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.