

Working towards malaria elimination in the Southwest Pacific



Assoc. Prof. Harin Karunajeewa RAM conference, Sydney 2017



Our research has driven policy change throughout the Southwest Pacific

Thankyou for being our Guest Speaker



The **Rotary** Clubs in Scarborough



Standard Treatment for Common Illnesses of Children in Papua New Guinea

A Manual for Nurses, Community Health Workers, Health Extension Officers and Doctors

Eighth Edition



Artemisinin-based suppositories Use of rectal artemistic-based suppositories in the management of severe malaria



Report of a WEG Internal Consultation





The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

A Trial of Combination Antimalarial Therapies in Children from Papua New Guinea

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ROTARIANS AGAINST MALARIA





Common Illnesses of Children in Papua New Guinea A Manual for Nurses. Community Health Workers, Health Extension Officers and Doctors **Eighth Edition**

Standard Treatment for



Republic of Vanuatu Ministry of Health



Standard Treatment Guidelines

April 2004



MANUAL FOR



WEHI malaria field work in Southwest Pacific



Malaria Research at WEHI: What do we do?

- Parasite biology
- Immunology
- Vaccine discovery and development
- New drug discovery and development
- Epidemiology and transmission
- Optimizing existing interventions for goal of malaria elimination

At a global scale, recent progress in malaria control has been an unprecedented success:

Incidence	Cases averted	Mortality	Lives saved
↓37%	1.2 billion	↓60%	6 million
Total reduction in malaria incidence worldwide 2000- 2015	Total estimated number of cases averted between 2000-2015	Total estimated reduction in annual number of deaths 2000-2015	Total estimated number of deaths averted between 2000-2015

World Malaria Report, 2015

In the Southwest Pacific, improvements in malaria control have even outpaced global progress:

World Malaria Report, 2015

3 major interventions contribute to this success:

	Intervention	Cases averted
	1. Insecticide treated bed-nets	69%
<	2. Improved malaria drug treatment (ACTs)	21%
	3. Indoor residual spraying	10%
	World Health Organization World Malaria Report, 2015 (da Africa)	ata from

Solomon Islands is aiming for nationwide malaria elimination by 2030

Plasmodium vivax has become the dominant parasite species in Southwest Pacific

P. vivax - 46% of all malaria species & 75% of ongoing transmission in the Solomon Islands.

P. vivax is much harder to eliminate through conventional malaria control measures

Fact:

In Southwest Pacific, <u>4 out of every 5</u> episodes of *P.vivax* are due to hypnozoite relapse.

Robinson et al. PLoS Medicine 2015

The problem of treating Vivax malaria

- Drugs for treating malaria infection in the bloodstream do not kill sleeping forms (hypnozoites) in the liver
- Only one type of drug, primaquine, can kill hypnozoites
- For vivax malaria, killing all parasites in the body necessitates using at least 2 different drugs

Malaria attack rates in Allied Forces taking Atabrine prophylaxis during and after the Guadalcanal campaign (1942)

• During active deployment:

1700/1000 person years

• After evacuation to a non-malarious area:

3700/1000 person years

 5 of every 6 cases of malaria in Allied Forces during WW2 were due to Vivax

A roadblock to elimination: Currently recommended drug treatment fails to kill *P. vivax* hypnozoites

How can we improve effectiveness of *P.vivax* treatment in Southwest Pacific?

- 1. Understand why current cure rates are so poor:
 - Is a drug interaction between the two drugs currently recommended to kill both blood and liver stage parasites (hypnozoites) compromising the effectiveness of the liver stage drug (primaquine)?
 - Are local human genetic factors limiting effectiveness?
- 2. Refining drug dosage and evaluating alternative drugs and drug combinations (e.g. the new drug tafenoquine)
- 3. Improved targeting of drug interventions
 - Better strategies to <u>identify who to treat</u>: including asymptomatic carriers
 - Better strategies to <u>identify who not to treat</u>: those likely to experience toxic side-effects or not respond to treatment

Solomon Islands is aiming for nationwide malaria elimination by 2030

GOOD SAL

Thank you Rotary Clubs for your continued support

Dr Charles Kellaway

- Director, Walter and Eliza Hall Institute (1923-1944)
- Member, Rotary Club of Melbourne (1932-1944)
- Director of Scientific Policy, Wellcome Research Laboratories (1944-1952)

Thankyou for being our Guest Speaker

at our meeting on

8th March

(President)

(Secretary)