

#### Journal Article

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#### Journal tags:

[tuberculosis](#) <sup>[1]</sup>, [Rwanda](#) <sup>[2]</sup>, [laboratory equipment](#) <sup>[3]</sup>, [fluorescence microscopy](#) <sup>[4]</sup>, [iLED microscopy](#) <sup>[5]</sup>

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 [Performance of LED Fluorescence Microscopy for Detection of TB in Rwanda](#) <sup>[6]</sup>

#### Abstract

**Introduction:** Ziehl-Neelsen (ZN) bright-field microscopy is time-consuming, with poor sensitivity, even under optimal conditions. Introduction of Primo Star iLED fluorescent microscopy (FM) may improve TB case finding at referral hospitals in Rwanda. The study aimed to determine the acceptability and effectiveness of iLED in a low resource setting.

**Methods:** Between June 2009 and May 2010, the Rwandan TB Program and National Reference Laboratory carried out demonstration studies with iLED at a referral hospital in the capital, Kigali, and a rural district hospital in Nyamata, taking conventional FM as gold standard.

**Results:** Agreement between the iLED and rechecking at the Reference Laboratory were deemed “almost perfect” ( $\kappa = 0.81-1.00$ ) across three of four site-phase combinations. The exception was Nyamata District Hospital during the validation phase, which was deemed “substantial” agreement ( $\kappa = 0.61-0.80$ ). However, the 100% concordance at both demonstration sites during the continuation phase shows technicians' rapid command of the new iLED microscope in a relatively short time. The lower overall positivity rate obtained in the rural clinic is not related to the performance of the microscope (or technicians), but is attributable to a significant increase in total number of patients and samples screened through active case finding.

**Conclusion:** Laboratory technicians demonstrated high acceptance of iLED. Additionally, fluorescent microscopy reduces the time necessary for examination by more than half. The high level of agreement between iLED and FM during implementation in both sites provides

initial evidence for iLED to replace current methods.

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