



eCOMPLIANCE

Ensuring high-quality delivery of health care among tuberculosis patients in resource-constrained settings

SERVICE DELIVERY

Implementation date: Cambodia (December 2013), Dominican Republic (November 2013), India (December 2010), Kenya (August 2014) & Uganda (July 2012)

Tuberculosis (TB) has been declared a health emergency by the World Health Organization (WHO). Over nine million people are newly infected with TB and 1.4 million die annually¹. Incomplete TB treatment has led to an alarming rise in multi-drug resistant TB (MDR-TB), a man-made epidemic. It is estimated that 3.7 percent of all newly infected individuals in the world have MDR-TB². In 2015, it is estimated that USD 2 billion will be required for the diagnosis and treatment of MDR-TB. MDR-TB, if not fully treated, leads to the dreaded XDR-TB (Extremely Drug-Resistant TB), causing greater suffering and economic loss.

Operation ASHA, an international non-governmental organization working to combat TB, is using an innovative solution called eCompliance, a combination of Operation ASHA's comprehensive model and a high leverage, low-cost biometric technology. The application assists with monitoring every dose taken by TB patients. The intervention aims to minimize development of multi-drug resistance, because MDR-TB treatment is often left incomplete due to long duration and debilitating side effects. The technology supports the directly observed therapy (DOTS) model, which is an essential part of TB treatment programs.

About eCompliance

eCompliance, is a portable biometric identification system capable of identifying patients by their unique fingerprint and compiling patient adherence data. The system is operated by Community Health Workers (CHW). During patient enrollment, their fingerprints are saved in the system and subsequently, every time the patient consumes a dose observed by the CHW, the patient provides their fingerprint. This provides indisputable proof that the CHW observed the patient taking the medication.

When a patient misses a scheduled dose, the system sends the CHW a text message. The CHW has to do the required follow-up in the next 48 hours in the patient's home, and again take a fingerprint before giving the medicine and reemphasizing the importance of adherence. This prevents any dose from being missed as well as prevents tampering with the system to obtain extra incentives.

The eCompliance system is highly interactive and easy to use even for semi-illiterate health workers. eCompliance is linked to an Electronic Medical System (EMR), which allows automatic generation of all reports, improves transparency and reliability, increases productivity and eliminates human error.

eCompliance technology has been customized to suit the local requirements of the dosage regimen for the country. For example – In rural Uganda, Columbia University's Earth Institute adapted the Operation ASHA strategy for a rural African setting. In that context, patients no longer go to the clinic while on TB treatment, but rather a community health worker goes to the patient's home with an eCompliance system to observe the patient taking the drugs and record the drug intake.

Evaluation and Results

eCompliance has achieved tremendous success, having raised the “Treatment Success Rate” to 86.9 percent, (from 32 percent), as noted by a WHO consultant in 2011, in Chhattisgarh state of India. The application has been used to enroll nearly 9,800 TB patients and clocked over half a million transactions on over 170 machines in India & Cambodia. The application has successfully reduced treatment default rates from as high as 36 percent to as low as 1.5 percent, thus minimizing the risk of MDR-TB. In 2011 in Ruhiira, Uganda, there were 52 TB cases diagnosed and placed on treatment and eight patients died. The eCompliance system was implemented in July 2012; since then, 31 patients have been enrolled in the system, and have been lost to follow-up or died³. The eCompliance initiative comes at a cost of \$3 per patient, which is more than offset by increased productivity of CHWs and office staff so it does not add to the per patient cost.



Lessons Learned

- The implementation of a good quality DOTS program is the first priority for TB control in the country
- As the price of technology falls, technological and biometric approaches towards TB control are viable even in poor areas; The current DOTS program allows opportunities to apply novel technological solutions, which have shown significant results in preventing MDR-TB
- An automatic follow-up procedure reduces the response time to defaulting patients and focuses counseling on first-time and repeat missed dose patients

Conclusion

eCompliance is a solution that enhances and improves upon the DOTS model. The system has been able to verify that patients were present for treatment by enhancing observation with biometric identification. It provides a method to quickly respond to missed doses by patients with up-to-date attendance information. eCompliance is a low cost, high impact, high visibility, scalable and replicable technology.

Geographic Coverage: Cambodia, Dominican Republic, India, Kenya, Uganda

Implementation Partners: Operation ASHA, RNTCP (India), CENAT (Cambodia), Uganda, Kenya (Columbia University), Dominican Republic (Clínica de Familia)

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