



AMAZON MALARIA INITIATIVE

Malaria in Low-Incidence Settings

MAINTAINING LABORATORY CAPACITY FOR MALARIA DIAGNOSIS

April 2016

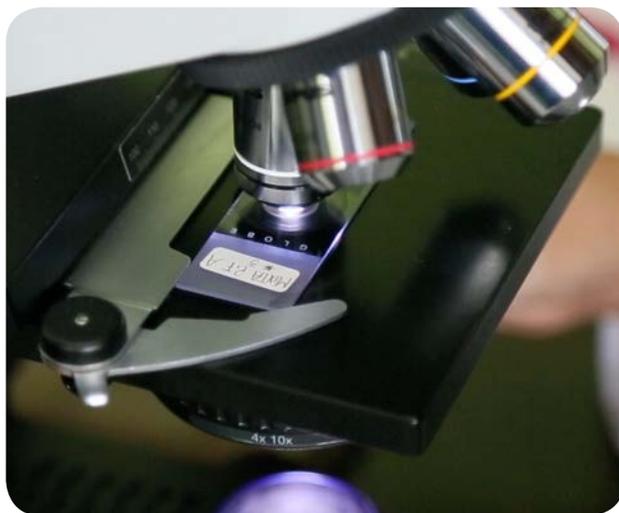
Microscopy remains the gold standard method for malaria diagnosis. However, as cases become less frequent, laboratory staff may have fewer opportunities to practice microscopy skills acquired for reading thick and thin blood smears. Supervision, as well as continued education and training opportunities for microscopists are essential to ensure that personnel develop expertise in this area and maintain their skills and capacities to properly diagnose malaria. AMI supported regional trainings and has helped to develop a quality assurance system to improve malaria diagnosis capacities across countries.

Low incidence of malaria can result in:

- Community health workers and health professionals mistaking signs and symptoms of malaria for other febrile illnesses.
- Health professionals failing to confirm clinical diagnosis of malaria with proper laboratory diagnosis.
- Personnel losing the skills required to make a diagnosis and provide treatment.
- Malaria incidence and prevalence are under-reported to national surveillance systems.
- Increased probability of cases of severe malaria, as well as re-introduction and outbreaks.

WHO recommendations on malaria diagnostics in low-transmission settings¹

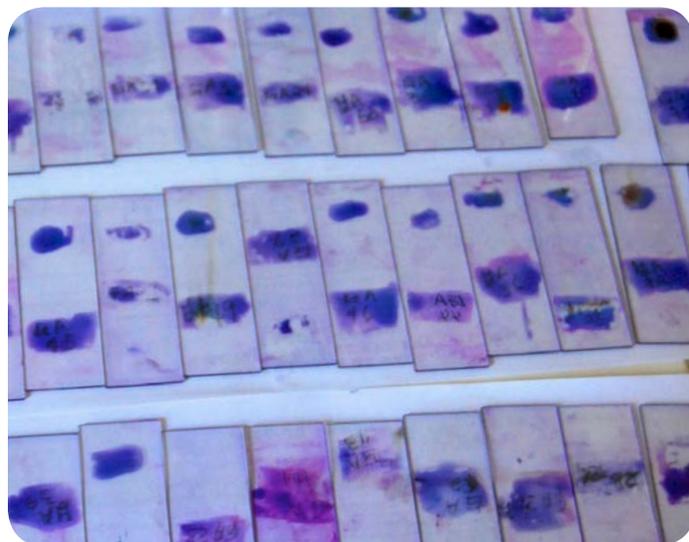
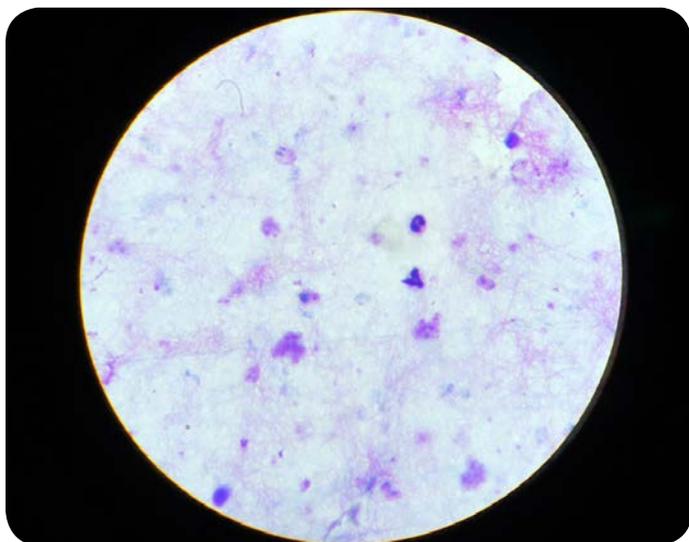
- I. Quality-assured rapid diagnostic tests (RDTs) and microscopy are the primary diagnostic tools for confirmation and management of cases of suspected clinical malaria in all epidemiological situations,



Photos: PAHO/WHO

including areas of low transmission, because of their good performance in detecting clinical malaria, their widespread availability and their relatively low cost. Similarly, RDTs and microscopy are appropriate for routine malaria surveillance (of clinical cases) in most malaria-endemic settings.

2. Several nucleic acid amplification techniques (NAA) such as PCR are available, which are more sensitive in detecting malaria than RDTs and microscopy. Generally, use of highly sensitive diagnostic tools should be considered only in low-transmission settings where there is already widespread malaria diagnostic testing and treatment and low parasite prevalence rates (e.g. < 10%). Use of NAA-based methods should not divert resources from malaria prevention and control or from strengthening of health care services and surveillance systems.
3. Sub-microscopic *P. falciparum* and *P. vivax* infections are common in both low- and high-transmission settings. Use of NAA methods in malaria programmes should be considered for epidemiological research and surveys to map sub-microscopic infections in low-transmission areas. NAA methods might also be used for identifying foci for special interventions in elimination settings.
4. In most infections with asexual parasites, gametocytes are detectable by molecular amplification at densities that are not detectable by microscopy or RDTs. Most malaria infections (microscopic and sub-microscopic) should be considered potentially infectious and therefore potential contributors to ongoing transmission. Sensitive NAA methods are not required for routine detection of gametocytes in malaria surveys or clinical settings.
5. Common standards should be set for nucleic acid-based assays. The WHO international standard should be followed for *P. falciparum* DNA amplification assays, and standards should be set for other *Plasmodium* species, particularly *P. vivax*. A standard operating procedure should be prepared for sample collection and extraction and for the equivalent quantity of blood to be added to the assay. Development of an international external quality assurance system is strongly recommended to ensure that data obtained from NAA assays are reliable and comparable.
6. In order to define the role of serological assays in epidemiological assessments, the reagents (antigens and controls), assay methods and analytical approaches should be standardized and validated.



Photos: PAHO/WHO

1 WHO. Policy brief on malaria diagnostics in low-transmission settings. September 2014.
http://www.paho.org/hq/index.php?option=com_docman&task=doc_view&Itemid=270&gid=30398&lang=en