prevalence decreased from 65 to 18% from 1999 and 2010. A single intervention with ITNs was performed in 1999. IgG levels to recombinant *P. falciparum* antigens (MSP-1_{19}, MSP-2, MSP-3, AMA-1) and *An. gambiae* salivary protein gSG6 were measured in children (1-16y) sampled in cross-sectional surveys in 1999 and 2010. SCR and rates of antibody decay were estimated by fitting mathematical models to data from the two cross-sections, assuming three profiles of exposure: (i) stable; (ii) stepwise decrease; or (iii) continuous decrease. Results suggest an average 66% decrease in malaria transmission intensity and an 89% reduction in *Anopheles* exposure. Transmission trends were best described by a stepwise decrease model with a reduction predicted to occur shortly after distribution of ITNs. The new models provide estimates of the duration of antibody responses under this transmission decline. MSP-1_{19} seropositive individuals were estimated to convert to seronegative with a half-life of 12 (95% CI 7-20) years due to antibody decline with a half-life of 3 (95% CI 2-6) years. The reduction in transmission may in part be attributed to reduced anopheles exposure following the introduction of ITNs, but is not likely to be explained by ITNs alone. Despite reduced parasite prevalence many children remained seropositive to blood-stage antigens. The new sensitive models using antibody levels enabled detection of reduced exposure among seropositive children and provided estimates of both antibody and transmission dynamics.

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MALARIA AT NATIONAL UNIVERSITY HOSPITAL, SINGAPORE

Revathi Sridhar, Hwang Ching Chan, Guat Kheng Goh, Indumathi Venkatachalam

National University Health System, Singapore, Singapore

Globally, malaria affects 300 to 500 million people each year. It is endemic to several countries in South East Asia. Singapore has maintained its malaria free status since 1982 despite occasional clusters due to local transmission. However, travel related malaria is seen in hospitals here. We describe the current epidemiology of malaria at our institution. The National University Hospital (NUH) is a 1000 bed multi-specialty, tertiary teaching hospital in Singapore. Laboratory surveillance for malaria is part of the infectious disease surveillance at NUH since 2004. A retrospective study, describing the epidemiology of malaria cases presenting between January 2009 and mid- April 2014, was conducted. A total of 44 cases were analyzed. 39 (88.6%) of them were male, 25 (6.8%) were Indian, 6 (13.6%) Chinese, 1 (2.27%) Malay and 1 (2.27%) Caucasian. 28 (63.6%) of the 44 patients had travelled to a malaria endemic area. All 9 Singaporeans with malaria had preceding travel history. The most common species of malaria was *Plasmodium vivax* (n=31, 70.5%). Of the other species, 7 (15.9%) were *P. falciparum*, 4 (9.09%) were *P. knowlesi* and 1 (2.27%) had a mixed *falciparum* and *vivax* infection. 17 of the 44 patients had traveled to India. 15 of the 17 patients who traveled to India were infected with *vivax*. Amongst the 4 patients with *P. knowlesi*, 3 had traveled to Malaysia. In particular, they had visited forested areas for recreation or training. Other travel destinations included Indonesia, Thailand, Hong Kong and Ghana. 39 of 44 patients were admitted and their mean length of stay was 4 days. 4 (9.09%) patients required ICU care and all 39 were discharged well. The global disease burden, modern travel dynamics and emergence of *P. knowlesi*, a zoonotic malarial species, contribute to the continued presence of cases of malaria in Singapore. The existence of *Anopheles* mosquito vectors on the island warrant ongoing vigilance to limit the risk of local transmission.

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EARLY DETECTION OF MALARIA RESURGENCE IN THE PERUVIAN AMAZON REGION USING SEROLOGICAL MARKERS

Angel Rosas[1], Alejandro Llanos-Cuentas[1], Niko Speybroeck[2], Hugo Rodríguez[3], Juan Contreras-Mancilla[1], Dionicia Gamboa[1], Anna Rosanas-Urgell[4], Freddy Alava[3], Irene Soares[5], Edmond Remarque[6], Umberto D'Alessandro[7], Annette Erhart[4]

[1]Universidad Peruana Cayetano Heredia, Lima, Peru, [2]Université Catholique de Louvain, Brussels, Belgium, [3]Región de Salud Loreto, Iquitos, Peru, [4]Institute of Tropical Medicine, Antwerp, Belgium, [5]Universidade de São Paulo, Sao Paulo, Brazil, [6]Biomedical Primate Research Centre, Rijswijk, Netherlands, [7]Disease Control and Elimination, Medical Research Council Unit, Fajara, Gambia

In the past decade, increased support from international donors, e.g. the Global Fund-PAMAFRO Project (2005-2010), allowed for the scale-up of comprehensive malaria control strategies in the Amazon Region. During this period, malaria declined drastically in Peru from 87,805 reported clinical cases in 2005 to 29,355 and 23,075 cases in 2010 and 2011, respectively. Since 2011, malaria control activities are mainly supported by the MoH budget, prioritizing passive and reactive case detection and treatment of confirmed infections. Since 2012, several malaria outbreaks have been detected in diverse Amazonian areas, a phenomenon that had not been observed since 2007. In order to assess recent changes the malaria transmission intensity (MTI), a cross-sectional survey was conducted during November 2012 in eight peri-Iquitos villages using molecular and serological tools. After a full census of the study villages, each household was visited and all available children<7 years plus one randomly selected individual>7 years were enrolled. A total of 651 survey participants were interviewed, clinically examined and a blood sample taken for the detection of malaria parasites (microscopy and PCR) and antibodies to *Plasmodium vivax* (PvMSP119, PvAMA1) and *P. falciparum* (PfGLURP, PfAMA1) antigens by ELISA. Age-specific seroprevalence was analyzed using a previously published catalytic conversion model based on maximum likelihood for generating seroconversion rates (SCR). Overall parasite prevalence by microscopy and PCR were low, i.e. 1.8 and 3.9%, respectively for *P. vivax*, and 1.5 and 6.7%, respectively for *P. falciparum*, while seroprevalence was much higher, 23.3% for PvMSP119 and 18.0% for PfGLURP. Most of infections were asymptomatic (79.2%) and sub-patent (71.6%). Likelihood ratio tests supported age seroprevalence curves with two SCR for both *P. vivax* and *P. falciparum* indicating a significant increase in MTI since 2011. Additional data including antibody responses to two antigens for each species and a risk factor analysis for malaria infection and exposure will be presented. In conclusion, this sero-epidemiological analysis allowed for an in-depth characterization of the current malaria transmission pattern as well as for the identification of a recent increase in MTI in the peri-Iquitos area of the Peruvian Amazon following a reduction of control efforts since 2011.

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ROLE OF AUTOPHAGY AND POLYMORPHIC VARIATION IN AUTOPHAGY GENES IN CONDITIONING CLINICAL OUTCOMES IN CHILDREN WITH MALARIAL ANEMIA

Prakasha Kempaiah, Karol Dokladny, Zachary Karim, Samuel B. Anyona, Kaitlin Ha, Evans Raballah, John M. Ong'echa, Pope L. Moseley, Douglas J. Perkins

University of New Mexico School of Medicine, Albuquerque, NM, United States

Plasmodium falciparum polymerizes free heme into hemozoin (*Pf*Hz) as a byproduct of hemoglobin (Hb) digestion. Phagocytosis of *Pf*Hz by leukocytes promotes dysregulation in the immune response and enhanced pathogenesis. Autophagy is a process that eliminates intracellular components to maintain homeostasis. Although no studies have investigated autophagy in malaria, inactivation of autophagy is associated