Nurses in clinics across El Alto, Bolivia, echoed the same challenges: “Some months, patients wouldn’t be able to complete their treatments because we were so short on tuberculosis [TB] medications. Other times, we would have so much unused medication that we had to throw out entire boxes of drugs that were about to expire.” For a health system that can’t afford to throw away valuable treatment courses, it was clear that valuable TB medications must be managed in a better way.

For TB patients, properly completing a full course of therapy is critical not only to protect their own health, but also reduce the risk of drug resistance in their communities. By bundling one full treatment course together for a single patient and placing the medicines in a dedicated box for that patient, the health networks were able to simultaneously ensure that each newly enrolled patient could complete a full treatment course while reducing the shortages and overstocks of drugs. The medication bundles are placed in an airtight plastic box that ensures the efficacy of the drugs by protecting them from damaging humidity and sunlight. The boxes are called DOTS boxes, after the WHO-endorsed TB treatment method of Directly Observed Treatment, Short-course (DOTS) used in all Ministry of Health and Sports facilities in Bolivia.

El Alto has a population of just under 1 million, 66.9% of whom live below the poverty line. There is high seasonal migration, creating an additional challenge for health facilities in identifying and retaining TB patients in care. There are an estimated 900 cases of TB per year, but less than half of these are captured. For those that are able to enter treatment, completing a full course of medication in two phases over 6 months helps reduce further transmission in the community.

The DOTS boxes initiative is led by the Health Care Improvement Project (HCI)-implemented TB improvement collaborative in El Alto, which includes 43 health centers, 3 hospitals, and 18 laboratories within 5 health networks. The goals of the collaborative are to improve the quality and coverage of TB control through increased detection of new patients, better retention of those patients while achieving higher cure rates and lower abandonment rates, and improved quality of sputum samples. Prior to the HCI collaborative, only 44% of clinics interviewed in El Alto complied with the nationally recommended process for drug distribution and evaluation. 68% of patients received on average an extra 24 doses of medication due to improper record-keeping or lack of sputum smears taken earlier in treatment as controls.
The collaborative uses a quality improvement (QI) methodology where teams implement a set of changes in their facility, such as introducing the use of DOTS boxes, then convene in workshops, called learning sessions, with other participating clinics and QI experts to share and learn from each others’ experiences. Specifically, the El Alto collaborative addressed the logistical challenges of medication management by encouraging implementation of the following changes in each facility:

- Create a dedicated DOTS room at the clinic, where patients can take pills in private
- Ensure the DOTS room provides dry, cool, and dark storage to protect the efficacy of the medications
- Prepare and assign a DOTS box for each new TB patient stored in the DOTS room
- Create a filing system to manage patient treatment cards
- Conduct quarterly medication requests one month in advance to have supplies distributed to facilities on time

HCI developed the DOTS boxes strategy based on its previous TB work with 16 rural municipalities in Bolivia, and was implemented the El Alto collaborative. USAID was able to donate reusable plastic boxes and sticker labels to help identify each patient’s treatment course. Clinics receive a full pre-packaged treatment course in a DOTS box for each new patient from the health network when that patient initiates treatment. “With their own box, my patients feel more ownership over their treatment, which helps encourage them to complete treatment,” reports Maria de Quispe Cruz, an auxiliary nurse at Centro de Salud Los Horizontes in El Alto.

HCI also worked with the five health networks in El Alto to improve management and drug availability to identify where under- and overstocks occurred within each network. Over 400 patient files were reviewed from all participating facilities to calculate where doses were missing. Additionally, the number of patients, cure rates, and abandonment rates in each health network were determined to better predict necessary stocks for the various clinics. Verifying current supply levels at each facility and network also contributed to improving the distribution of medications across each network. The DOT boxes make it easier for us to manage our supplies; we don’t have to throw out expiring medications at the end of the month or wonder how we will manage new patients the following month.”

Clinics are encouraged to set aside a room to for the TB program for medication storage and program management. This room also serves as a medical home for patients during their six months of treatment; they can take pills and consult with the TB nurse in private. Another nurse at the Centro de Salud Mercedes remarked, “We chose a large room for the TB program so that families can come in together. This helps patients feel supported at the clinic and at home.”

By August 2010, the El Alto clinics reached a 0% abandonment rate, aided by the DOTS boxes. The cure rate was 86%, higher than the national target of 85%. The results of this collaborative, now expanded to 43 facilities in Cochabamba, show that TB can be controlled in Bolivia through better logistical management of medications, improving outcomes for patients and the facilities that serve them. These positive results from the HCI Project have been facilitated by the Ministry of Health and Sports by improving the quality of TB services offered in clinics and hospitals across El Alto. The initiative is supported by the American people through the United States Agency for International Development (USAID).

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