

From Boarding Gate to Malaria Diagnosis: A Prospective App-Based Cohort Study of Incidence and Prevention Dynamics
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Malaria is a clinically significant imported infection in Europe, despite effective preventive measures. Evidence largely derives from travel clinic populations, overlooking travelers who do not seek pre-travel consultation. Real-world incidence and sustained adherence across the travel timeline remain poorly defined. We evaluated malaria incidence and prevention dynamics in an airport-recruited cohort using prospective app-based follow-up.

Adult travelers departing Brussels Airport for African destinations requiring malaria chemoprophylaxis were recruited at boarding gates. Of 812 enrolled participants, 660 were eligible after geolocation and data-coherence verification. Participants completed questionnaires via the MilPasos app at departure (Q1), after 7 days of travel (Q2), at return (Q3), and 28 days post-return (Q4). Data included preventive intentions, chemoprophylaxis use, additional vector-avoidance measures, and malaria-related symptoms. Confirmed malaria was clinician-diagnosed infection; suspected malaria was self-reported fever followed by clinician evaluation including malaria testing.

Among 660 eligible participants, 360 (54%) completed follow-up. Median travel duration was 16.5 days (IQR 11–29); 42.6% traveled to visit friends or relatives, and 37.9% for vacation. Confirmed malaria occurred in 1.9% (7/360), and suspected malaria in 9.4% (34/360). Although 73.1% planned chemoprophylaxis before departure (Q1), optimal use declined from 60.2% on return (Q3) to 50.9% at D28 (Q4). Extended analyses conducted in this cohort of behavioral and contextual determinants aim to refine risk stratification and guide more targeted prevention strategies.

Airport-based digital recruitment captures travelers beyond traditional clinic settings and demonstrates meaningful gaps in sustained chemoprophylaxis adherence and layered malaria prevention, particularly among VFR travelers.