanid has a novel mechanism of action completely different from that of existing anti-tuberculous agents and is now used as a part of an appropriate combination regimen for pulmonary multi-drug resistant (MDR) TB patients. Delamanid was first launched in Europe and Japan in 2014 and is currently used in more than 70 countries worldwide. In parallel with its rapid expansion, promotion of the proper use is crucial when delamanid is introduced to individual countries in order to avoid the emergence of resistance to this new drug. For the proper use of antimicrobial agents, it is important to select “the right drug, the right dose, the right duration, and the right route of administration”.[2] Thus, proper use is based not only on the right prescription of an antimicrobial agent, but also on the condition that the patient continues taking the drug for the right duration. Indonesia ranks second globally in terms of TB burden (representing about 10% of all TB patients worldwide). Preparing for the introduction of delamanid in this TB high burden country, it was also considered important to improve daily treatment adherence in this country.

1.2. Technology to be Disseminated in the Program

Recently, every effort has been made to enhance the health of individuals by using portable information terminals such as smartphones: referred to as mobile health (mHealth) in the medical field. Treatment discontinuation by patients is one of the major issues in long-term TB/MDR-TB treatment. Otsuka Pharmaceutical Co., Ltd. came up with the idea of improving daily medication by using a smartphone application (hereinafter “app”) and worked on its development in Japan. The widespread use of such an app was unfortunately considered to be unlikely (and therefore less effective) in Japan because 65% or more of TB patients in Japan are 65 years of age or older, a group that is unaccustomed to the use of smartphones in daily life.[3] On the other hand, TB is a significant health issue among younger generations in many of TB high burden countries and this applies to Indonesia which has the second largest TB burden globally. Among the TB high burden countries, Indonesia has a relatively high level of

smartphone use. In 2017, the number of smartphone users was about 75 million, and it was assumed that the number will reach about 92 million in 2019.[4] In such an environment, it was thought that a smartphone app could be an effective way to improve drug compliance and enhance knowledge of TB and its treatment.

The technology to be disseminated in the Program was a smartphone app which was designed to effectively improve drug compliance and enhance patient knowledge. The app contained a function to remind patients when to take the drugs and when to visit the hospital. It also had a function which provides educational information about TB. It was designed to promote daily administration by enhancing adherence to medication (“adherence” refers to a patient’s active participation in decision-making regarding his/her treatment and willingness to receive the treatment and a patient’s active participation in treatment is considered a key to success).

1.3. Objective/Target of the Program

The objective of the Program was to contribute to improving the TB treatment environment by introducing the smartphone app when new anti-TB drugs like delamanid were introduced into Indonesia. The app needed to be optimized in a user-friendly manner, taking into consideration the local smartphone environment. Considering the medical environment in the country, educational video clips which improve drug adherence by enhancing knowledge of TB were created and then made accessible via the app.

1.4. Overview of the Program

The table below shows the four major phases and individual objectives to be attained in the Program.

Phase	Duration	Objective
I	Nov. 2015 – Dec. 2016	Creation of a localized app
II	Jan. 2017 – Sep. 2017	Demonstration of the effectiveness of the localized app
III	Sep. 2017 – Dec. 2017	Finalization of the localized app reflecting the results of the demonstration project
IV	Dec. 2017 – Feb. 2018	Dissemination of the localized app and educational/awareness-raising activities related to TB

1.5. Results of the Program

1) Creation of Localized App Reflecting Local Needs

The Program started from the localization of the app that had been developed in Japan. During the localization, we conducted the interview survey with a prototype app to understand the real situation of TB treatment and the need and expectation for the app by interviewing TB patients, their families and medical professionals in three hospitals which provide MDR-TB treatment in Jakarta and two puskesmas (regional public clinics established across Indonesia).

2) Demonstration of the Effectiveness of the Localized App

The localized app and video clips were developed by reflecting the results of the interview survey. With acknowledgment from the Indonesian Ministry of Health, the localized app was evaluated in three hospitals (Persahabatan Hospital, Islam Cempaka Putih Hospital and Dr. Goenawan Lung Hospital) from January to August 2017. In this demonstration project, we confirmed the efficacy of the app to improve treatment adherence.

3) Finalization of the Localized App Reflecting the Results of the Demonstration Project

Based on the results of the demonstration project, functions of the app were re-examined, leading to creation of a total of 15 educational video clips including the introduction video for use of the app. The final version of the app was uploaded to Google Play Store to make it accessible free of charge.

4) Dissemination of the Localized App and Educational/Awareness-raising Activities Related to TB

In addition to a lecture in the national pulmonologist conference, we held a forum and meetings with local relevant key opinion leaders to promote the use of the app as well as emphasize the importance of drug compliance.

1.6. Current Situation of the Business

Since February 2016, delamanid has been available from the Stop TB Partnership/Global Drug Facility (GDF) in countries supported by the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund). In Indonesia as well, the Ministry of Health procured delamanid from the GDF while the Program was underway. Since one hundred ninety four delamanid treatment courses had been imported into Indonesia at the end of 2017, widespread use of the app is expected to start soon.

1.7. Rationale of Prospects for Future Business

After approvals in Europe, Japan and Korea in 2014, delamanid has been approved in Hong Kong, Turkey, the Philippines, India, Turkmenistan and China. The World Health Organization (WHO) issued guidance on its use in 2014 and delamanid was also included in WHO's Model Lists of Essential Medicines as an MDR-TB treatment drug for use in adults in 2015 and for use in pediatric and adolescent patients in 2017. In Indonesia as well, the drug was listed in national guidelines for tuberculosis treatment issued in 2016, and preparations for use are ongoing. A report of the Joint External TB Monitoring Mission (JEMM TB) issued in January 2017 also recommends the early introduction of delamanid.

1.8. Remaining Issues and Countermeasures/Policy on Future Business

1) Purchase of Delamanid from the Local Subsidiary

A scheme by which the Indonesian Ministry of Health would procure delamanid from the GDF was established during the Program. Currently, procurement of MDR-TB drugs by the Ministry of Health mainly depends on the financial support of the Global Fund. There are some cases where anti-tuberculosis drugs are locally procured for reasons of convenience even in countries supported by the Global Fund where anti-TB drugs are available from the GDF. It is also likely that, in Indonesia, anti-TB drugs may be directly purchased from the local subsidiary (PT Otsuka Indonesia, PTOI). Thus, the preparations for establishing a direct procurement scheme are ongoing while PTOI has filed a regulatory application to the Ministry of Health of Indonesia.

2) Formation of an Environment that Facilitates the Smooth Introduction of Delamanid

Prior to the introduction of delamanid, the National TB Program (NTP) of the Ministry of Health of Indonesia (MOH) and Royal Netherlands Tuberculosis Association (KNCV) had played a major role in establishment of a Pharmacovigilance System (PV system) to promote the correct use of novel anti-TB drugs including delamanid. Japanese Government funds provided to the United Nations Development Programme (UNDP) supported this PV system development. Based on the PV system, the environment is being improved for “the science and activities relating to the detection, assessment, understanding and prevention of adverse effects or any other drug-related problems” as defined by the WHO. The Indonesian NTP has created a standard operating procedure (SOP) for the introduction of new drugs and is making preparations to ensure that the drugs are introduced properly, making delamanid available at more than 80 sites (including 35 core hospitals and their satellite facilities) where MDR-TB treatment is provided. As part of the establishment of the proper environment for the introduction of new drugs, the app could be useful as a complementary tool that will help to improve patient adherence to therapy.

1.9. Plan for Future Business

At present, PTOI has submitted a regulatory application for the approval of delamanid to the MOH. After regulatory approval is obtained, delamanid can be procured not only from the GDF but also from PTOI. In countries where delamanid is introduced without using the GDF, various methods are employed such as bulk purchasing by governments, purchase through drug procurement bidding at hospitals, and insurance reimbursements by a wide variety of insurers. Establishment of a local purchase scheme is expected in Indonesia.

1.10. Possibility of Collaboration with Japan’s Official Development Assistance (ODA)

In Indonesia, the “Tuberculosis Control Project” was carried out as an ODA technology cooperation project from October 12, 2008 to October 11, 2011 in Surabaya in East Java, Bandung in West Java, and Jakarta. The capacity of laboratories to diagnose TB was enhanced through this project. These labs still play a central role in clinical testing of TB in Indonesia and perform drug susceptibility testing which is indispensable for determination of which drugs should be used to treat each MDR-TB patient. TB remains a serious public health issue in Indonesia while the capacity of TB diagnostic systems and

treatment facilities must be further strengthened. Thus, improvement of the TB therapy related environment via an ODA scheme such as the abovementioned “Tuberculosis Control Project” is regarded as an effective way to enhance the proper use of delamanid.

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