

# Electronic reminders keep TB patients on track with medication in China

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Giving electronic reminders to tuberculosis (TB) patients in China can reduce the amount of medication doses they miss by half, according to new research published in *PLOS Medicine*.

Researchers from the London School of Hygiene & Tropical Medicine, UK, and the National Center for Tuberculosis Control and Prevention, China, conducted a trial with 4,173 patients from the provinces of Heilongjiang, Jiangsu, Hunan, and Chongqing. Patients either received text message reminders, an electronic medication monitor, both, or no reminders for their six month treatment period.

Patients receiving no reminders missed taking 29.9% of their medication doses and patients receiving text messages missed 27.3% of their doses. However, patients with an electronic medication monitor box - which beeped if not opened at the agreed time - only missed 17% of their medication doses. Patients who received both text messages and an electronic medication monitor missed just 13.9% of medication doses.

According to the World Health Organization, China has the world's second largest number of TB cases, accounting for 11% of the estimated 9 million global cases.

TB treatment usually lasts for six months and is effective if taken fully, but patients missing drug treatment doses is a major problem. This increases the risk of having a relapse of TB and also TB becoming drug resistant, making the disease more difficult to treat and potentially fatal.

Senior author Dr Katherine Fielding of the London School of Hygiene & Tropical Medicine, said: "Global plans to reduce TB advise that treatment be taken under the direct observation of a healthcare worker to reduce missed doses, something which has been difficult to carry out in many parts of China, particularly in rural areas, as in other parts of world. Innovative approaches are needed to tackle this problem.

"Our study is the first large-scale randomised trial to carefully evaluate whether electronic reminders can help patients to take their [tuberculosis](#) treatment on their own. Our findings show real promise. A low-cost, reliable electronic medication monitor could improve TB treatment for thousands of people across China."

Project investigator Dr Shiwen Jiang of the National Center for Tuberculosis Control and Prevention, added: "Directly observed therapy is difficult to implement in China due to limited human resources, poor acceptance and other factors. Our study aimed to assess whether the use of the medication monitor and/or text messaging can improve adherence to TB drugs. Our results are encouraging. We are currently planning a further evaluation of a management model including the use the medication monitor on long-term TB outcomes including TB recurrence. China plans to scale up the use of medication monitors in some provinces in the next five years."

The authors note their findings may have been limited due to battery problems with the medication monitor, leading to loss of data for some [patients](#).

**More information:** Xiaoqiu Liu, James J Lewis, Hui Zhang, Wei Lu, Shun Zhang, Guilan Zheng, Liqiong Bai, Jun Li, Xue Li, Hongguang Chen, Mingming Liu, Rong Chen, Junying Chi, Jian Lu, Shitong Huan, Shiming Cheng, Lixia Wang, Shiwen Jiang, Daniel P Chin, Katherine L Fielding. Effectiveness of electronic reminders to improve medication

adherence in tuberculosis patients: a cluster-randomised trial. *PLOS Medicine*. DOI: [10.1371/journal.pmed.1001876](https://doi.org/10.1371/journal.pmed.1001876)

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