

# Medical Refrigerators Improve Storage Condition at the Peripheral Level and Ensure Quality of Tuberculosis Medicines: Lessons Learned and Opportunities

## CONTEXT

According to the World Health Organization (WHO), poor-quality medicines and inadequate storage conditions<sup>i</sup> are among the contributing factors that result in poor tuberculosis (TB) treatment outcomes and multidrug-resistant tuberculosis. The recommended temperature to retain the quality of TB medicines is below 25°C<sup>ii</sup>, but at the peripheral level in Bangladesh, most TB medicines are stored at the Directly Observed Treatment Short-Course (DOTS) centers of the upazila (subdistrict) health complexes (UHCs) or in the implementing nongovernmental partners' facilities, where the storage facilities consist of wood or steel lockable cabinets. These cabinets cannot ensure the ideal storage temperature and therefore put expensive and sensitive TB medicines at risk of degradation. In 2012, the US Agency for International Development-funded Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program, implemented by Management Sciences for Health, conducted a rapid assessment of TB pharmaceutical management in Bangladesh. One recommendation in the assessment report was that options should be considered for lowering the storage temperature at facilities at the upazila level. Both the fifth and sixth Joint Monitoring Missions of the National Tuberculosis Control Program (NTP), conducted in 2010 and 2014, respectively, put forth recommendations to improve storage standards at the upazila level; however, due to a

lack of funding, the NTP could not implement these recommendations.

## APPROACH

In 2014, SIAPS conducted a cost-benefit analysis and found that at the upazila level, renovating store rooms or air conditioning at all drug stores might impose a significant cost burden. However, installing a medicine refrigerator in each DOTS center would be a cost-effective solution to having a temperature-controlled, secured storage area that would require minimum space. To improve storage conditions and maintain the temperature within acceptable limits for TB medicine, SIAPS and NTP began commissioning medicine refrigerators for DOTS centers at UHCs on a limited basis in 2015. First, SIAPS discussed the plan with NTP, conducted a short survey to assess feasibility, and identified UHCs in which to implement the intervention. One refrigerator was given to an upazila that averaged between 70 and 100 TB patients per quarter, and two refrigerators were given to upazilas with more 100 patients per quarter. In total, 102 medicine refrigerators for 94 DOTS centers in 14 districts were commissioned by August 2015. A temperature-monitoring chart was provided to each site to ensure that the recommended temperature is maintained. NTP also instructed the facilities to use the refrigerators for TB medicines only.



Before: Medicine stored in a steel cabinet



After: Medicine stored in refrigerators



more than 40°C. Therefore, the risk of gradual degradation of medicine efficacy is minimized.

- Storekeeper can organize different medicines according to expiry dates and easily apply first expiry first out principles during distribution.
- The TB medicines are secured.

At the intervention sites, DOTS providers are now taking a two-week supply at a time, rather than requesting a month’s supply, as was their previous practice, because they feel that medicines are maintained in good condition in the refrigerators.

## CONCLUSION

Poor storage facilities will invariably lead to medicine damage and loss of medicine quality. The introduction of these medicine refrigerators has improved the storage condition for TB drugs, and the intervention has received interest from development partners, particularly the Global Fund, as an innovative and effective storage solution at the peripheral level. Therefore, the viability of a country-wide roll out of this intervention through NTP should be explored.

## RESULTS AND IMPLICATIONS

After the refrigerators were commissioned, SIAPS and NTP conducted joint monitoring visits to assess the functionality of the equipment and identify the immediate results of the intervention.

- UHC DOTS centers are now able to store TB medicines within the recommended temperature range, even during the summer (March to September), when the room temperature ranges from 25°C to



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<sup>i</sup> Companion handbook to the WHO guidelines for the programmatic management of drug-resistant tuberculosis

<sup>ii</sup> Technical Specifications / Product List by Global Drug Facility