

**Request for Quote (RFQ)
For mHealth Application for
ConnecTB (for South African based companies only.)**

University Research Co., LLC

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Email quote to TBSAP@urc-chs.com

Managed by:
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1 INTRODUCTION

The ConnectTB platform is composed of a web portal and two complimentary Android applications. The web portal is expected to be used by administrators to register patients, supervisors and directly observed therapy (DOT) providers, and by supervisors to review submitted DOT surveys. The Patient Management (PM) Android application is expected to be used by DOT providers to submit DOT visit surveys and geo-tags.

General Workflow

The DOT module of the ConnectTB platform allows administrators to register TB patients and create DOT profiles for those patients. DOT providers can then be created and assigned to these profiles to initiate DOT survey generation. DOT surveys are served via the PM Android application and are expected to be submitted by DOT providers at the patient's location. DOT supervisors can be assigned to monitor the performance of DOT providers in the field. Automatic geotagging during DOT visits allows to supervisors to verify completed visits.

Reporting

A key component of the product is its reporting capabilities. Two types of reports are generated by the ConnectTB platform:

- Daily digest emails for DOT supervisors
- Patient level and aggregate level reports

Daily digest emails are sent to DOT supervisors to whom active DOT providers are assigned. The digest email contains a list of patients the DOT providers did not visit on a given day. It also includes warnings about geo location information that may be suspect the DOT supervisor is expected to follow up with the appropriate providers to verify the details.

The following sections will provide an overview of the technology stack and the deployment process for the web portal and the Android application. This overview is intended to assist with handover of a ConnectTB deployment to a third party for further development and maintenance.

2 CONNECTTB OVERVIEW

This App should be compliant with the Health Information Exchange (HIE) norms and standards for EHealth of the National Department of Health (NDOH).

The Web Portal

The ConnectTB web portal will be a single page application (SPA). The web application should be distributed as a source code package, and ready to be built and deployed on a production server.

DOT Module

The ConnectTB DOT module will provide the ability to track Directly Observed Therapy (DOT) for TB patients performed by providers in the field. The goal of this module is to provide supervisors and administrators a comprehensive overview of the status of the TB patients as well as the activities of the DOT providers.

The DOT module will allow the site administrator to create profiles for patients to be geotagged, as well as profiles for DOT providers who will be filling out surveys for each patient visit using the ConnectTB Patient Management (PM) Android mobile application.

Patient Management Module

The ConnecTB Patient Management (PM) module will support DOT providers during visits with TB patients in the field. The goal of this module is to provide DOT providers a systematic reporting mechanism that allows supervisors and administrators to view the status of the TB patients as well as the activities of the DOT providers.

3 DOT MODULE

The module consists of three major roles. The Site Administrator is responsible for managing the module data via the ConnecTB web portal. The DOT Provider is responsible for going out into the field and completing the DOT visit surveys for each patient. DOT Supervisors are responsible for tracking the progress of the DOT Providers assigned to them.

3.1 Workflow

The following is the recommended workflow for the DOT module:

Site Administrator

- Create one or more Patient profiles
 - Select Patients > New Patient
- Create at least one DOT Supervisor profile
 - Select DOT > New DOT Supervisor
- Create at least one DOT Provider profile
 - Select DOT > New DOT Provider
 - Assign a supervisor to the provider
- Create DOT Profiles for each Patient that should be visited by a DOT Provider
 - Select DOT > New DOT Profile
 - Assign a patient to the profile
 - Assign a provider to the profile
- Send instructions to all DOT Providers
 - Including the Patient Management Android User Guide

DOT Provider

- Install and run the ConnecTB Patient Management Android mobile application
 - Follow instructions provided by the Site Administrator
- Visit the location of each patient assigned and complete the DOT visit survey(s)

DOT Supervisor

- Login to the ConnecTB web portal with supervisor credentials to view track the status of the assigned DOT providers
 - Supervisors receive daily digest emails from the ConnecTB portal that summarizes the progress of the DOT providers

3.2 Dashboard

The DOT module dashboard displays an overview of the DOT visits for the selected date range. This overview **may consist** of two graphs: one displays the percentage of DOT visits completed, and the other displays the side effects reported via the DOT visit surveys.

Figure 1: Sample dashboard displays. Clicking on the bars in each graph displays an expanded view of the underlying surveys. Each item in this list is a link that opens up the corresponding survey in a separate window (Figure 2).



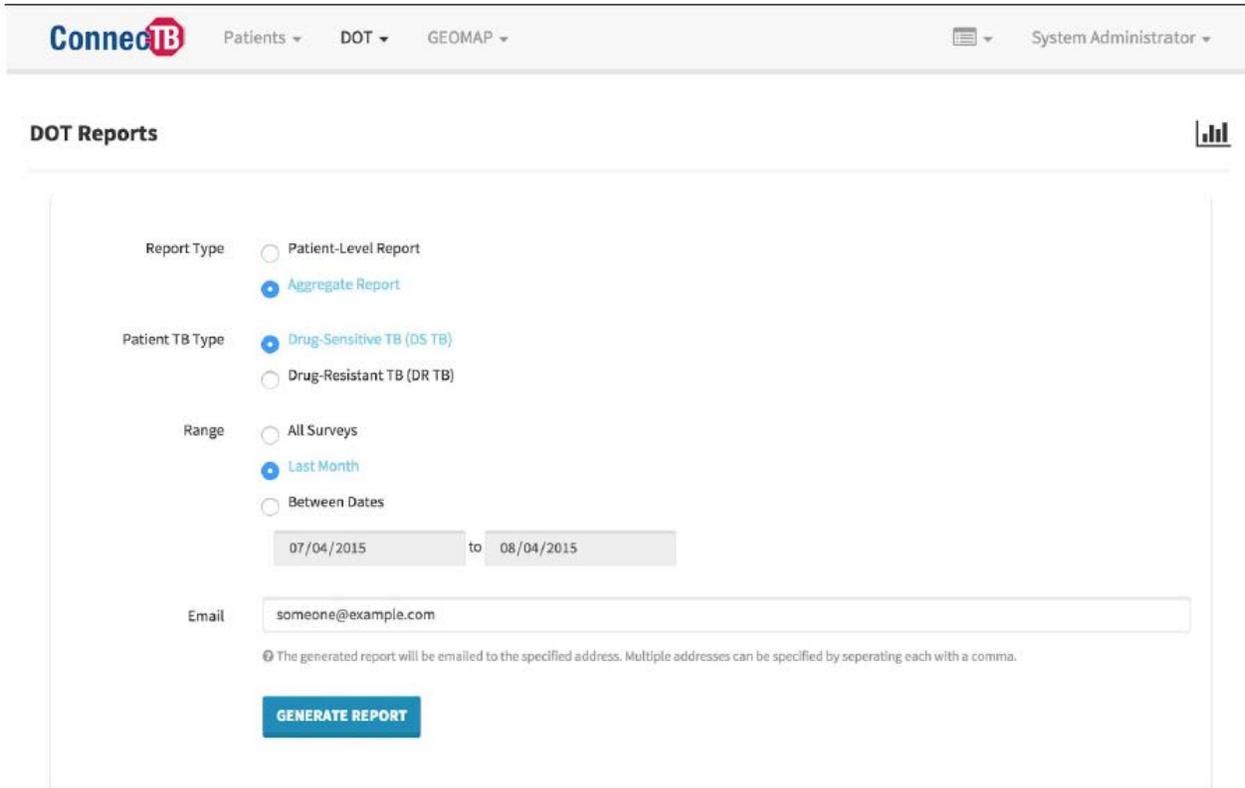
Figure 2: List of surveys shown after clicking on a bar in the graph



3.3 Report Generation:

The DOT module will also provide the ability to generate reports for the DOT visit survey data. The report generator should be accessed via a DOT > Generate Reports menu (Figure 3).

Figure 3: DOT report generation



The screenshot shows the 'DOT Reports' interface in the ConnecTB system. The header includes the ConnecTB logo and navigation menus for 'Patients', 'DOT', and 'GEOMAP'. The user is logged in as 'System Administrator'. The main content area is titled 'DOT Reports' and contains a form with the following fields:

- Report Type:** Radio buttons for 'Patient-Level Report' and 'Aggregate Report' (selected).
- Patient TB Type:** Radio buttons for 'Drug-Sensitive TB (DS TB)' (selected) and 'Drug-Resistant TB (DR TB)'.
- Range:** Radio buttons for 'All Surveys', 'Last Month' (selected), and 'Between Dates'.
- Between Dates:** Two date input fields showing '07/04/2015' and '08/04/2015'.
- Email:** A text input field containing 'someone@example.com'.

Below the email field, there is a note: "The generated report will be emailed to the specified address. Multiple addresses can be specified by separating each with a comma." At the bottom of the form is a blue button labeled 'GENERATE REPORT'.

Administrators will be able to generate reports for all patients with DOT profiles, while DOT supervisors can only generate reports for patients assigned to them. Patient-level reports should be spreadsheets with data for each patient, while aggregate reports are condensed tables with percentage values for several critical metrics. The email address field specifies the destination to where the reports will be sent and the field supports multiple email addresses, separated with commas.

4 PATIENT MANAGEMENT MODULE

The patient management module is used by DOT providers to monitor patients during daily visits.

4.1 Workflow

Provider login: When the DOT provider logs in, the patient selection screen shows the list of patients assigned to the DOT provider.

Start DOT: Clicking on a patient in the patients list should expand that item and present a “Start DOT” button. Pressing the “Start DOT” button begins a DOT session for the selected patient.

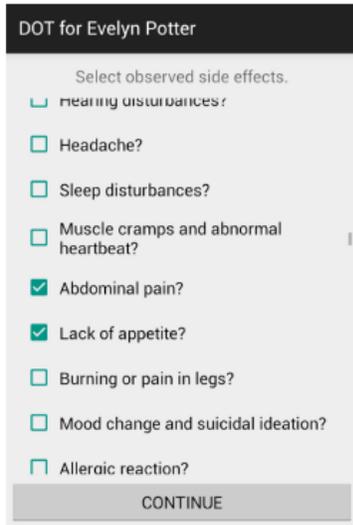
Patient Confirmation: The following screen should allow for patient confirmation. The DOT provider will verify the patient’s information before continuing by pressing the Start DOT Visit button.

Geo-tag: The app should now attempt to acquire a new geotag. This dialog will automatically close when a new geotag is acquired.

Patient Medications: The first data entry screen in the survey should show the list of medications the patient is expected to take for the current visit. Each medication should be clicked on when they are administered to the patient (Figure 4). Once all patient medications are administered, the continue button will become enabled.

Side Effects: The next screen will ask if the patient is experiencing any side effects.

Figure 5: Sample list of side effects for selection.



If yes, then the next screen presented is a list of side effects (Figure 5). Select the side effects experienced by the patient.

After reporting the specific side effects experienced by the patient, the next screen will ask if the patient received any medication for headache or nausea. It also asks if the patient was referred to a nearby facility.

Previously Scheduled Visits: The next screen asks about the previous scheduled facility visit for the patient. Options should include whether the patient went and received consultation or did not go.

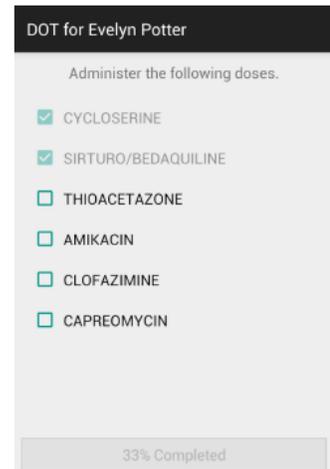
Contact Tracing: *Adults:* The next screen asks if there is an adult in the family that is currently sick with cough and/or fever. If yes, then the provider will be prompted to ask if this person has gone to the health facility to be tested for TB. *Children:* The next screen asks

if there is a child in the family. If yes, then the provider will be prompted to ask if the child has been brought to the health facility to be tested for TB.

Subsidies: Has the patient received food/transportation money this month?

Survey Submission: The last screen in the survey will let you submit the completed survey. Read the information presented in the screen and press Submit when ready. After submitting the survey, a provider can either exit the application or go back to the patients list.

Figure 4: Sample medication completion list during a DOT visit.



5 ADDITIONAL CAPABILITIES REQUIRED OF THE APPLICATION.

5.1 Phase 1:

The application should be able to execute the following tasks:

- Pilot biometric scanners as a unique identifier
- Grant facilities access to provide DOT to patients who go for reviews or are hospitalized
- Enable DOH focal staff to monitor patient progress and manage side effects
- Enable real-time patient updates
- Evaluate patient outcomes in cohorts
- Use *ConnecTB* as platform for patient education, using program developed edu-videos

The web-based module will require the following changes:

1. Hospital/facility accounts which have the same privileges as supervisors can be created and linked to patients
2. Patient status will change to
 - **Active:** patient will be visible on the DOT provider's device
 - **Cured/Died/Failed/Lost to follow up/Transferred out:** patient will not appear on devices
 - **Hospital review:** this option will activate a new field called 'receiving facility' where the patient will appear on the facility's device for one day only
 - **Transferred to hospital:** this option will also activate a new field called receiving facility and the patient will appear on the facility's device every day until a new outcome is reported
3. Sputum collection and results module: All patients should have a calendar that alerts adherence supporter on sputum collection dates. Module should also allow for in-putting of sputum results.
4. Patient education: *ConnecTB* will also house edu videos housed on the servers with the field devices being used as information delivery modalities. 3-5 minute videos to cover topics on adherence, side effect management, clinical management, infection prevention control, commonly asked questions, and contact management will be shown to the patient and contacts as part of the support package.

The device application will also need to be modified to incorporate biometric scanning. A new screen will be introduced before seeking a GPS signal to register/confirm a fingerprint. On the first visit this screen will ask for a fingerprint to be registered and from the second visit this screen will prompt the user to confirm the fingerprint registered.

Phase 2:

At a later stage modifications will permit the system to:

- Enable self-monitored sessions on own smartphone (for patients who have their own smart phones)

- Enable system to be integrated with electronic MDRTB system (EDRWeb)

The current smartphone application is designed for DOT providers to administer medication and ask questions, for patients to monitor themselves a new application will have to be designed. The application will have to be designed to work on three main operating systems (Android, IOS and Windows) because patients will be using their own smartphones and the project has no control over which device they possess. A service provider will be contracted to provide data bundles for each patient on any cellphone network. On a monthly basis the patients will receive 250MB of data (this will be monitored over time to see if it is sufficient). The app will be loaded onto the patient's smartphone device and on a daily basis an alarm will go off to remind the patient that it is time to take their medication. The patient will then run the application and follow the on-screen prompts.

Linking to the EDR.Web is crucial for monitoring patient progress. The project is currently negotiating with the EDR.Web developers to see how best the two systems can be integrated. For this integration the only changes required are web-based. The link between the two systems will enable the ConnectTB platform to import data from EDR.Web and run reports using the EDR.Web algorithms.

Additional Requirements: *Complete documentation of the application, and a complete guideline of the source code must be provided to URC*

Reporting indicators

of clients visited/day/week/month/quarter/year

of clients:

- Cured
- Completed treatment
- T/O
- T/F to hospital
- Received by hospital
- LTFU
- Died

Clients reporting side effects: # reporting **Major** (we should provide list |# reporting **Minor**

Cohort analysis of patients (per reporting quarter) with Outcomes i.e. T/O, cured, completed, died etc.

of clients collecting sputum/ # of clients with sputum results

of clients converted

Proposal:

- a) A Title Page with name of the organization, contact person's name and title, full address including telephone, fax and email;

- b) Application and website specifications;
- c) A section on organizational experience and capacity.
- d) A summary of plans for rapid design and deployment
- e) Please be sure to review and confirm that all **amounts and formulas are correct**. The cost proposal shall include the following:
 - i. A summary budget by line item
 - ii. A detailed budget giving adequate breakdowns of all costs showing the formulas used for cost calculations for each app;
 - iii. All VATs and Taxes associated must be identified separately;
 - iv. Provide budget narratives explaining applicability and costs determination;
 - v. Monthly maintenance costs for upkeep of ConnectTB.

6 VALIDITY

The quote should remain valid for not less than 60 calendar days after the deadline specified above. The quote must be signed by an official authorized to bind the OFFEROR to its provisions.

To Apply:

Please send your concept document and quote to TBSAP@urc-chs.com by August 25th, 2017.