
PHE National Parasitology Reference Laboratory, Hospital for Tropical Diseases, 3rd Floor Mortimer Market, Centre, Capper Street, London WC1E 6JB, TEL: +44 (0) 207 383 0482, FAX +44 (0) 207 388 8985

Estimation of percentage parasitaemia of *Plasmodium falciparum* and *Plasmodium knowlesi*

Counting of red blood cells infected with parasites of *Plasmodium falciparum* and *Plasmodium knowlesi* is essential and the percentage parasitaemia should always be reported as this has implications for prognosis and the pattern of treatment employed.

Method 1

- a) Air dry thin films
- b) Fix in methanol for 1 minute
- c) Wash in tap water and flood the slide with Giemsa (see appendix for details of manufacturer) diluted **1 in 10** with buffered distilled water **pH 7.2**. The diluted stain **must be freshly prepared each time**.
- d) Stain for 25 - 30 minutes.
- e) Run tap water on to the slide to float off the stain and to prevent deposition of precipitate on to the film.
- f) Drain slide vertically and leave to dry.
- g) Examine the section of the film where the red cells are one layer thick and touching, using the x100 objective.

The recommended procedure for estimating the percentage parasitaemia in a **thin blood film** is by expressing the number of infected cells as a percentage of the red blood cells e.g. **3 parasitised red cells/100 red blood cells** or **3% parasitaemia**.

A red blood cell infected with multiple parasites counts as **one parasitised red cell**.

The percentage parasitaemia should be calculated by counting the number of **parasitised red cells** in 1000 cells in a **thin blood film**.

Method 2

Alternatively the World Health Organisation recommend a method which compares the number of parasites in a **thick blood film** with the white blood cell count.

The parasitaemia is estimated by first counting the number of parasites per 200 white blood cells in a **thick blood film** and then calculating the parasite count/ μL from the total white blood cell count μL .

Knowledge of either % parasitaemia or total parasite count is essential for the correct clinical management of *Plasmodium falciparum* and *Plasmodium knowlesi* malaria.