

**PRESS RELEASE – MARCH 12, 2025****Researchers Unveil Ground-breaking Insights on Digital Technologies in Tuberculosis Care**

On March 11, 2025, *The Lancet* has published new ground-breaking research led by KNCV Tuberculosis Foundation and authored by Jerene D et al, presenting the main findings of four independent trials examining the effectiveness of digital adherence technologies (DATs) in improving treatment outcomes for adults with drug-sensitive tuberculosis. Conducted as cluster-randomized trials, the studies involved participants in the Philippines, South Africa, Tanzania, and Ukraine.

The trials compared two DAT interventions—smart pillboxes and medication labels with differentiated care pathways—against standard care. Each trial featured two arms: DAT versus standard of care (SOC), spanning four countries and three continents. In the pillbox arm, participants stored medications in a smart device that provided audiovisual reminders and sent signals to an online platform when opened, indicating a dose taken. In the label arm, participants texted codes from medication labels via a toll-free service, which were logged as proxies for adherence. Healthcare providers monitored adherence in real-time via the platform and responded with actions ranging from reminders to home visits. In contrast, the SOC arm followed national guidelines, typically involving direct observation of treatment at home or in clinics.

The primary outcome was a composite measure of poor treatment results, including treatment failure, loss to follow-up, switching to multidrug-resistant regimens, or death, assessed per national TB program standards. Of 25,606 enrolled participants across 220 clusters, 23,483 (92%) from 219 clusters were analysed. After excluding those with undefined outcomes, 86% (SOC) and 87% (DAT) were evaluated. The adjusted odds ratios (OR) for poor outcomes showed no significant difference between DAT and SOC: Philippines 1.13 (95% CI, 0.72–1.78); Tanzania 1.49 (0.99–2.23); South Africa 1.19 (0.88–1.60); Ukraine 1.15 (0.83–1.59). Loss to follow-up, a secondary outcome, was slightly lower in DAT arms in the Philippines (4% vs. 6%; OR 0.94, 95% CI 0.45–2.00) and Tanzania (5% vs. 6%; OR 0.88, 95% CI 0.43–1.77), though confidence intervals were wide.

While DATs treatment outcomes did not differ by treatment outcome, the authors highlight broader benefits, including cost savings, convenience, and enhanced patient-provider interaction, as shown in related studies. Lead author Dr Degu Jerene of the KNCV Tuberculosis Foundation in The Hague, Netherlands, notes, “To our knowledge, this is the largest set of studies examining DAT effectiveness in improving TB treatment outcomes. Our findings apply to diverse settings. As funding constraints continue to challenge global TB efforts, optimizing the use of cost-effective, patient-centered treatment support options like DATs is crucial.”

The trials’ pragmatic, cluster-randomized design strengthens their real-world relevance. “Conducting these pragmatic studies using a robust cluster randomised trial design adds important evidence on the effectiveness of a real-time digital adherence technologies for TB treatment care”, says Professor Katherine Fielding of the London School of Tropical Medicine and Hygiene.

Kristian van Kalmthout, director of the ASCENT project at KNCV, noted: “Despite similar outcomes between study arms, DATs were appreciated by all involved. *We express deep gratitude to study participants, national TB programs, and partners.*”

The study was funded by Unitaid.

Additional information:

DOI link to the manuscript [https://doi.org/10.1016/S0140-6736\(24\)02847-2](https://doi.org/10.1016/S0140-6736(24)02847-2)

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