

## Malaria imported in Sweden 1995-2015: a nationwide retrospective study

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### Background

Malaria is a potentially severe and fatal disease. Prompt diagnosis and adequate treatment are of outmost importance for a favourable outcome. The aim of this study was to assess factors in the clinical presentation and management that predict the outcome of imported malaria.

### Method

Nationwide retrospective chart review of malaria episodes diagnosed in Sweden 1995-2015. Episodes were identified in the National Surveillance Database at the Public Health Agency of Sweden.

### Results

Of the notified episodes, 2769 (89.4%) were reviewed and 2653 included in the primary assessment. Initiation of antimalarial treatment was delayed  $\geq 1$  day after health care presentation in 517/2653 (19.5%). Severe *P. falciparum* was significantly more common among patients with delay to treatment, especially in travellers from non-endemic countries where 25/107 (23.4%) had severe malaria compared to 59/509 (11.6%) without healthcare delay.

Severe *P. falciparum* was more common in children  $< 5$  years and adults  $> 60$ , seen in 10/49 (20.4%) and 22/84 (26.2%), respectively. Furthermore, severe *P. falciparum* was more common in patients from non-endemic countries, 87/632 (13.8%) compared to 66/924 (7.1%) in patients born in endemic countries.

Case fatality rate was 0.15% (4/2653) of all episodes. All 4 were Swedish born males infected with *P. falciparum* in Sub-Saharan Africa.

### Conclusion

Death due to malaria was rare in Sweden. However, we found a high occurrence of health care delay that in *P. falciparum* was associated with severe disease. Continuous efforts are needed to reduce time from healthcare presentation to diagnosis and treatment to avoid development of severe malaria.