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### Risk of airport malaria in the UK

R.A. Hutchinson, M.N. Bayoh and S.W. Lindsay

School of Biological and Biomedical Sciences, University of Durham, Science Laboratories, South Road, Durham DH1 3LE. Email: S.W.Lindsay@durham.ac.uk

#### Abstract

The inexorable increase in air traffic has fuelled concern that the risk of malaria may rise if vector mosquitoes are imported into non-endemic countries onboard aircraft from malarious zones. We assessed this risk by searching for mosquitoes in 52 aircraft that had flown from Africa and arrived at Gatwick airport, one of the UK's busiest airports. After 43 hours of searching by experts only three exotic mosquitoes were found. All of these were *Culex quinquefasciatus*, a species incapable of transmitting human malaria. The low numbers of mosquitoes recovered indicates that aircraft disinfection is being implemented successfully and the risk of imported malaria vectors by aircraft into the UK is extremely low.

#### Introduction

There is growing concern about the risk of malaria in and around European airports, resulting from the importation of infective mosquitoes by aircraft, particularly as a result of increased travel to malaria-endemic countries. Airport malaria has been reported from several European countries in the last 30 years including Belgium, France, Germany, Italy, Netherlands, Spain, Switzerland and UK (Danis *et al.*, 1996). The UK was recently listed third in Europe with 14 cases of actual or suspected cases of airport malaria between 1969 and 1999 (Gratz *et al.*, 2000). Despite these cases and the fact that there are over 685,000 flights into the UK each year (Civil Aviation Authority, 2000), there have been no published surveys of aircraft searched for disease vectors in this country for the past 18 years.

The World Health Organization recommends that the best way to prevent the importation of tropical mosquitoes into other countries is by aircraft disinsection on all aircraft from malarious countries (World Health Organization, 1961). Disinsection requires spraying cabins and holds with a knock down insecticide, once the aircraft doors have been closed. In light of recent concerns about the importation of malaria into the UK we carried out inspections of British Airways aircraft arriving from Africa, where 90% of malaria cases occur.

Searches were made on aircraft arriving at Gatwick airport that had left Africa after 18.00h, the time the main malaria vectors, *Anopheles gambiae sensu lato* and *An. funestus*, begin searching for a blood meal and are most likely to enter aircraft. Gatwick was chosen since it has a large number of flights from Africa and its rural location, favours the dispersal of malaria mosquitoes. Searches were made of all evening flights from Africa for five consecutive days each month from June to September 2001, the time of year most suitable for the survival of tropical insects. There was a policy of spraying insecticide on these flights. Aircraft were met immediately upon landing and the baggage crates, rear and front holds, passenger cabin, cockpit, toilets, overhead lockers and crew sleeping quarters searched using torches. A complete inspection took approximately 50 man-minutes.

A total of 52 aircraft were searched departing from Accra, Abuja, Entebbe, Harare, Lagos and Nairobi and represents approximately 25% of flights arriving at Gatwick Airport during the summer (June-September) that had departed from Africa at night. Only three live mosquitoes were found, all were *Culex quinquefasciatus*, a species incapable of transmitting malaria. One male was recovered from a luggage compartment in the cabin on a flight from Lagos and two females from the holds, one on an Entebbe flight and one on a Harare flight.

The potential for importation of vectors is considerable since 9.8 million people made trips between the UK and malaria endemic countries in 1999 alone (Civil Aviation Authority, 2000). To ensure the safety of passengers, airport personnel and local residents, disinsection of aircraft needs to be strictly adhered to. The small number of mosquitoes found during our searches indicates that the airlines' disinsection policy is both implemented and effective and the risk of importation of tropical vectors is extremely small. What is of far greater concern is the importation of malaria parasites by travellers since currently over 2000 cases of imported malaria occur in the UK each year (Brabin & Ganley, 1997).

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