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Experience with LAMP (Loop mediated isothermal AMPLification) for the detection of malaria at a university hospital

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Background: Half of the world population is at risk of malaria infection. WHO objective is to decrease its incidence worldwide, the number of deaths decreased significantly between 2000-2015 (48%). Conventional methods of diagnosis require expertise in microscopy, molecular biology is not subjective. The aim of this study is to evaluate the illumigene® Malaria-Meridian, a new test in the Meridian LAMP menu, as a routine malaria diagnostic tool, within the WHO recommended 2 hours of blood collection.

Material/methods: 94 test requests for detection of malaria by microscopy (thin and thick smears) and antigen immunoassay (Palutop + 4 optima®-All Diag) were obtained over a period 5 months (May-September 2016). Out of the 94, 60 plasmodial DNA tests were performed on the illumigene® Malaria when one (or all) of the conventional techniques remained negative.

Results: Plasmodial DNA detection tests show an earlier diagnosis in 5.5% of the cases. 100% of negatives with the conventional techniques are confirmed with the amplification techniques and in 1.7% of the cases, the LAMP permits the diagnosis while the microscopic techniques were not sensitive enough. A decision algorithm is proposed.

Conclusions: The LAMP technique improves the sensitivity of the diagnosis. In the laboratory routine, illumigene® Malaria easily excluded malaria infection. In those two cases where the illumigene®

Malaria test was positive, *plasmodium* parasites were not found in 1 case by the other techniques however the management of the patient remained unchanged (no anti-malaria treatment for chronic malaria migrant). The illumigene® Malaria testing is decided case-by-case and is performed only if patient returns from an endemic area, shows a negative Palutop + 4 optima® test or in case of discordance between the rapid antigen test and smears results. Illumigene® Malaria is used in diagnosis and not for follow-ups. In our experience, illumigene® Malaria is a major benefit especially when there is clinical evidence of neurological disorders.