Reduction in Malaria Following the Free Distribution of Mosquito Nets in Papua New Guinea

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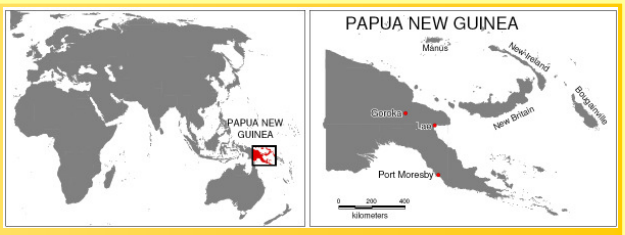
BACKGROUND: Papua New Guinea (PNG) is a highly malaria endemic country in the South-West Pacific with a population of approx. 7 million. Four malaria species (*Plasmodium falciparum,P. vivax, P. malariae, P. ovale*) are found in PNG and a variety of *Anopheles* mosquitoes transmit malaria in the diverse ecological settings making it an epidemiologically unique setting.



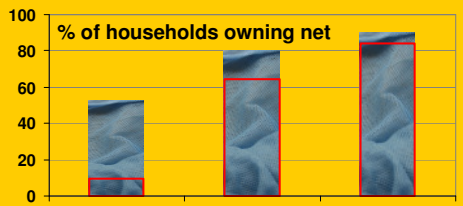
In 2004, PNG intensified country-wide malaria control efforts with support from the **Global Fund to Fight AIDS, Tuberculosis and Malaria**.

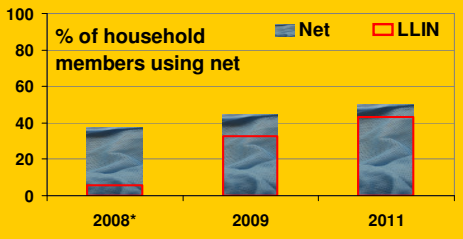
Today, the **National Malaria Control Program** (NMCP) operates as a partnership between the National Department of Health, Rotarians Against Malaria, Population Services International, OilSearch Health Foundation and the PNG Institute of Medical Research.

MOSQUITO NETS: In the absence of a vaccine, **insecticide treated mosquito nets** (ITN) are the most effective way to prevent malaria. They act as physical barrier and simultaneously reduce the number of mosquitoes in communities in which they are widely used.

Since 1997, **5.5 million nets** were distributed by **Rotarians Against Malaria** (RAM) in PNG. Between 2004 and 2009, RAM imported Long Lasting Insecticide-treated Nets (LLIN) and delivered them to distribution centres across PNG; since 2009, RAM is responsible for the distribution to all households in the country in the frame of the NMCP.

EVALUATION OF THE NATIONAL MALARIA CONTROL PROGRAM: The **PNG Institute of Medical Research** (IMR) has been evaluating the National Malaria Control Program since 2008. Through country-wide malaria surveys and a network of surveillance sites, IMR has been gathering scientific evidence on the outcomes and impact of the distribution of mosquito nets.

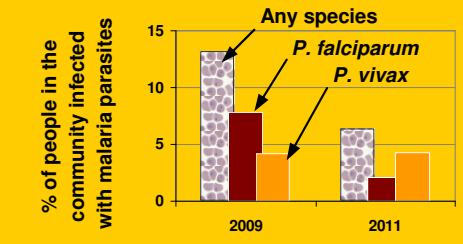




RESULTS:

Mosquito Nets: Household ownership and usage of nets have steadily increased over the past five years. In particular, **ownership of LLINs increased dramatically** from an estimated 10% prior to the large-scale distribution to around 80% in 2011. In 2011, more people slept under a mosquito net than in previous years and most people now use a LLIN rather than a conventional net. However, net usage is still below 50% mainly due to a lack of sufficient nets in households.

Malaria: Following the net distribution, malaria cases in health facilities surveyed by IMR dropped dramatically as did the proportion of fever cases with a positive malaria test (RDT). This was accompanied by a decrease in the number malaria infected *Anopheles* mosquitoes biting humans. Country-wide, **the prevalence of malaria infection in the community decreased from 13% in 2009 to 6.5% in 2011**.



CONCLUSION: The repeated large-scale distribution of Long Lasting Insecticide-treated Nets has led to a significant increase in net ownership and usage. In the absence of any other major malaria control intervention, the observed reduction in malaria incidence and population prevalence can be considered a direct consequence of the net distribution. A continuous supply of LLLINs is required to sustain the current gains.

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