

Rapid epidemiologic assessment of glucose-6-phosphate dehydrogenase deficiency in malaria-endemic areas in Southeast Asia using a novel diagnostic kit

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Summary

We recently reported a new rapid screening method for glucose-6-phosphate dehydrogenase (G6PD) deficiency. This method incorporates a new formazan substrate (WST-8) and is capable of detecting heterozygous females both qualitatively and quantitatively. Here, we report its evaluation during field surveys at three malaria centres and in malaria-endemic villages of Myanmar and Indonesia, either alone or in combination with a rapid on-site diagnosis of malaria. A total of 57 severe (45 males and 12 females) and 34 mild (five males and 29 females) cases of G6PD deficiency were detected among 855 subjects in Myanmar whilst 30 severe (25 males and five females) and 23 mild (six males and

17 females) cases were found among 1286 subjects in Indonesia. In all cases, severe deficiency was confirmed with another formazan method but due to limitations in its detection threshold, mild cases were misdiagnosed as G6PD-normal by this latter method. Our results indicate that the novel method can qualitatively detect both severely deficient subjects as well as heterozygous females in the field. The antimalarial drug, primaquine, was safely prescribed to *Plasmodium vivax* -infected patients in Myanmar. Our new, rapid screening method may be essential for the diagnosis of G6PD deficiency particularly in rural areas without electricity, and can be recommended for use in malaria control programmes.