
# 1635 - Multi-centric Field Evaluation Of A Digital Malaria Microscopy Device Based On Machine-Learning: EasyScan GO - A Preliminary Analysis

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## Disclosures

**D. Das:** None.


## Abstract

Microscopic examination of Giemsa-stained blood films remains the reference standard for laboratory confirmation of malaria, but is undermined by difficulties in ensuring high quality manual reading and inter-reader reliability. Automated parasite detection and quantification may address this issue. We assessed the performance of the EasyScan Go, a microscopy device employing machine learning-based image analysis to detect malaria parasites. A prospective study was conducted during 2018 and 2019 at 10 sites in 10 countries from Africa, Asia and South America. Giemsa-stained blood films were prepared and read by expert microscopists and the EasyScan Go device. A selection of slides were rechecked for quality control. Of 2110 patients enrolled, 919 tested positive by expert microscopy of which 62% (n=574) were infected with ***P.falciparum***, 36% (n=327) with ***P.vivax*** and 2% (n=18) with mixed infections. Diagnostic sensitivity (Se) of the EasyScan Go device was 91.1% (95%CI:88.9-93.0%) and specificity (Sp) was 73.6% (95%CI:70.8-76.3%). Se varied according to parasite density - 59% at <200 p/µL, rising to ≥90% at densities >200-200000 p/µL. Parasite species were identified accurately in 91% ***P. falciparum***

samples (362/399; kappa = 0.73) and in 92% ***P. vivax*** samples (281/307; kappa = 0.71). Intraclass correlation coefficient for parasite density estimates obtained from comparison of manual microscopy with the EasyScan GO was 0.33 (95%CI:0.26-0.39) indicating moderate agreement. When results from sites assessed to have low quality slides during quality control with respect to smear and/or stain quality were excluded, Se decreased to 88.6% (95%CI:85.2-91.5%) but Sp improved to 84.7% (95%CI:81.8-87.3%). Further software improvement is required to improve parasite density estimations and Se at low parasite densities. High quality of smears and staining is paramount to allow machine learning-based image analysis to perform adequately.