

BRITISH PAEDIATRIC SURVEILLANCE UNIT

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MALARIA IN CHILDREN

Abstract

Imported malaria is a preventable disease. The United Kingdom currently has one of the highest incidences of imported malaria cases among industrialised countries, with over 2000 cases notified to the National Malaria Reference Laboratory every year. Children account for around 10-15% of all cases. While the total number of paediatric cases has only increased modestly in recent years, the proportion of cases due to *Plasmodium falciparum*, which is responsible for almost all the mortality associated with malaria, has more than quadrupled in the last 2 decades. This BPSU study aims to determine the incidence and clinical features of imported malaria in children; to identify high risk groups or regions within the UK and Ireland that might benefit from enhanced public health measures to improve uptake of antimalarial prophylaxis; to determine the incidence, risk factors and clinical spectrum of severe malaria; and, to determine how imported malaria is managed and outcome at hospital discharge.

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Background

The United Kingdom currently has the highest incidence of imported malaria cases among industrialised countries (1). Between 1997 and 2001, the National Malaria Reference Laboratory (MRL), London, received an average of 240 notifications of children below 15 years of age with malaria each year (2). The incidence of paediatric malaria in the UK has tripled over the past 30 years (3,4) and what is particularly concerning is that the proportion of cases due to *Plasmodium falciparum*, which is responsible for almost all the complications of malaria (shock, severe anaemia, acute renal failure, convulsions, coma, long-term neurological damage and death (5), has increased exponentially over the past 3 decades. Nationally, the proportion of *P. falciparum* cases reported to the MRL has increased from 17% in 1977 to 40% in 1987 and 77% in 2001 in both adults and children (2). In children, one south London observational study reported that the proportion of cases due to *P. falciparum* in children rose from 50% in 1975-1979 to 82% in 1990-1999 (4). Many parents who have immigrated to industrialised countries continue to take their children back to their home countries, often with no prophylaxis (6). In addition, because children with malaria often present with symptoms of common childhood illnesses, the diagnosis is often missed initially. We recently completed a 6-year retrospective study of children with malaria in East London and found that only 15% took appropriate antimalarial prophylaxis (7). Furthermore, the General Practitioner suspected malaria at the first visit in only 32% of children and a further 25% of children were referred to the Emergency department with a diagnosis other than malaria (7). Previous studies have consistently shown that delay in diagnosis is the single most important determinant of an adverse outcome in imported malaria (8).

Background Cont...

Despite the potentially fatal nature of the disease, there is a lack of robust data on children with imported malaria in industrialised countries. National statistics on paediatric-imported malaria in the United Kingdom are currently derived from official notifications to the MRL but it is unclear how accurately they reflect the true incidence of paediatric malaria. Furthermore, because MRL data is based on laboratory notifications, current knowledge on the clinical features of imported malaria is limited to small retrospective case series. As a result, for example, there is no data on the incidence, risk factors, clinical features, management and outcome of severe malaria in children. In addition, the management of paediatric malaria is based on national guidelines, but it remains unclear whether they are followed and whether the recommended therapy is effective. The public health importance of this project cannot be over-emphasised. Imported malaria is a preventable disease. The BPSU study will help us understand the epidemiology and risk factors for imported malaria and provide crucial information upon which future public health measures can be modeled. It is hoped that this study will enable us to identify high risk populations and regions within the United Kingdom and allow us to develop strategies to target such populations in order to prevent imported malaria by, for example, improving antimalarial prophylaxis uptake.

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| Coverage | United Kingdom and the Republic of Ireland. |
| Duration | January 2006 – January 2007 (13 months). |
| Objectives | For imported malaria in children, this study will aim to: <ol style="list-style-type: none">1. Estimate the incidence in the United Kingdom and Ireland.2. Describe clinical & laboratory features, management, complications and outcome.3. Identify risk factors for severe malaria. |
| Case Definition | Any child less than 16 years of age who is diagnosed with malaria through either microscopic examination of thick and thin blood smears or malaria antigen detection in the blood using commercially available assays. |
| Reporting Instructions | Please report any cases seen in the past month that meet the surveillance case definition. Please note that BPSU surveillance does not replace other on-going reporting systems for malaria (e.g. enhanced surveillance through the MRL, mandatory notifications to the HPA). |
| Methods | Paediatricians will be asked on a monthly basis to report all cases meeting the case definition through the orange card system. Paediatricians reporting a case will be sent a questionnaire seeking information on travel history, antimalarial prophylaxis, presenting features, severity, diagnosis, laboratory investigations, management and outcome at hospital discharge. |
| Ethics Approval | This study has been approved by the Leicestershire, Northamptonshire, and Rutland MREC (Reference: 05/Q2502/120). |
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