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## FINAL REPORT

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# Tuberculosis Diagnosis and Treatment Computer-based Training Package for Indonesia

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MARCH 2012

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This final report was prepared University Research Co., LLC (URC) for review by the United States Agency for International Development (USAID). It was authored by Neeraj Kak and Nurfina Bachtiar of URC. The tuberculosis diagnosis and treatment computer-based training package for Indonesia was developed by URC under the USAID Health Care Improvement Project, which is made possible by the generous support of the American people through USAID.



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MARCH 2012

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**DISCLAIMER**

The views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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## ABBREVIATIONS

CBT	Computer-based training
CD-ROM	Compact disk, read-only memory
DOTS	Directly observed treatment, short-course
HCI	USAID Health Care Improvement Project
IARW	Indonesia Antimicrobial Resistance Watch
IBI	Indonesian Midwife Association ( <i>Ikatan Bidan Indonesia</i> )
IDI	Indonesian Medical Association ( <i>Ikatan Dokter Indonesia</i> )
ISTC	International Standards for Tuberculosis Care
KNCV	Royal Netherlands Tuberculosis Association
MDR	Multi-drug resistant
NTP	National Tuberculosis Program
PAL	Practical Approach to Lung Health
PPNI	Indonesian Nurses Association ( <i>Persatuan Perawat Nasional Indonesia</i> )
TB	Tuberculosis
TBCAP	Tuberculosis Control Assistance Program
UGM	University of Gadjah Mada
URC	University Research Co., LLC
USAID	United States Agency for International Development
WHO	World Health Organization
XDR	Extensively drug resistant

## I. BACKGROUND

Indonesia ranks third among the 22 high-burden tuberculosis (TB) countries in the world. The Global Fund is currently providing funding support to the National Tuberculosis Program (NTP) and the Indonesian Medical Association (*Ikatan Dokter Indonesia*, or IDI) for training private medical practitioners on the World Health Organization (WHO) directly observed treatment, short-course (DOTS) and the International Standards for Tuberculosis Care (ISTC) that are part of the STOP TB strategy. However, it is difficult to reach the large number of private practitioners in the country using classroom-based training due to the large geographic expanse of Indonesia and the logistics involved.

The predecessor project to the USAID Health Care Improvement Project—the Quality Assurance Project—had developed a Tuberculosis Case Management CD-ROM in 2000. The TB CD-ROM's training modules were based on the DOTS strategy. Through the CD-ROM, users could practice and apply mastery of DOTS on simulated cases and improve their treatment and diagnostic decision-making using computer-generated feedback on their performance. The TB CD-ROM was tested in Ethiopia with 100 doctors, nurses, and other health professionals, and results indicated that health workers could learn faster from the program than traditional paper-based training and raise their competence scores for correct TB case management. The product was then translated to Spanish and adopted by the National TB Program of Bolivia, which continues to use an updated version of the product throughout the country.

In 2008, USAID Indonesia expressed an interest in the possibility of translating the original TB CD-ROM into *Bahasa Indonesia* language and preparing an updated computer-based training package for health practitioners and workers in Indonesia from various sub-sectors, including private and non-governmental. The Mission approached the USAID Health Care Improvement Project (HCI), managed by University Research Co., LLC (URC), to conduct the work and gave field support to URC under HCI Task Order 1 to develop the TB computer-based training CD-ROM in Indonesia.

The objective of the computer-based training (CBT) on tuberculosis in Indonesia was to instruct health practitioners and health workers from private, public and non-governmental sub-sectors in the modern treatment of tuberculosis based on the Stop TB Strategy. It was anticipated that in addition to accessing training on the well-established elements of DOTS, health personnel should be able to learn newer elements that are part of the Stop TB framework, e.g., global advocacy/policy initiatives for TB control, the emerging problem of multi-drug resistant (MDR) and extensively drug resistant (XDR) TB, infection control, and institutionalization of appropriate laboratory capacity.

The TB CBT for Indonesia includes the new Stop TB framework, updated TB detection and treatment guidelines as per the Indonesian NTP, and a modern software platform to ensure compatibility with recent operating systems. In addition, the CD-ROM covers the ISTC and the WHO Practical Approach to Lung Health (PAL).

URC's Dr. Pankaj Sadaphal visited Indonesia in January 2009 to meet with USAID, the NTP, and Tuberculosis Control Assistance Program (TBCAP)/Royal Netherlands Tuberculosis Association (KNCV) representatives to discuss a proposal for the development of a CBT product in Bahasa Indonesia. The product, which could be produced as a CD-ROM or made accessible via the Web, would be based on the TB CD-ROM previously developed by the Quality Assurance Project in 2000, but updated to reflect the Stop TB strategy and other developments in case management, including management of TB-HIV co-infection.

## II. OBJECTIVES OF HCI TECHNICAL ASSISTANCE

To support the NTP in its effort to train health practitioners, especially private providers, the United States Agency for International Development (USAID) requested that HCI update and adapt for Indonesia a computer-based training product that had previously been developed for Bolivia by the Quality Assurance Project.

HCI developed a partnership with the NTP, the Indonesian Medical Association, and the Indonesian Midwife Association (*Ikatan Bidan Indonesia* or IBI), and the Indonesian Nurses Association (*Persatuan Perawat Nasional Indonesia* or PPNI) to achieve the following objectives:

- Develop a TB CD-ROM and computer-based training package in Bahasa Indonesia for medical and other health practitioners; and
- Support the NTP and professional associations to disseminate the CD-ROM training package to improve diagnosis, management, and referral of tuberculosis patients in accordance with NTP guidelines.

Although, initially the focus was to design TB CD-ROM for doctors, early on it was decided that nurses and midwives would also benefit if a similar product was available for them.

## III. DEVELOPMENT OF THE TB COMPUTER-BASED TRAINING PACKAGE

A first draft of the storyboard (screen content) for the CBT was shared in August 2009 with USAID/Indonesia, the TBCAP, University of Gadjah Mada (UGM), and the NTP. The scope was broadened to suit not only private practitioners, but also certain other government health personnel, such as nurses. In his meetings with representatives of the Indonesian Medical Association, Dr. Sadaphal outlined strategies for making the TB CD-ROM available to the country's private practitioners. He also identified an Indonesian multi-media firm able to program the CD-ROM and a Web version.

TB experts reviewed the draft storyboard and proposed modules. The content incorporated the International Standards for Tuberculosis Care as well all the elements of the Stop TB strategy. A second, more condensed version was then prepared for sharing with the NTP, USAID, TBCAP, and UGM.

During FY10, HCI developed the content for the TB CD-ROM, including nine training modules for physicians and six modules for nurses and midwives, job aids, and other reference materials and translated them into Bahasa Indonesia. The content was submitted for review by the senior in-country TB expert, the Chief Pulmonologist from Persahabatan Hospital in Jakarta. In the

### **Contents of the TB CD-ROM designed for Indonesian Physicians**

1. Introduction, history, and epidemiology of TB
2. Pathogenesis of TB infection and tuberculosis disease
3. Diagnosis of TB infection and TB disease
4. Treatment of TB infection and TB disease
5. Treatment of TB in children
6. Adherence to TB treatment
7. TB and HIV infection
8. Multi-drug resistant TB diagnosis and management
9. TB infection prevention and control

### **Contents of the TB CD-ROM designed for Indonesian Nurses and Midwives**

1. Epidemiology of TB
2. Diagnosis of TB
3. Adherence to TB Treatment
4. TB and HIV infection
5. Multi-drug resistant TB diagnosis and management
6. TB infection prevention and control

fourth quarter of FY10, URC held a brainstorming meeting in Jakarta with the in-country expert and the team from the private medical association, IDI. The media group OneComm was recruited to prepare the CD-ROM, including graphics, layout, and media programming.

To gain a better understanding of weak areas in current provider knowledge that should be reinforced through the training package, HCI conducted focus group discussions with both physicians and nurses in Bahasa Indonesia in 2010 and 2011 as part of the design of the CD-ROM content and lay out. The focus groups were particularly valuable to inform changes in the training content for TB service delivery by midwives and nurses, who are important frontline providers in rural areas. Members of the Indonesia Midwife Association helped HCI to expand the content of the training product to address the midwife’s role in TB services.

#### IV. FINAL PRODUCTS

Working with a local media company (OneComm) in Jakarta, HCI developed the content and formatting of the CD-ROM and accompanying materials using USAID/Indonesia funds. The training package includes the following pieces, in the Bahasa Indonesia language:

- TB computer-based training CD-ROM covering nine modules for physicians and six modules for nurses and midwives
- A job aid—the Fact Sheet for Health Professionals on TB and MDR TB: Infection and Transmission—and an information card for patients which was adapted from one developed in South African by the TASC II Tuberculosis Project.

The physician version of the CD-ROM was completed in July 2011 and distributed at professional meetings for medical doctors. The training package for nurses and midwives, including the job aids and patient information care, was completed in August 2011. The TB CD-ROM was uploaded on the IDI website and is available through a link on the IDI website home page and at:

[http://www.idionline.org/edukasi\\_tuberkulosis/](http://www.idionline.org/edukasi_tuberkulosis/).

The total number of materials produced with Mission funds is listed by item in the table below.

<b>Material</b>	<b>Quantity produced</b>
Information Card/Smart card (in Bahasa Indonesia)	10,200
Information Card/Smart card (in Bahasa Indonesia)	10,200
Cover CD/Envelope packaging	10,200
CD production for Midwife/Nurse (Bahasa version)	5,000
CD production for Doctor (Bahasa version)	5,000
CD cover and label for Midwife/Nurse (Bahasa version)	5,000
CD cover and label for Doctor (Bahasa version)	5,000
CD production for Midwife/Nurse (English version)	100
CD production for Doctor (English version)	100
CD cover and label for Midwife/Nurse (English version)	100
CD cover and label for Doctor (English version)	100

Through February 2012, URC distributed the following quantities of CD-ROMs in Indonesia:

- IDI: 5,000 CD-ROMs (doctor version/Bahasa)
- IBI: 1,500 CD-ROMs (midwife/nurse version/Bahasa)
- PPNI: 3500 CD-ROMs (midwife/nurse version-Bahasa)
- NTP /Kemenkes: 10 CD-ROMs (doctor version/Bahasa) and 10 CD-ROMs (midwife/nurse version/Bahasa)
- USAID: 30 CD-ROMs doctor/Bahasa version; 30 CD-ROMs midwife/nurse/Bahasa version; 10 CD-ROMs doctor/English version; 10 CD-ROMs midwife/nurse/English version

In addition, the following quantities were distributed outside of Indonesia:

- International Union Against Tuberculosis and Lung Disease conference in Lille, France, October 2011: 50 CD-ROMs for doctor (English version); 40 CD-ROMs for midwife/nurse (English version); 10 CD-ROMs doctor (Bahasa version); 10 CD-ROMs for midwife/nurse (Bahasa version). In addition, a two-page flyer describing USAID's support for the development of the TB CD-ROM was distributed in Lille (see Appendix).
- URC headquarter: 5 copies of Bahasa version for doctors, 5 copies of Bahasa version for midwife/nurse; 40 CD-ROMs for doctor (English version); and 40 CD-ROMs for midwife/nurse (English version).

## V. DISSEMINATION OF THE TB CBT PRODUCTS

The event of the 7th National Symposium of Indonesia Antimicrobial Resistance Watch (IARW) in Jakarta provide an important opportunity for IDI and HCI to promote the CD-ROM. The event was held on July 1-3, 2011 and the exhibition held on July 2-3. In order to support the promotion, IDI and HCI rented a booth which was named "TB Education".



During the first day of the exhibition, the TB Education booth was visited by 40 visitors, followed by 58 visitors on the second day. Approximately one third of all symposium participants visited this booth. The total number of participants who attended the symposium was around 300. Conference participants who visited the TB Education booth were given a free CD-ROM as long as they tried to operate it first on the computer available at the booth. This was done in order to test whether the participants could operate the product. Conference participants universally stated that they felt the product was very easy to use, as shown in the box at right.

**Comments from visitors to the TB Education Booth at the National Symposium of Indonesia Antimicrobial Resistance Watch, July 2011**

(“...it’s good...it’s like a child’s game....the instructions are easy to follow ...”)

(“...IDI has shown a great progress by developing this CD it’s good because it’s very useful for doctors at the hospitals who were not trained on this program ...”)

(“...may God bless you because this CD will be very useful for my students ...”)

(“...did USAID develop it only for TB? Are there other programs such as a CD learning program for HIV?...”)

(“...wow this is very good!...it’s good for doctors who have not followed the DOTS training...”)

The TB package given to booth visitors consisted of: a) the nine-module TB CD-ROM for physicians; b) job aids such as “Fact Sheet for Health Professionals on TB and MDR TB: Infection and Transmission” and a TB information card which was adapted from the TASC II TB Project in South Africa; c) the book of Tuberculosis Management according to ISTC with the DOTS strategy for private practitioners developed by IDI; and d) a pocket book on updated ISTC.

## VI. SUSTAINABILITY

The ongoing use of the TB CD-ROM will be promoted through the three professional associations that participated in its development: IDI, IBI, and PPNI. These organizations will work with the NTP in this effort. Although HCI worked closely with the NTP in the development of the CD-ROM, the NTP has strongly recommended that the professional associations take the lead in the dissemination and promotion of the use of the CD-ROMs by their members.

Since the HCI-supported activity has come to an end, URC will use its own resources to continue working with both the NTP and the professional organizations to maintain the momentum for the dissemination as well as use of the two CD-ROM products in Indonesia. URC has also held discussions with TB CARE I to see how they could support the dissemination of the CD-ROMs. There is a possibility that TB CARE I will include the support and dissemination of the TB CD-ROMs in its PY3 budget.

In November 2011, HCI made available on its Health Care Improvement Portal the English version of the nine-module TB computer-based training program. It can be accessed at:

[http://www.hciproject.org/idn\\_tb\\_course](http://www.hciproject.org/idn_tb_course). URC will also make the English version of the nine-module CBT program available on the TB CARE II Portal in March 2012.

## VII. NEXT STEPS AND RECOMMENDATIONS

The training modules have been uploaded to the IDI website (with a link posted on the site's home page) and are available directly at: [http://www.idionline.org/edukasi\\_tuberkulosis/](http://www.idionline.org/edukasi_tuberkulosis/). The IDI agreed to award members passing the course a certification in TB care. The other two participating professional associations (IBI and PPNI) are also anticipated to have the training package available on their websites. The training is anticipated to reach approximately 65,000 public and private doctors and other health workers in Indonesia.

URC will work NTP and TB CARE I-Indonesia to develop a strategy for using its resources for expanding the use of the CD-ROM in the country. In addition, URC is also identifying private funds for the same purpose.

URC is working with a number of stakeholders in the country to carry out an evaluation of the effectiveness of the TB computer-based training in changing knowledge and practices among the users of the CD-ROM. The evaluation is expected to be carried out mid-2012. URC will keep NTP and USAID informed about the progress in this effort.

## VIII. BUDGET

The total development cost for producing the CD-ROM was \$300,000, broken down by line item as follows:

**USAID Health Care Improvement Project in Indonesia  
USAID Contract No. GHN-I-01-07-00003-00**

Direct Labor Total	78,197
(84% of labor costs for Pankaj Sadaphal)	
Other Direct Costs Total	124,479
Consultants	56,749
Travel & Per diem	37,929
Conferences	11,856
Office Supplies & Misc.	2,419
Postage and Freight	499
Reproduction	30
Outside Labor (translation)	9,639
Telephone, fax	137
Local Travel	5,200
Printing	22
Subcontract Cost	97,324
<b>TOTAL CONTRACT</b>	<b>300,000</b>

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