



"CoolComply"

Addresses at-Home Drug Refrigeration Needs

Effective treatment of MDR-TB takes at least 18 to 24 months. Keeping the required second line drugs (SLD) properly refrigerated is a great challenge especially in rural home settings in the developing world where adequate power supplies and refrigeration are frequently lacking.



The CHC team readies the SLD in the CoolComply box for DOT support to distribute to the patient at home.

"In the rural community and home settings in both Cambodia and Ethiopia that GHC serves most households have no power supply or refrigeration," says Dr. Sok Thim, CHC's Executive Director in Cambodia. "Keeping the SLD cool is a major challenge for the patient and family. Fortunately our field teams have

devised ingenious ways to overcome the problem including providing ice chests and support for buying ice."

Addressing this need throughout the developing world is the motivation behind a new, simple, cost-effective at-home refrigeration solution, "CoolComply" that keeps a two-week supply of SLD at a proper temperature in the patient's home. It was developed in collaboration with the Massachusetts General Hospital Center for Global Health, the Massachusetts Institute of Technology Little Devices that Could Laboratory, and the Global Health Committee.

The Need for CoolComply

The community/home-based model of care for Multi-Drug Resistant Tuberculosis (MDR-TB) greatly contributes to reducing the spread of infection in rural developing nations with high levels of poverty. But this model of care comes with numerous challenges including socio-economic factors, adherence to daily drug intake, and the challenge to maintain adequately cool temperatures for one MDR-TB medication in particular, PASER — crucial to its effectiveness.

That's the driving force behind the development of "Cool Comply" a modular home cooling solution for MDR-TB medications developed in collaboration with the Massachusetts General Hospital Center for Global Health, the Massachusetts Institute of Technology Little Devices that Could Laboratory, and the Global Health Committee.

"The development of CoolComply is the result of a strong collaborative effort that we are certain will pay off in more effective home-based treatment," says Kristian Olson, R, M.D., MPH, DTM&H of Massachusetts General Hospital and Harvard University. "Until now a simple device such as this that can be distributed to patient's homes simply did not exist.

"This very basic but vital piece of equipment could potentially expand provider capacity to serve more patients in homes where adequate refrigeration equipment is lacking," he continues.

CoolComply keeps the SLD cool and addresses the adherence of patients during the treatment period. The device provides a record every time the CoolComply box is opened to match with doses recommended by the patient's physician, allowing the health worker to monitor the doses through how many time the box has been opened during the given time period. This simple technology will help ease the responsibility of all stakeholders involved in patient care.

CoolComply fills the need for a cost-effective and easy-to-use device that can be readily distributed to patient homes. Refrigeration is critical to maintaining drug potency and minimizing side effects. Although cool boxes for vaccines have been previously developed they are primarily used for transport and not intended for widespread distribution and long-term use.

Kassim Abato, GHC Outpatient Coordinator, agrees on the impact CoolComply can have on patient care.

"There are so many challenges out in the field for us," Kassim says. "CoolComply, being so easy to understand and use, overcomes a major obstacle for us in the many homes that lack adequate refrigeration."

The project has received support from the Vodafone America Wireless Innovation Award, Harvard Catalyst/Harvard Clinical, and the Translational Science Center NIH Award.