Abstract

In India today, two deaths occur every three minutes due to tuberculosis (TB) (www.timesofindia.com). It is spread through the air by a person suffering from TB. A single patient can infect 10 or more people in a year. Controlling TB in India is a tremendous challenge. The TB burden in India is still staggering. Every year, 1.8 million persons develop the disease, of which about 800,000 are infectious; and, until recently, 370,000 died of it annually—1,000 every day. The disease is a major barrier to social and economic development (www.tbcindia.
An estimated 100 million workdays are lost due to illness. Society and the country also incur a huge cost due to TB—nearly US$ 3 billion in indirect costs and US$ 300 million in direct costs (www. tbcindia. nic. in). It is seen that with appropriate antibiotic treatment, TB could be controlled. In order to provide these antibiotics to the patients, DOTS (Directly Observed Treatment, Short-course) is the name given to the tuberculosis control strategy recommended by the WHO, to be the most effective and efficient method to cure and prevent TB. The personals involve with the DOTS program are made responsible of providing the medicines to the patients every two/three days and make sure that they consume it as well. But the problem is that the DOTS provider often does not do that. (www. satyamevjayate. in, 2014) In the paper, we will be discussing as to how we can make sure if the medicines are been regularly provided to all the patients and monitoring their health parameters digitally. To achieve this, we shall be using a device that would contain a thumb scanner in it and a band (like GoQii band) that has several sensors embedded in it to monitor the patient’s health metabolic activities associated with TB viz. pulse rate, Blood Pressure, Breath Pattern etc. Every time a DOTS provider provides a medicine to an enrolled patient; he must tie the band on the wrist of the patient and ask him to put his thumb on the thumb scanner. With the successful detection of the thumb print, the band on the wrist is initialized and the sensors sense the health parameters and save it in the database corresponding to the patient’s UID or his thumb print. This UID and the thumb print could be easily implemented, assuming that all the TB patients are AADHAR card holders and if not, a particular enrolment can be done in each small area exclusively for TB patients. With this, the software at the back end monitors if all the patients are provided the medicines in the prescribed duration or not and shall be capable of generating an alert if a particular DOTS Provider is not doing its job ethically. Since the basic health parameters are also diagnosed during every dose, the software shall also be able to interpret the patient’s health status and the same can be done by any medical analysts in any place at any part of time. Thus the basic aim of providing the medicines to the patients regularly can be regularly monitored and any authority can access the day anywhere. This automation will not only help the patients excessively but will also help the officers monitoring the DOTS provider. It would reduce the cases of the providers not providing the medicines regularly or selling them out, thus reducing corruption. In a village, only that no. of instrument is required as many DOTS provider have been appointed, thus no big costs are involved. Moreover, UN has put TB as one of the few diseases on their priority for curing and prevention, thus this model helps it achieve even more efficiently

References

- http://www. who. int/mediacentre/factsheets/fs104/en/
- Determination of vitality from a non-invasive biomedical measurement for use in fingerprint scanners R Derakhshani, SAC Schuckers, LA Hornak… - Pattern recognition, 2003 – Elsevier
- Performance evaluation of fingerprint verification systems R Cappelli, D Maio, D
Maltoni… - Pattern Analysis and …, 2006 - ieeexplore.ieee.org
- Mukherjee, A "Outcomes of different subgroups of smear-positive retreatment patients under RNTCP in rural West Bengal, India", Rural and Remote Health www.ncbi.nlm.nih.gov/pubmed/19260766
- Satyanarayana, S "From where is Tuberculosis patients accessing treatment in India? Results from a cross-sectional community based survey of 30 districts", PLoS ONE www.plosone.org/article/info:doi/10.1371/journal.pone.0024160
- Udwadia, Z "This should not exist", Hindustan Times, November 27, 2012 www.hindustantimes.com/
- Anand, Geeta "Shortages of Drugs Threaten TB Fight", The Wall Street Journal, 6 June 2013 online.wsj.com/article/
- http://www.tbcindia.nic.in/rntcp.html

Index Terms

Computer Science
Information Science

Keywords

Finger Print Scanner Dots Vaccine Consumption Regulation Surveillance Sensors.