



Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive



2006

EPIDEMIOLOGY OF MALARIA IN IRELAND



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Acknowledgements

We wish to acknowledge the co-operation of clinicians, GPs, microbiologists, medical scientists, SMOs, SPHMs, surveillance scientists, infection control nurses, in providing the information on which this report is based.

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Citation:

Epidemiology of Malaria in Ireland. Health Protection Surveillance Centre, Month 2007

Further information:

<http://www.ndsc.ie/hpsc/A-Z/Vectorborne/Malaria/>

http://www.hpa.org.uk/infections/topics_az/malaria/menu.htm

<http://malaria.who.int/>

Summary

- In 2006, 96 cases of malaria were notified, more than double the number reported in 2005
- The most common species reported was *P. falciparum*, accounting for 83% of cases notified
- The majority of cases became ill after exposure in sub-Saharan Africa
- Visiting family in country of origin was the most common reason reported for travel. An emerging sub-group within this group was composed of children born in Ireland visiting family in country of origin.
- Only two malaria cases in Ireland in 2006 reported full compliance with their prescribed course of malaria prophylaxis. The remaining cases either failed to take any malaria prophylaxis prior to exposure or failed to continue prophylaxis for the required time period.
- It is important that travellers to endemic areas are made aware of the need to be properly compliant with anti-malarial medication and anti-mosquito measures, and the potential health consequences of non- or partial compliance.

Introduction

Malaria is the most important vectorborne disease in the world, and a major problem in Africa and to a lesser degree Asia, Central and South America, the Middle East, Oceania and other tropical regions. Of approximately one million deaths from malaria annually in the world, 90% occur in Sub-Saharan Africa.

Worldwide each year, it is estimated that up to 30,000 travellers fall ill with malaria on their return from visiting countries where the disease is endemic.¹ Pregnant woman, young children and the elderly are particularly at risk. Malaria in pregnancy increases the risk of maternal death, miscarriage, stillbirth and neonatal death.

The reported incidence of malaria in Ireland has increased in recent years, due likely to some extent to changing patterns of travel and immigration, making it (i) more likely that a clinician will encounter a malarial patient, and (ii) more important that that all Irish residents travelling to endemic areas receive appropriate advice on prevention while travelling.

This report describes the burden of malarial illness in Ireland in 2006.

Case Definition

Clinical description

Clinical picture compatible with malaria, i.e. fever and commonly associated symptoms, which include headache, back pain, chills, sweats, myalgia, nausea, vomiting, diarrhoea and cough.

Laboratory criteria for diagnosis

One of the following:

- Demonstration of malaria parasites in blood films
- Detection of plasmodium nucleic acid

Case classification

Possible: N/A

Probable: N/A

Confirmed: An episode of laboratory confirmed malaria parasitaemia in any person (symptomatic or asymptomatic).

Materials and Methods

Malaria has been notifiable in Ireland since 1948. The case definition adopted since 2004 is based on the EU case definition.² Since 2001, enhanced surveillance data, e.g. country of infection, reason for travel and use of chemoprophylaxis, are provided to HPSC where available. Notification and enhanced surveillance data are maintained in the CIDR (Computerised Infectious Disease Reporting) system. The data used in this report are based on information retrieved from the CIDR database (as of October 2nd 2007) on malaria cases in 2006. Census data from 2006 (CSO) were used to calculate incidence rates.

Results

Incidence in Ireland

In 2006, 96 cases of malaria were notified (Figure 1). This is an increase of 118% on the number reported in 2005, and equates to a crude annual incidence rate of 2.3 per 100,000 (95% C.I. 1.8-2.7).

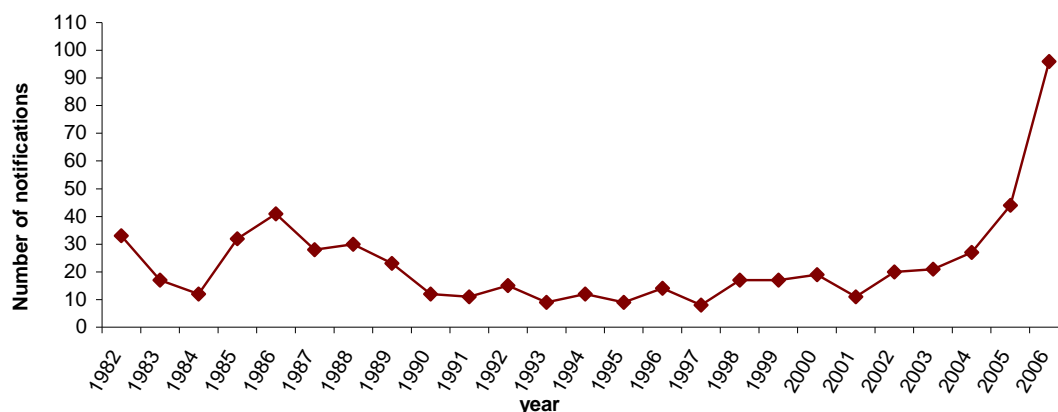


Figure 1. Number of malaria notifications, Ireland 1982-2006

Regional distribution

Cases were distributed across the country, with almost half reported in the HSE-E (n=45). A further 17 cases were reported in the HSE-NE, nine in the HSE-S, seven in the HSE-W, six in the HSE-NW, five in the HSE-M, four in the HSE-SE and three in the HSE-MW.

Species of *Plasmodium*

As in previous years, the most common species reported was *Plasmodium falciparum*, accounting for 83% of all cases notified (n=80). There were also four *P. vivax*, six *P. ovale*, one *P. malariae* and five cases where the species was not specified. This is similar to the species distribution reported by the United Kingdom and in Europe for cases of imported malaria.^{3,4}

Age and sex distribution

Fifty-eight cases were male, 36 were female and for two cases, sex was unknown/unspecified (figure 2). Cases ranged in age from 10 months to 63 years. Notably there were 26 paediatric cases (27%) and 39 males (41% of all cases) in the 20-44 years age range.

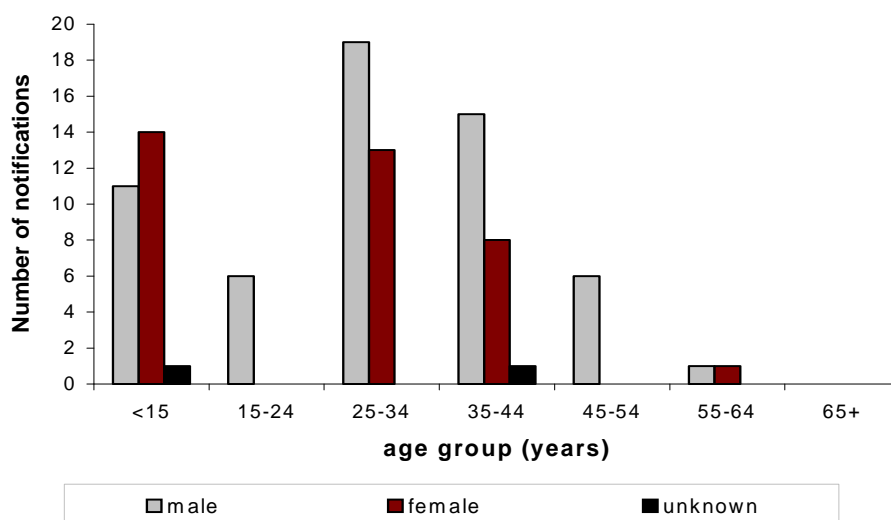


Figure 2. Age-sex distribution malaria notifications, Ireland 2006

Severity of illness

Information on patient type was available for half of patients (n=48), with 44 cases reported as hospital in-patients, one as a hospital out-patient, two as GP patients, and one as patient type=other. No deaths from malaria were reported.

Country of infection

There were no cases of airport, congenital, induced or introduced malaria reported. Country of infection was recorded for 77 cases, the majority of whom were exposed in sub-Saharan Africa; a small but increasing number of cases were associated with exposure in Asia (table 1).

Table 1. Malaria notifications by country of exposure, Ireland 2006

Place of infection	Number of notifications	% of all cases
Sub-saharan Africa	71	74%
Nigeria	48	50%
Other than Nigeria	23	24%
Asia	6	6%
Not reported	19	20%
Total	96	100%

Reason for travel

Reason for travel was recorded for 73 cases. The largest subgroup identified in 2006 was people who had travelled to visit family in their country of origin – over half of those for whom the information was available (n=40). The second most common reason reported for travel was holidays (n=13). This is an increase on the number of holidaymakers reported in the last 2 years (one in each year). New entrants made up a further 12 cases, with the remainder reported as business travellers (n=1), armed services (n=2), Irish citizen living abroad (n=1), foreign visitor ill while in Ireland (n=1), other (n=3) and not specified (n=23).

Of the 40 cases whose reason for travel was reported as ‘visiting family in country of origin’, 11 were born in Ireland and all 11 were less than 10 years of age, presumably representing the children of immigrants.

Use of chemoprophylaxis

Excluding new entrants (those who had spent their lives to date living in an endemic region would not be expected to be taking chemoprophylaxis), information on malaria prophylaxis was available for 57 of the remaining 84 cases. Of these, 43 took no prophylaxis, and 12 took prophylaxis but failed to continue for the required period. Only two cases reported full compliance with their prescribed course of prophylaxis.

Discussion

In 2006, the number of notified malaria cases reached 96, more than double the number of cases reported in 2005. *P. falciparum*, which causes the most severe form of malaria, was responsible for the majority of cases, and a high proportion of cases required hospitalization. With increasing holiday travel to endemic destinations, and a growing immigrant community, it is now becoming more likely that clinicians will be presented with malarial patients. Given the potential for fatal complications in severe cases, it is important for them to consider malaria as a diagnosis for patients with compatible symptoms who have history of travel to an endemic country within the preceding year.

As in 2005, visiting family in country of origin was the most common reason reported for travel to an endemic area -over half of those for whom this information was available. This is similar to the situation in the United Kingdom where immigrant families (who likely travel more frequently to endemic countries) make up a sizeable proportion of reported cases.⁵ An emerging sub-group within this group is composed of children born in Ireland visiting family in country of origin (presumably the children of immigrant parents). In comparison to their parents who may retain some immunity from previous infections (although this fades when they no longer live in endemic areas), these children are likely to be more susceptible than their parents.

In 2006, there was a sharp rise in the number of cases who reported holiday as their reason for travel, compared to 2004 and 2005. With long-haul travel becoming more accessible, and long-term travel becoming more common, it is important that all holidaymakers travelling to endemic areas seek advice appropriate to their risk.⁶

Mosquito bite avoidance and malaria prophylaxis are the cornerstones of malaria prevention in travellers. In 2006, the majority of Irish cases notified either failed to take any prophylaxis or failed to comply fully with their prescribed course. It is important that travellers to endemic areas:

- (i) are aware of the risk of malaria
- (ii) avoid mosquito bites
- (iii) comply fully with prescribed prophylaxis (including continuing with the full course) and
- (iv) are aware that preventive measures are not 100% effective, and that they should seek treatment promptly if they suffer symptoms suggestive of malaria within a year following their return, informing their physician of their travel history.

The guidelines of the Health Protection Agency Advisory Committee on Malaria Prevention in travellers were revised extensively in January 2007, and include recommendations for advising travellers under many different circumstances or who have specific medical conditions.⁶

References

1. WHO 2005 International travel and health. <http://www.who.int/ith/en/>
2. HPSC. 2004. Case definition for Notifiable Diseases.
<http://www.ndsc.ie/NotifiableDiseases/CaseDefinitions/>
3. HPA MRL. 2005. Malaria imported into the UK: implications for those advising travellers. CDR Weekly. Vol 15(22)
4. TropNet. 2006. TropNetEurop Friends & Observers Sentinel Surveillance Report: *Malaria*
http://www.tropnet.net/reports_friends/pdf_reports_friends/feb06_malaria2005_friends.pdf
5. HPA. 2005. Foreign travel-associated illness, England, Wales, and Northern Ireland. Annual Report 2005
6. Chiodini P, Hill D, Laloo D, Lea G, Walker E, Whitty C and Bannister B. Guidelines for malaria prevention in travellers from the United Kingdom. London, Health Protection Agency, January 2007.
http://www.hpa.org.uk/infections/topics_az/malaria/guidelines.htm
(Accessed 4th October 2007)