Malaria Policy Advisory Committee Meeting

17–19 October 2018, Geneva, Switzerland
Background document for Session 8

WHO technical consultation on external competence assessment for malaria microscopy

Dr A. Bosman

Update on the consultation to be held in January 2019, Geneva, Switzerland

1 Background

The detection of malaria parasites by light microscopy remains one of the reference methods for diagnosis of malaria used worldwide. It accounts for about half of all laboratory tests performed to confirm malaria infection in clinical settings. WHO recommends quality-assured rapid diagnostic tests (RDTs) and microscopy as the primary diagnostic tools for the confirmation and management of suspected clinical malaria in all epidemiological situations, including areas of low transmission. These tools are recommended because of their high diagnostic performance in detecting clinical malaria, wide availability and relatively low cost. Also, RDT and microscopy are considered appropriate tools for routine malaria surveillance (of clinical cases) in most malaria-endemic settings.

Microscope diagnosis has many advantages; for example, this method:

- has low direct costs, if there is already a high volume of samples and the infrastructure to maintain the service;
- is highly sensitive for clinical malaria, if the quality of microscopy is good (including competent microscopists, good equipment and reagents, and an appropriate workload), although not sensitive for detecting low-density parasitaemia;
- allows differentiation of malaria species and parasite stages;
- allows determination of parasite density;
- allows monitoring of the response to malaria treatment; and
- can be used to diagnose other diseases.

The effectiveness of malaria microscopy depends on maintaining a high level of competence and performance of the microscopist, ensuring good-quality reagents and equipment at all levels, and undertaking regular external assessment.

WHO has developed a quality-assurance (QA) manual *(1)* that provides guidance on the multiple technical and operational aspects required to ensure a quality management system for malaria microscopy (Fig. 1). As indicated in this manual, at a minimum, a malaria microscopy QA programme should have:

WHO/CDS/GMP/MPAC/2018.20

- a central coordinator or coordinators to oversee QA – this position is essential, because the QA programme requires constant coordination and advocacy to be effective;
- a reference (core) group of microscopists at the head of a hierarchical structure, supported by an external QA programme, with demonstrable expertise in overseeing programme training and validation standards;
- good initial (pre-service) training, with competence standards that must be met by trainees before they work in a clinical setting;
- clear standard operating procedures (SOPs) at all levels of the system;
- regular refresher (in-service) training and assessment of competence, supported by a well-validated reference slide set (slide bank);
- a sustainable cross-checking system to detect gross inadequacies without overwhelming "validators" higher up in the structure, with good, timely feedback of results; a system to correct inadequate performance; and regular, effective and structured supervision at all levels;
- efficient, effective logistical management, including supplies of consumables and maintenance of microscopes and other equipment; and
- an adequate budget for funding QA activities.

The national reference core group must undergo regular assessment and certification of their competence, to ensure that it is maintained. Hence, WHO has developed and implemented an external competence assessment scheme; this scheme has been operating since 2009. The external competence assessment for malaria microscopy (ECAMM) was started by the WHO Regional Offices for South-East Asia and the Western Pacific in collaboration with the WHO Collaborating Centre for Malaria in Australia. It was later expanded by the WHO Regional Office for Africa in collaboration with Amref Health Africa and, more recently, the University of Cheikh Anta Diop de Dakar (UCAD). Over the past 2 years, it has also been implemented by the WHO Regional Office for the Eastern Mediterranean. In these four regions, as of September 2018, a total of 182 ECAMM workshops have been completed, each evaluating 12 participants; this corresponds to almost 2000 microscopists (because some underwent repeated assessment). Since 2015, WHO has implemented a training and coaching programme for ECAMM facilitators in these same four regions, to expand the number of experts able to run ECAMM workshops at international and national levels. As a result, there are now six ECAMM facilitators who can independently conduct the assessment following the WHO SOPs for this activity, and another eight who can run several workshops as co-facilitators and may become facilitators in 2019.

Based on the experience acquired over a full decade, WHO plans to review the results of the assessment of microscopists following this method. It also plans to update the current methodology of ECAMM, including the training approaches, SOPs and teaching support tools related to this activity. In preparation for this meeting, WHO has compiled all the results from ECAMM workshops conducted since 2009 by the institutions listed above. WHO will use these results to identify data predictors of competence and evaluate the need to refine the current criteria for the certification of competence in relation to detection, species determination and parasite density estimation.

2 Objectives of the technical consultation

1. To review the results of ECAMM workshops conducted since 2009 by multiple institutions, and to evaluate the need for updating the current WHO criteria for certification of competence in relation to detection, species determination and parasite density calculation, including potential impact on certification levels if new criteria will be recommended for adoption.
2. To review experiences of combination of ECAMM workshops with different forms of microscopy refresher training, and provide guidance on the ideal mix of training plus assessment, as well as recommendations on revised curricula of the pre-ECAMM refresher training and the ECAMM workshops.
3. To review the variants of malaria microscopy SOPs for slide examination in relation to detection, species determination and parasite density calculation adopted by multiple agencies, taking into consideration the SOPs developed by WHO to foster harmonization around common SOPs.
4. To review e-learning platforms recently developed for malaria microscopy and their potential application for refresher training and self-assessment, in view of the potential wider dissemination and adoption of these learning tools.

3 Process

The GMP Prevention Diagnostics and Treatment (PDT) will assure the WHO Secretariat of the meeting, with a financial contribution from the United States Agency for International Development (USAID) umbrella grant.

GMP/PDT has established a multiagency team to advise on preparations for the technical consultation. The team involves the resource people Dr Jane Carter (Amref), Dr Daouda Ndiaye (UCAD) and Dr Ken Lilley (Army Malaria Institute), and technical resource persons from the WHO Regional Offices for Africa, the Eastern Mediterranean and the Western Pacific and from WHO headquarters.

WPRO has coordinated the collation of results from participants attending WHO ECAMM workshops completed by different institutes since 2009. The data entry is being completed and data will undergo statistical analysis, against a precise set of questions formulated by the WHO Secretariat. Once the new criteria for the accreditation have been formalized and agreed, this database will serve as a basis for developing a standardized data entry, analysis and reporting system for ECAMM facilitators to automatically generate participant assessment and summary results, for writing a report of the workshop.

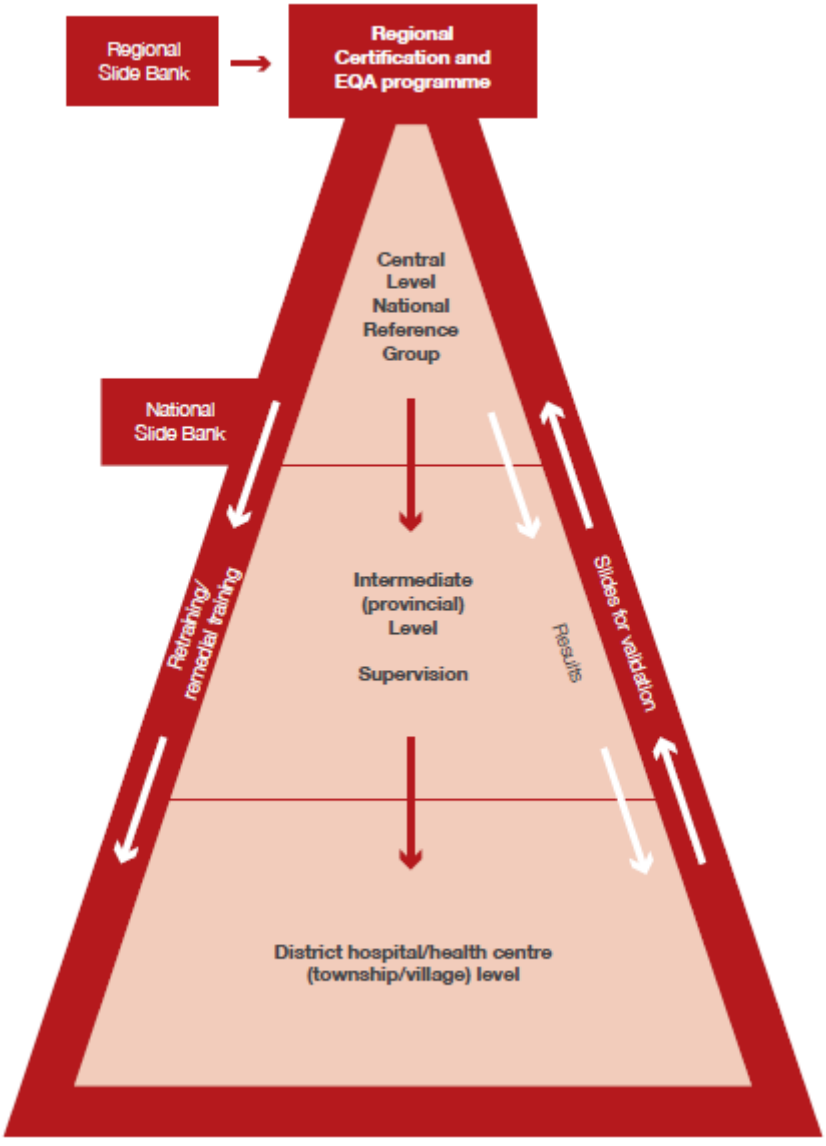
The technical consultation will involve up to 35 participants, representing independent experts on malaria microscopy; lead facilitators of WHO ECAMM workshops and co-facilitators; experts in microscopy accreditation using different schemes (e.g. from the WHO Region of the Americas/Pan American Health Organization); and technical resource people involved in microscopy training and accreditation, and in the development of SOPS.

The technical consultation is planned for 26–28 January 2019, and its conclusions and draft recommendation will be presented to the Malaria Policy Advisory Committee (MPAC) in March 2019 for finalization.

4 References

1. Malaria microscopy quality assurance manual – Version 2. Geneva: World Health Organization; 2016. (http://apps.who.int/iris/bitstream/handle/10665/204266/9789241549394_eng.pdf, accessed on 3 October 2018)
2. Malaria microscopy standard operating procedures. Geneva: World Health Organization; 2016. (http://www.wpro.who.int/mvp/lab_quality/mm_sop/en/, accessed on 3 October 2918.)

Figure 1. Structure and function of the quality assurance system



EQA: external quality assessment