

# TB REACH Wave 6: KNCV Digital Adherence (99DOTS) Project in the Philippines

## 99DOTS as a Platform for Quality TB Treatment by Private Providers in the Philippines

### Background

The private health sector manages tuberculosis (TB) using diverse approaches that remain unstandardized. These range from facility-based directly observed treatment (DOT) to self-administration of medication with no form of support. Completing a six-month treatment is not easy for most patients. But strategies to consistently follow up patients, monitor adherence, and trace defaulters are often inadequate. Missing a few daily doses or interrupting treatment could lead to drug resistance or a return of the disease.

### What problem did your intervention address?

KNCV Tuberculosis Foundation (KNCV) supported adult drug-sensitive (DS) TB patients in three highly urbanized cities in Metro Manila to adhere to, and complete their treatment through a digital adherence technology (DAT) called 99DOTS. As part of this intervention, KNCV assessed the practicalities and scalability of implementing 99DOTS, and its impact on improving treatment outcome among the patients.

### Why was it innovative; what kind of vulnerable population did you work with and what made your project unique?

The 99DOTS demonstration project focused mainly on the urban poor, the elderly, and people living with HIV (PLHIV), all of whom have a high risk of TB. Their circumstances provide scant opportunity to visit a health facility for DOT. Without support, the urban poor, busy earning a living, cannot miss work and tend to forget to take their daily dose. Handicapped by age-related issues, the elderly often find it challenging to go to a health center every day. The double stigma from HIV and TB deters PLHIV from accessing TB care.

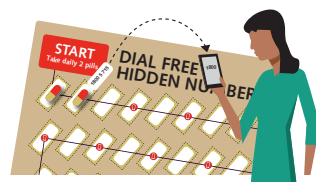
### 99DOTS Platform

In all, 380 (277 male and 103 female) adult DS-TB patients were enrolled in the 99DOTS platform between December 2018 and March 2020 in three NTP-engaged private facilities. Healthcare workers (HCWs) provide patients their anti-TB drugs in customized

paperboard sleeves. Once a patient removes the pill from the blister pack, a code is revealed, which the patient sends to a toll-free number through text/SMS. On receiving this code, the 99DOTS system sends the patient an automated message that confirms the daily dose was successfully logged in. HCWs are able to check whether the patients took their daily medication by logging on to the 99DOTS platform.



### 99DOTS: Innovative medication packaging paired with SMS technology.



### Patient support

Patients who fail to log in their daily dose in the 99DOTS platform receive on the same day an automated message reminding them to take their medication. Those who miss recording their medication intake for a day receive a phone call from the HCW. Patients unable to log in for two days are paid a home visit by a *barangay* (village) health worker.

### Results of the intervention

Treatment success rate (TSR) in 99DOTS-implementing clinics was compared with that in control facilities that provided the same NTP standard of care minus the use of 99DOTS. TSR registered 84% in the December 2018–September 2019 cohort of patients on 99DOTS platform compared with 72% among patients in control facilities. Adherence rate was recorded at 94.59%.

Operations research built into the project design tested the accuracy of 99DOTS in monitoring adherence. Isoscreen urinalysis test

confirmed that TB patients reported by 99DOTS as adherent did in fact take their doses.

Surveyed patients and healthcare workers found 99DOTS acceptable. In a sample of 106 patients, 99% agreed that 99DOTS helps them complete their treatment, 98% said the 99DOTS packaging made it easy for them to remember what to do, and 82% claimed that the reminders cued them to take their medicine. All 12 HCWs reported that 99DOTS eased identifying and contacting patients who missed their doses; and helped them provide better support, counseling, and direct patient care. All but one HCW said their patients visit the facility less than those not using 99DOTS.

The use of feature phones and SMS technology as the minimum requirements in implementing DAT, and reduced out-of-pocket expenses through less travel-related expenses point to the feasibility of implementing 99DOTS in the country.

### Conclusion

Using DAT helps improve treatment success rate. The accuracy of 99DOTS in monitoring treatment adherence is confirmed using Isoscreen. Both patients and health

providers accept the use of DAT. 99DOTS help patients reduce facility visits and improve HCWs' provision of patient-centered care. The use of SMS technology and reduced cost of accessing TB care indicate the feasibility of implementing 99DOTS.

### Patient and Healthcare Worker Stories

**Juan (27), not his real name,** is a PLHIV who enrolled in 99DOTS and completed his treatment successfully. He registered 100% treatment adherence.

**Juan:** "Running a small eatery starts with going to the market at 4:00 AM to buy fresh produce. With my day as busy as it is, I found the daily reminders very helpful. These cued me to take my medication amid the frenzy of making a living. And every time I got a response that the code I texted was recorded, I felt one step nearer to winning my battle with TB. And win I did!"

**Chyrrna Riccy M. Belmonte (28)** is a registered nurse. She serves as TB point person for Canossa Health and Social Center. Located in an urban poor area, Canossa is one of the three private facilities that implemented 99DOTS.

**Riccy:** "Attending to 50–75 patients every day left me little time to see who among my TB patients needed to be followed up. Today with my patients logging in their daily dose to the 99DOTS platform, I'm able to monitor their adherence and prioritize those who required extra support. 99DOTS has made my work easier. With some free time on my hands, I could now help women run income-generating activities such as preparing sweetened coconut meat called *bukayo*. Now I could talk with and see how malnourished children with TB are faring when they come in for their daily feeding program. Life is good!"



Chyrrna Riccy M. Belmonte on the right.



Juan on the right.

**KNCV**  
TUBERCULOSIS FOUNDATION

**Stop TB Partnership**  
TB REACH