**WHO Malaria RDT Web Reviews**

**Review Coordinator Summary: Final**

| Persistence of *Plasmodium falciparum* HRP2 in successfully treated acute falciparum malaria | Mayfong Mayxay, Sasithon Pukrittayakamee, Kesinee Chotivanich, Sornchai Looareesuwan and Nicholas J. White  
*Transactions of the Royal Society of Tropical Medicine and Hygiene (2001), 95 179-182* |
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<tr>
<td><strong>RDT product</strong></td>
<td>Parasight-F</td>
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<tr>
<td><strong>Target antigens</strong></td>
<td>HRP2</td>
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<tr>
<td><strong>Comparative standard (s)</strong></td>
<td>Microscopy</td>
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<td><strong>Trial type: Accuracy / Cost-benefits / public health impact / ease of use / behavioural</strong></td>
<td>Good accuracy/not stated/not stated/not stated/possible use for initial diagnosis</td>
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<td><strong>Usefulness of paper (rated by reviewers):</strong></td>
<td>4</td>
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| **Major findings/implications** | Parasight-F is sensitive specific test for initial diagnosis of *P. falciparum* infection but is not useful for prediction of treatment failure  
Parasite clearance rates were not influenced by persistence of Pf HRP-2. |

**Origin**  
Thailand

**Trial type:**

A prospective trial to determine the value of a commercially available semi-quantitative dipstick test in predicting treatment failure following anti-malaria treatment

92 adult Thai patients, randomly admitted with acute mono-infection falciparum malaria and remaining in hospital for 28 days were entered into the trial.  
Patients were treated with Artesunate or artemether alone or in combo with azithromycin or lumefantrine.  
Serial bloods were collected on admission and at days 7, 14, 21 and 28 and on day of recrudescence. All samples were stored at -40°C and thawed before use.  
A control study with unfrozen fresh samples, unfrozen was conducted in parallel.  
ParaSight-F RDT was used to detect PHRP-2 from the whole blood samples by a technician blinded to the microscopy and clinical results. Graded values from 0-9 were made depending on the RDT line intensity. Parasite counts were performed 6 hourly in severe cases and 12 hourly for uncomplicated cases until clearance and then daily.  
No comments were made on the ease of use or storage of the RDT for this study

Statistical analysis used SPSS 8.0 for windows computer software. Comparisons between 2 independent groups were made using Mann-Whitney U, Student t and $x^2$. *P* HRP-2 comparison between fresh and stored samples were made using Wilcoxon signed ranks test. Factors determining reactive intensity scores and *P* HRP-2 persistence were assessed with multivariate analysis. The potential of persistent *P* HRP-2 antigenaemia and *P* HRP-2 reactive intensity scores to predict treatment outcome were made using a multiple regression model.

**Results and analysis:**

92 patients with acute malaria were eligible for the study, 38 with severe malaria and 54 with uncomplicated *P. falciparum* infection.

89% of severe and 61% of uncomplicated malaria cases had positive *P* HRP-2 dipstick tests > 2 weeks following the start of treatment. 40 of the 92 had subsequent recrudescent infections and 52 remained aparasitaemic for 28 days.  
The proportion of patients with acute malaria and persistent HRP-2 > 2 weeks was higher in severe cases than in uncomplicated cases. The admission *P* HRP-2 line intensity scores and parasitaemia levels were also significantly higher in severe cases.  
In patients who were cured 33% had *P* HRP-2 tests positive for < 2 weeks and 67% were persistently positive for > 2 weeks.  
Persistence of *P* HRP-2 was not an indicator of recrudescence but those with persisting *P* HRP-2 tended to have higher initial reactive line intensities and higher parasitaemia. Parasite clearance rates were not influenced by persistence of *P* HRP-2.  
Correlation of reactive line intensity and parasitaemia and infection severity occurred.
Pf HRP-2 reactive lines on admission and in days 7 and 14 post treatment, HRP-2 persistence did not show significant difference between cured and recrudescent cases and so could not predict treatment outcome.

The control study of 10 uncomplicated and 15 severe cases remaining aparasitaemic at 28 days with fresh and frozen samples did not show any significant difference between the samples. 2.4% were positive with fresh samples but negative with frozen and 2.4% were positive with frozen but negative with fresh samples. Most of the samples had reactive line scores of 0-1.

The conclusion was that the most likely cause of persistent PfHRP-2 in this study was their high admission parasitaemia. The long clearance time of antigenaemia was associated significantly with high admission parasite density, disease severity and high colour intensity scores of the RDT but not with other factors of sex, age, parasite clearance time, biochemical results or gametocytaemia.

*Usefulness of paper (rated by reviewers): 4*

* 1. No direct relevance. 2. Very unlikely to influence current practice. 3. Likely to influence current practice in some settings. 4. Likely to influence current practice in many areas. 5. Highly likely to influence current practice in many areas.

**Disclaimer:**

The views expressed in this report are those of the independent reviewers and do not necessarily reflect the views or policies of the World Health Organization.