

ROTARIANS AGAINST MALARIA
PAPUA NEW GUINEA

**MALARIA PROGRAM
IN PNG**
RAM Australia Annual Meeting

14 November 2021

Tim Freeman

**Yumi
Rausim
Malaria**
INTERNATIONAL MALARIA CONTROL PROGRAM



MALARIA PROGRAMME

NDOH/RAM PROGRAMME

- Net Distribution
- Health Facility Supervision Visits
- Drug Distribution
- **HMM (Started 2020)**
- Management Of Finances For IMR and NDOH
- RAM School Program
- NCD Elimination Program



RAM/NDOH PROGRAMME

Funding Sources And Amounts

Donors	2018-2020		2021-2023	
	US\$	%	US\$	%
Global Fund	28,710,597	77.6	37,534,288	94.2
AMF	7,144,872	19.3	150,000	0.4
PNG SDP	906,581	2.4	2,097,297	5.3
RAM Australia	210,000	0.6	30,000	0.1
Exxon Mobil	35,000	0.1	25,625	0.1
Totals	37,007,050	100.0	39,837,211	100.0

Notes:

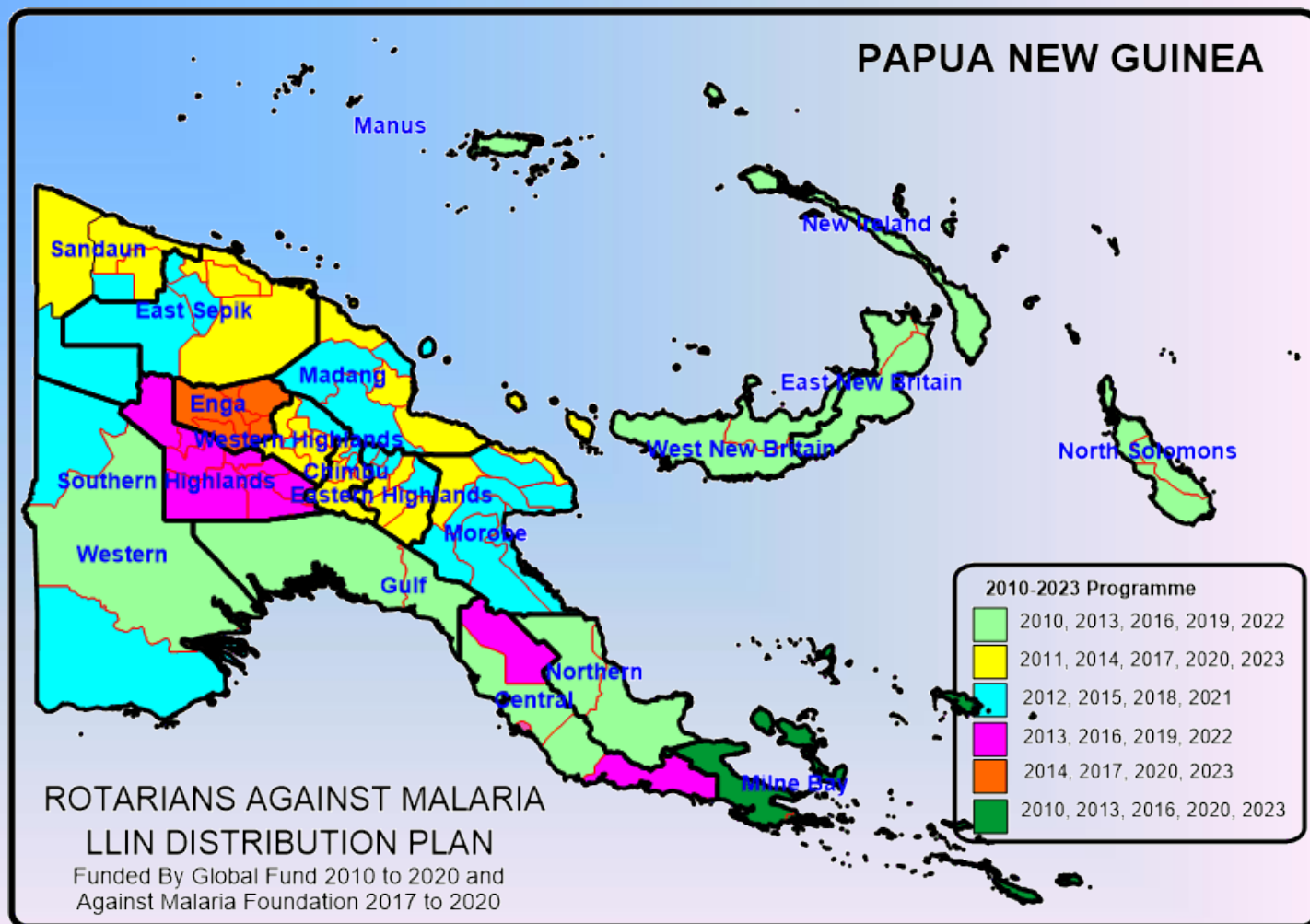
- PNG SDT funds the same activities as Global Fund but only in Western Province
- AMF supports follow up of their program from 2017-2020 to investigate what happened to their nets. No longer supplies nets.
- Exxon Mobil funds an elimination project in NCD and RAM Australia a school malaria program in Central Province.

Beginning Of The RAM Program

- RAM PNG started in 1997 selling nets on a revolving fund basis. Sold successfully about 40,000 nets a year until Global Fund appeared.
- Global Fund first gave money to PNG in 2004.
- Nets were first delivered into PNG in 2004 and then distribution began in 2006. RAM was asked to organize the delivery of nets from factor to provinces.
- Issues
 - From time nets were delivered to PNG by RAM and then distributed in the province was often very long e.g. two years.
 - Implementation was very good in some province and poor in others. Did not follow protocols
 - Programmatic and financial reporting was often very poor.
- Result was that in 2009, it was decided RAM would take over the coordination of the distribution of nets.

LLIN DISTRIBUTION

RAM
Distributes
LLINs On A
Three Year
Basis To All
Areas Of
PNG.
Follows
NDoH
Original
Plan



LLIN DISTRIBUTION

Distribution Of LLINs To Household Level

Period	Dates	Districts	Provinces	Nets Delivered
Phase One (2010-2011)	Nov 09 - Oct 11	50 Districts	18 Provinces	1,890,448
Year 3 (2012)	Nov 11 - Sep 12	27 Districts	10 Provinces	832,671
Year 4 (2013)	Oct 12 - Sep 13	28 Districts	12 Provinces	1,210,391
Year 5 (2014)	Oct 13 - Sep 14	23 Districts	11 Provinces	1,374,791
Year 5 (2014) No Cost Extension	Oct 14 - Dec 14	Okapa, Lufa, Madang, Angoram, Maprik, Yangoru Saussi, Wewak, Aitape Lumi, Nuku and Vanimo Green	EHP, Madang, East Sepik and Sandaun	454,806
Year 6 (2015)	Jan - Dec 2015	29 Districts	11 Provinces	932,822
Year 7 (2016)	Jan - Dec 2016	27 Districts	13 Provinces	805,597
Year 8 (2017)	Jan - Dec 2017	36 Districts	13 Provinces	1,543,947
Year 9 (2018)	Jan - Dec 2018	27 Districts	11 Provinces	1,211,922
Year 10 (2019)	Jan - Dec 2019	26 Districts	12 Provinces	1,266,525
Year 11 (2020)	Jan - Dec 2020	28 Districts	13 Provinces	1,495,368
	Jan - Mar 2021	Airtape Lumi, Nuku, Yangoru Saussi, Maprik, Angoram, Mount Hagen, Dei, Jimi	Sandaun, East Sepik, Western Highlands, Jiwaka,	232,042
	Apr - Jun 2021	Yangoru Saussi, Jimi, Gumine, Kundia w a Gembogl, Sinasina Yongomugl, Asaro, Kainantu and Ungai Benna		377,865
New Funding Model (2015-2020)				7,866,088
Round Eight (2010 - 2014)				5,763,107
Overall Total Phase One and Phase Two And NFM				13,629,195

1,495,368 LLINs Distributed In 2020 – 11% Over Target BUT 2021 Under Target

LLIN DISTRIBUTION

Distribution Of LLINs To Vulnerable Groups

Totals	Antenatal	Schools	Prisons	Others	Totals
Phase One 2010-2011	208,602	43,242	4,656	5,158	261,658
Phase Two (2012-214)	444,603	83,229	4,253	10,084	542,169
Total NFM (2015-20217)	440,021	17,466	2,047	473	460,007
2018 GF Program	134,274	0	140	302	134,716
2019 GF Program	65,468	630	0	200	66,298
2020 GF Program	93,403	0	0	0	93,403
Jan-Mar 21 (Q1 GFNFM)	45,500	0	0	0	45,500
Apr-Jun 21 (Q2 GFNFM)	102,667	50,256	0	0	152,923
TOTAL GFNP	441,312	50,886	140	502	492,840
Total Prog	1,534,538	194,823	11,096	16,217	1,756,674
Percentage	87.4%	11.1%	0.6%	0.9%	100.0%
Perecentage GFNP	89.5	10.3	0.0	0.1	100.0

Antenatal Nets As No Nets Supplied By GF In 2018 and 2019. 345,000 LLIN Now Delivered In November 2020. Distribution Now Progress

LLIN DISTRIBUTION



Showing the difficulties, malaria bags and team of RAM

LLIN DISTRIBUTION

Strengths and Weaknesses

- Have a consistent methodology of distribution of nets which ensure equitable distribution of nets to all households in PNG
- Challenges include Covid (quarantine), tribal fights (Dei District), community issues in Maramuni in Enga, hijacking (Wasu Morobe), boat from Morobe leaving a week late but program otherwise we kept good time.
- Many logistic challenges, particularly poor airstrips but continue to reach all locations despite challenges.
- However, we still need to improve the way we distribute nets, particularly verification.
- Biggest challenge is funding for areas above 1600m.

LLIN DISTRIBUTION



Airstrips became water logged in Karamui and helicopters brought in to assist as airplanes could not longer land

HEALTH CENTRE SUPERVISION

- RAM has a team of twelve Regional Malaria Coordinators (RMCs) who each work with one or two provinces. Their job is to visit all accessible health facilities once a month and ensure that all health facilities receive drugs quarterly.
- They work closely with Provincial Malaria Supervisors (PMS) who ultimately should take over the role of the RMCs.

HEALTH CENTRE SUPERVISION

ROLES OF RMCs AND PMSs AT EACH HEALTH CENTRE INCLUDE:

- 1) Ensure that all health facilities have adequate stocks of all malaria commodities – LLINs for antenatal women, RDTs and malaria drugs.
- 2) Ensure that all commodities are properly recorded and utilized.
- 3) Ensure that testing and treatment of malaria is being done correctly.
- 4) Reporting to the National Health Information System (NHIS) is done properly and on time.

HEALTH CENTRE ISSUES

- Estimated that 40-50% cases of malaria are not recorded. This has made quantification of ACTs and RDTs very difficult. It is estimated that
 - Negative cases are often not recorded.
 - Clinically diagnosed malaria cases often not recorded.
 - Treatment from AID posts not included in many cases but Aid Post Kit Drugs also not included in the above

2020	RDTs	ACTs
Total Drugs Distributed	3,139,420	1,700,490
Cases Receiving Testing Or Treatment	1,357,334	884,663
% Recorded As Treated	43.2	52.0

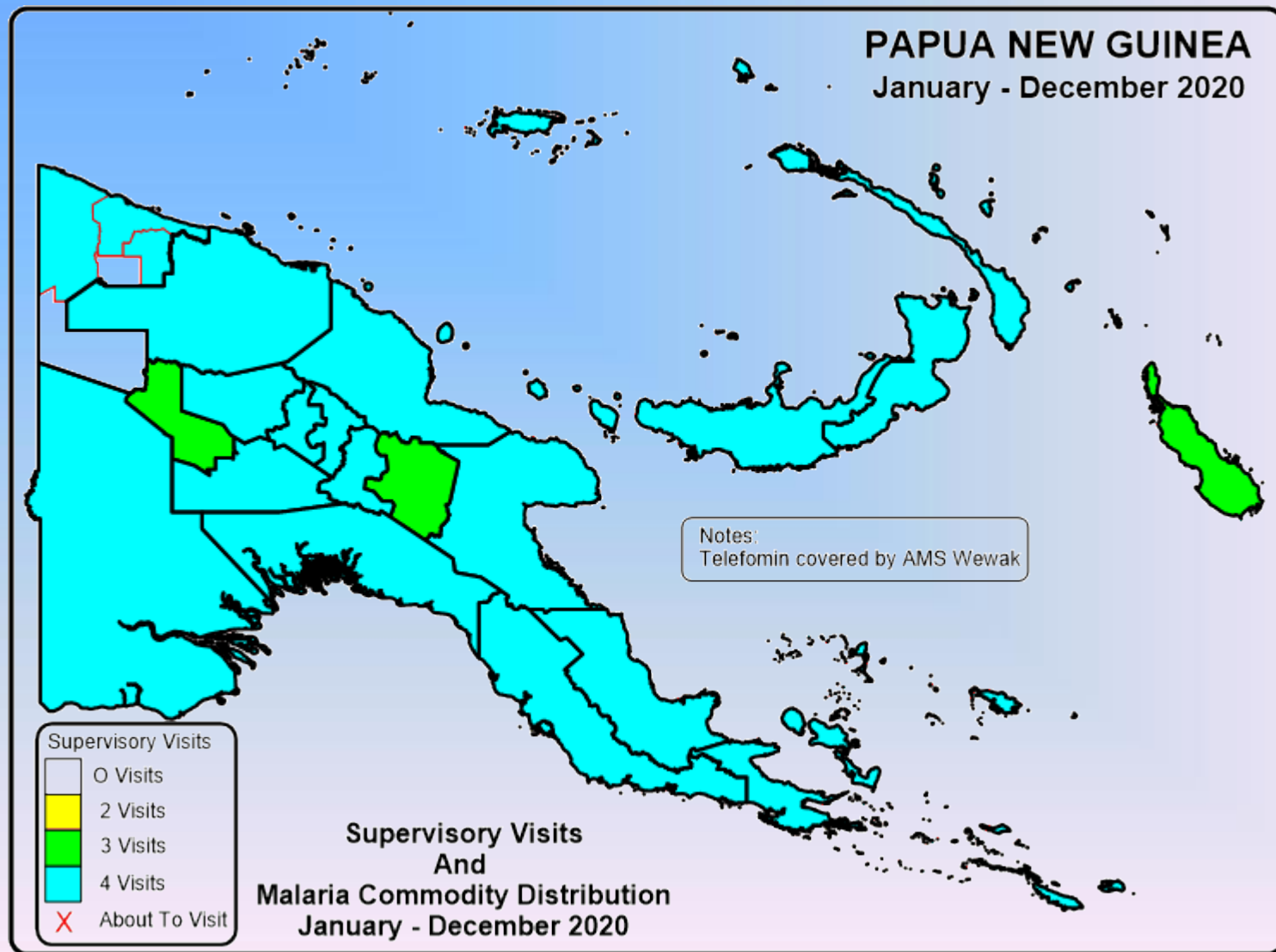
HEALTH CENTRE ISSUES

- Communication with remote health centres extremely difficult and supplying commodities to these locations problematic.
- However, an electronic National Health Information System (ENHIS) will be installed in all health centres in the coming year and hopefully this will allow health data to be available more quickly.
- RMCs will work with ENHIS to ensure that it is used properly.
- Reporting to the National Health Information System (NHIS) is very slow but appears to be getting better.

DRUG DISTRIBUTION

- Since January 2021, RMCs have visited all provinces quarterly. In 2020, they managed to reach all provinces at least three times and most four times. The only district we do not visit is Telefomin. Drugs are delivered to Telefomin remotely in collaboration with Government Medical Stores.
- RAM is working very closely with the National Department of Health Supply Division. RAM is filling in stock shortages of ACTs and RDTs throughout PNG and has distributed both RDTs and ACTs from Global Fund and from government of PNG in a combined distribution.

DRUG DISTRIBUTION



DRUG DISTRIBUTION

- RDTs and ACTs stored in Government Store
- In total, RAM distributes each year:
 - over 2,000,000 RDTs (1,100,000 from GF stocks and about 900,000 from NDoH stocks)
 - About 1,700,000 ACTs

2019	RDTs	ACTs
Total Treatments Distributed	2,632,586	1,713,840
Cases Recorded	1,212,337	823,342
% Recorded As Treated	46.05	48.04

2020	RDTs	ACTs
Total Drugs Distributed	3,139,420	1,700,490
Cases Receiving Testing Or Treatment	1,357,334	884,663
% Recorded As Treated	43.2	52.0

DRUG DISTRIBUTION

- RAM Distributes both GF and NDoH stocks. In 2018 about 50% of commodities distributed were from NDoH but in 2020, GF supplied all the commodities so those of NDoH were a much smaller proportion.
- In the new grant, the NDoH has committed itself to procuring 50% of ACTs and 60% of ACTs.
- We wait to see if the NDoH will fulfil these commitments but to date have supplied their share of ACTs.

DRUG DISTRIBUTION

- Drug supply overall has been a big success. Since July 2017 there have been no significant shortages of malaria commodities to this time.
- Almost no stock has gone missing except for two cartons of drugs lost in Air Niugini.
- Biggest challenges for the Drug Logistics Team are:
 - Health facilities don't report that they have stock outs to PMSs or RAM.
 - RMCs often late to submit GDNs very late.
- Overall the biggest problem is getting health centres to report usage of ACTs (35%) and RDTs (40%). This is a major challenge for RMCs.

DRUG DISTRIBUTION



NATIONAL DEPARTMENT OF HEALTH

RAM Works Closely Alongside the National Malaria Control Program (MCP) Including

- 1) Coordination of all malaria activities in the country
- 2) Therapeutic Efficacy Studies of Anti Malaria Drugs carried out by MCP
- 3) Community Based Malaria Programs including Home Management of Malaria

HOME MANAGEMENT OF MALARIA

- Program involved training Community Volunteers in remote areas in the testing and treatment of malaria.
- Home Management of Malaria (HMM) previously carried out in Sandaun (PSI), East Sepik (Save the Children) and East New Britain (Burnet Institute) from 2015 to 2017.
- Program abandoned in 2017 due to high cost. However continued in Sandaun by PHA which RAM supports.
- PHA HMM program like the one in Sandaun was rolled out in 2020 Morobe, Madang, East Sepik, New Ireland, Central and Milne Bay.
- Expansion in 2021 is in Western, Oro, Gulf, East New Britain.
- This program trains community volunteers to test and treat malaria at a community level in places which are at long distance to health facilities.

PNG - MALARIA LLIN PROGRAMME

SCHOOL MALARIA PROGRAM

School And Community Involvement



SCHOOL MALARIA PROGRAM

TRAINING PRIMARY SCHOOL TEACHERS IN KURIVA CENTRAL PROVINCE IN APRIL 2019

- April 2019 - 13 teachers trained in testing and treating malaria.
- Teachers came from six schools plus one village volunteer trained at Kuriva Primary School.
- Teachers now all testing and treating malaria
- These teachers are still going strong after one year



Two years later these teachers are still regularly treating malaria patients in their schools and local communities

SCHOOL MALARIA PROGRAM

- Overall the program has been a success but getting schools to work to a regular routine when project staff are not there has been problematic though this has been complicated by Covid19 in the last 18 months when schools have often been closed.
- School teachers who were trained to test and treat malaria in 2019 continue to test and treat their pupils and surrounding communities.
- School prevalence rates in general are much lower in 2021 than in 2018. We believe that these reduced rates are mainly due to the program.

School	May-18	May-19	May-20	May-21
Kuriva	64.1	25.7	61.5	20.8
Brown River	46.5	23.0	33.3	20.8
Vanapa	43.9	18.1	3.8	
Kerea	32.5	22.9	10.8	20.2
Berere	64.1		5.6	

INSTITUTE OF MEDICAL RESEARCH

RAM is managing finances of IMR in three studies being supported by the Global Fund.

- Stratification of malaria in PNG in 2018.
- Insecticide Resistance in 2018 and 2020.
- Malaria Indicator Survey in 2019 – 2020.

INSTITUTE OF MEDICAL RESEARCH STRATIFICATION

It is presently assumed that the stratification of malaria in PNG is as follows:

- 0-1200m Malaria is endemic
 - 1200-1600m Malaria is epidemic
 - 1600-2000m Only *P. vivax* is transmitted
 - 2000m and over No malaria transmission.
-
- This study determined that these limits are still good in the environment of Global Warming
 - IMR have just completed school surveys throughout the highlands and should produce a report soon.
 - Study shows practically no malaria above 1200m at present but experience shows that outbreaks are still possible in the areas of 1200-1600m but no outbreaks noted this year.

INSTITUTE OF MEDICAL RESEARCH

Malaria Indicator Survey

This is a national malaria survey which covers all provinces. It looks primarily at three things,

- LLIN Coverage and Usage
 - Treatment seeking practices
 - National Prevalence
-
- The results of the MIS have been favorable showing a general decline in malaria.

Malaria Prevalence As Per MIS

Region	MP-09	MP-11	MP-14	MP-17	MP-20
Southern	11.6	4.4	0.1	4.2	1.1
Highlands	11.4	0.3	0.3	0.7	0.03
Momase	19.8	8.0	3.3	10.6	4.1
Islands	25.1	14.3	3.4	2.8	1.4

INSTITUTE OF MEDICAL RESEARCH

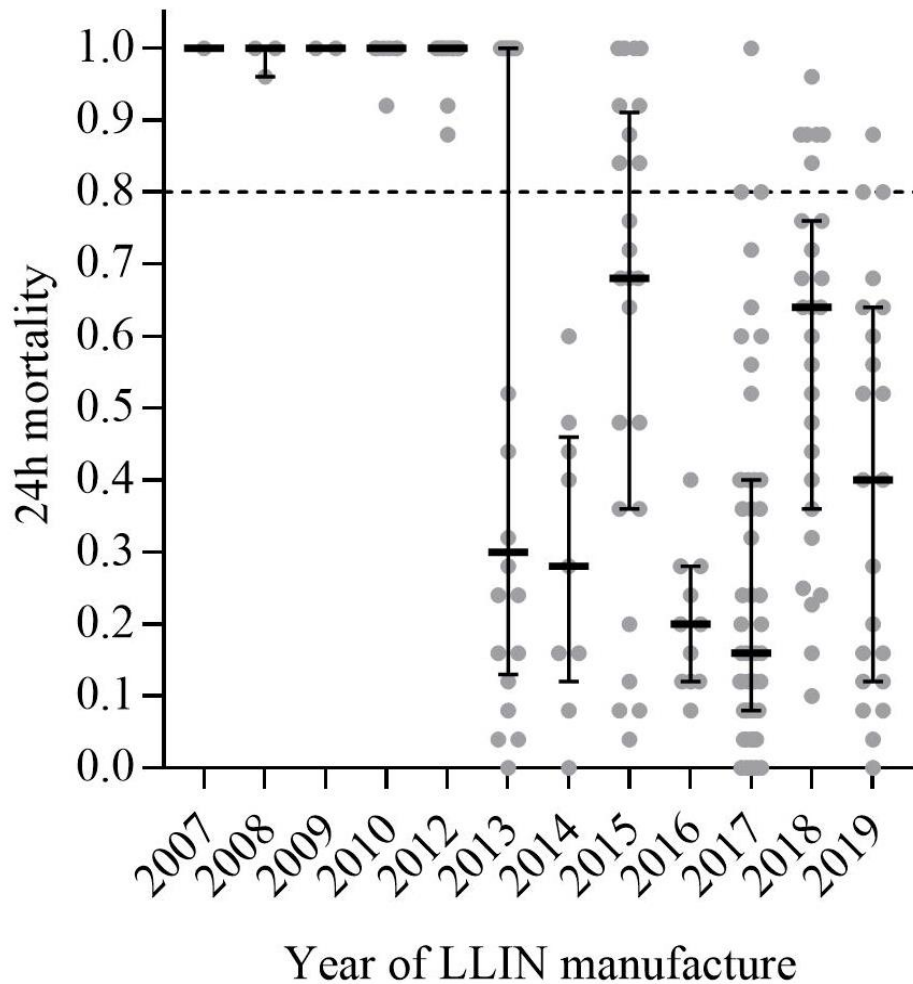
Insecticide Resistance Studies

This work involves testing mosquitoes for insecticide resistance and is based in Madang.

- To date, Anopheline mosquitoes which transmit malaria are not showing any resistance to any common insecticides.
- However, Aedes mosquitoes which transmit dengue and other viral diseases show some resistance to insecticides which is very worrying.
- Team in Madang has also been working on the efficacy of nets for which a paper has been published in July 2020 in Nature Communications.

IMR RESEARCH

Permanets which PNG has been using since 2004 are now not holding their insecticidal activity. This has now been published



IMR RESEARCH

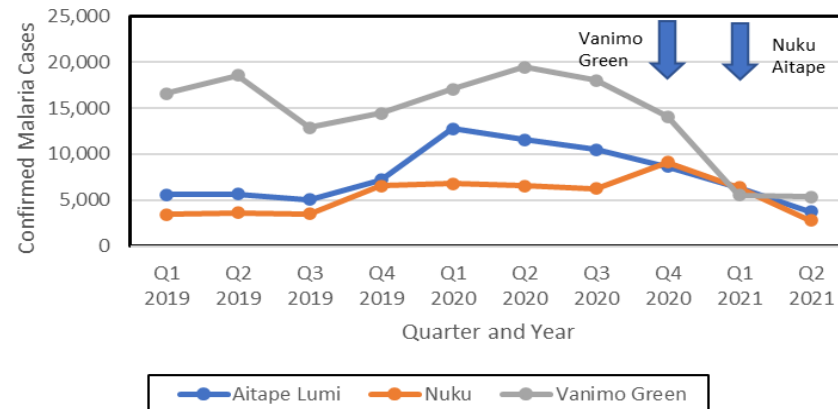
RAM has received four new types of nets in 2020. SafeNet, Interceptor, Yorkool and Royal Sentry.

Of the four, only Royal Sentry have shown good efficacy in the laboratories. Data for the other three nets has been submitted to Global Fund for analysis,

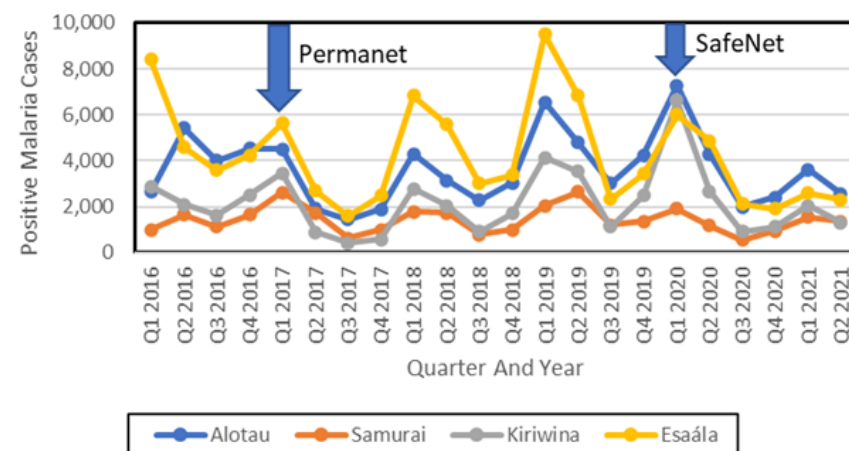
Royal Sentry have only been distributed in the East Sepik and Sandaun in early 2021. Initial results look promising.

MALARIA DATA

Sandaun - Malaria Cases By Quarter



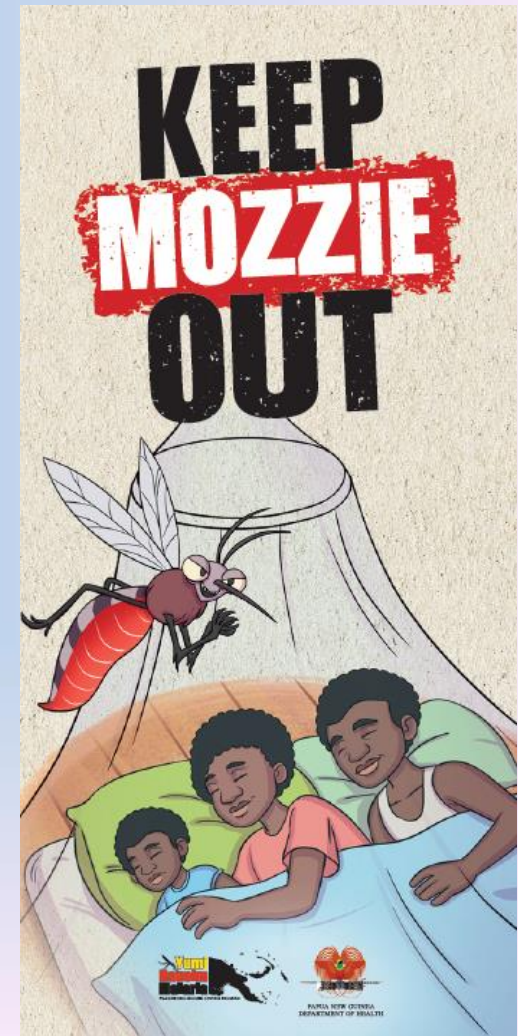
MILNE BAY - Malaria By Quarter And Year



PNG - MALARIA PROGRAMME

BEHAVIORAL CHANGE COMMUNICATION

- Malaria Program has hired a company known as Media Playground to develop BCC materials. Be have already developed a pamphlet and shortly a Flip Chart than can be used in health facilities and schools. We are also developing, billboards, posters, bumper stickers and other materials for churches, schools and politicians.
- These materials will be available for use in 2021.



CHASING MALARIA PROGRAM

Working closely alongside the NCD, Gulf and Central PHAs. Activities include:

- 1) Giving out nets to all malaria positive patients.
- 2) Map all positive cases.
- 3) Work with schools and communities for malaria education and create school clubs to destroy mosquito breeding sites.
- 4) Training school teachers in test and treating malaria and keeping them supplied with drugs
- 5) Support World Malaria Day
- 6) School malaria prevalence surveys

CHASING MALARIA

LLINs Given Out For Positive Cases Of Malaria In
Central, NCD and Gulf Provinces

Province	2014	2015	2016	2017	2018	2019	Total
Central	325	3,276	1,888	1,932	2,130	2,356	11,907
NCD	167	925	592	619	823	3,621	6,747
Gulf	0	214	972	1,876	622	2,818	6,502
Total	492	4,415	3,452	4,427	3,575	8,795	25,156

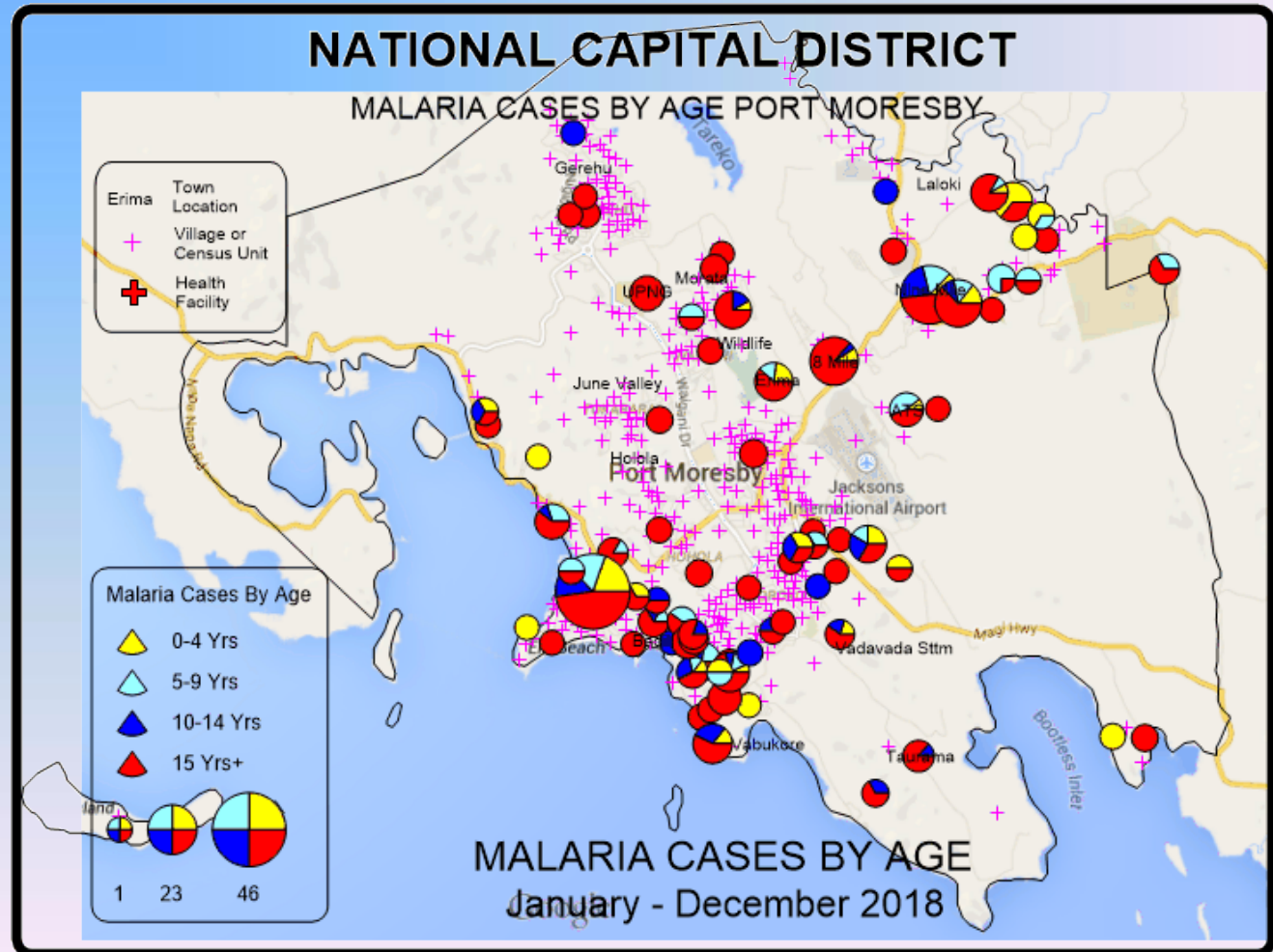
CHASING MALARIA

MAPPING IN CENTRAL AND NCD PROVINCES

- Since late 2014, RAM has been giving nets away for all RDT positive cases. This has encouraged people to get tested while allowing health staff to collect data on malaria cases throughout the two provinces.
- We also collect data on the travel history of the patients.

CHASING MALARIA MAPPING IN NCD

This map shows malaria cases in children in NCD. This suggests that malaria is still being transmitted in Kaugere.





CHASING MALARIA

MAPPING AND ELIMINATION IN NCD

We are starting a new program in NCD with funding from Exxon Mobil.

The purpose of this program is to map malaria within the city by following up on children 0-9 yrs old who have no history of travel to try and map potential breeding sites in Port Moresby and surrounding areas.

This is a joint program between Chasing Malaria Program and NCD Health with a new officer now employed to carry out this work.



SCHOOL PROGRAM

- RAM has been working with community initiatives since 2012 and since 2016 working with schools, first in Waima and now Kuriva.
- Greatest challenge in continuity. Schools are happy to work with the program but once the program does not visit the schools, the program stops.
- Chasing Malaria Program has recently linked up with YWCA Skillz Program and Grassroots Soccer from South Africa to expand the school curriculum of Skillz's to include destruction of breeding sites.
- Chasing Malaria together with Skillz Program has had a number of ZOOM training sessions and now having practice sessions in schools.

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CHASING MALARIA

School Program

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CHASING MALARIA SCHOOL PREVALENCE SURVEYS



School Prevalence Survey In Brown River

WORLD MALARIA DAY PREVALENCE SURVEYS

School Prevalence Surveys Initiated On
World Malaria Day in Kuriva in 2018 Central
Province showed very high prevalence rates

Row Labels	Neg	Pf	Non Pf	Mixed	Tested	Positivity
Berere	14	9	8	8	39	64.1
Brown River	77	17	26	24	144	46.5
Doromoku	33	4	6	3	46	28.3
Kerea	83	20	10	10	123	32.5
Vanapa	74	16	20	22	132	43.9
Grand Total	281	66	70	67	484	41.9

ELEMENTARY SCHOOL PREVALENCE SURVEYS

- School Prevalence Surveys Now carried out throughout PNG in Elementary Schools.
- Results have shown very high prevalence rates in many parts of the country.
- The area big differences between provinces but also within the same province.
- Results from Central Province at least show reductions of malaria in 2019 from 2018.

Primary School	Date	Negative	Pf	Non Pf	Mixed	Total RDTs Tested	Total Positive	% Positive	Pf %
DISTRICT	HIRI DISTRICT								
Kuriva	Apr 19	139	12	24	12	187	48	25.7	6.4
Vanapa	Apr 19	95	5	14	2	116	21	18.1	4.3
Kerea	Apr 19	74	1	19	2	96	22	22.9	1.0
Brown River	Apr 19	144	12	6	25	187	43	23.0	6.4
TOTAL RDTs		452	30	63	41	586	134	22.9	5.1

WORLD MALARIA DAY

PREVALENCE SURVEYS

Prevalence Surveys now done in eleven provinces
and 19 districts.

Province	District	No. Elementary schools surveyed	No. students tested	No. students tested positive	Positivity rate (%) - district	Positivity rate (%) - province
Central	Abau	2	240	0	0.0	8.0
	Hiri-Kairuku	12	1,539	178	12.0	
	Rigo	3	302	0	0.0	
East Sepik	Wewak	2	302	23	8.0	3.0
ENB	Gazelle	2	128	4	3.0	5.0
	Kokopo	1	49	30	61.0	
Gulf	Kerema	3	419	36	6.0	5.0
Madang	Madang	2	300	90	30.0	26.0
	Sumkar	2	300	104	35.0	
Manus	Manus	8	588	114	19.0	15.0
Morobe	Lae	2	300	21	7.0	9.0
	Markham	4	301	45	15.0	
NCD	North-east	1	150	0	0.0	0.0
	North -west	1	150	0	0.0	
	South	1	149	0	0.0	
Oro	Ijivitari	2	299	15	5.0	2.0
	Sohe	1	106	3	3.0	
West Sepik	Vanimo-Green	2	289	65	22.0	9.0
WNB	Talasea	3	355	18	5.0	2.0
11	19	54	6,266	746	12.0	12.0

Results show that malaria is still very high in many provinces

Not repeated in 2020 due to Covid

POSSIBLE PROBLEMS

POSSIBLE REASONS FOR INCREASES IN MALARIA

- People not going for treatment due to access (Kuriva Population spread out)
- Human behaviour
 - Not sleeping under nets, not repairing nets
- Mosquitoes biting earlier so increasing contact with mosquitoes.
- People staying up late e.g. watching village cinema
- LLINs no longer working
 - not treated properly.
 - Insecticide resistance
 - Nets not being repaired

FUTURE OF CHASING MALARIA

- RAM will continue to work in Waima and Kuriva but will now expand into the areas between.
- However ownership remains a big problem – communities happy to work when RAM staff are present and but do nothing when RAM staff are away. In this respect trying to identify any strong local groups (e.g. Church or women's groups) working in the area with whom RAM Chasing Malaria Team can win.
- We will try to work with the YWCA Skillz Project in the future if funding allows

Staff Situation

YEAR	Number Of Staff	Left	Drink	Fraud	Other	Resigned
2010	19-21	8	3	1	4	
2011	21	2	1	1		
2012	28-31	11	1	5		5
2013	33-43	13		6		7
2014	40-37	23	2	6	8	7
2015	38-42	11	1	6	1	3
2016	42-45	4	1	2		1
2017	48-59	10		2		8
2018	75	7		2	1	4
2019	99	12		4	3	5
2020	130	13	1	2	1	9
TOTAL		114	10	37	18	49

In 2020, we had 130 staff. This will increase to 137 in 2021 with the addition of six HMM staff and one logistics supervisors. Increases from 2019 include seven HMM officers, RMCs, project officers and accountants.

2021 Program

LLIN

- Complete East Sepik and Sanduan
- Mount Hagen District and Dei District???
- Jimi District in Jiwaka, Chimbu, EHP Morobe, Madang, ESP, Western and Telefomin (Sandaun).

Antenatal Nets throughout PNG

Health Centre Supervision

- Continue with drug distribution and improving diagnosis, treatment and NHIS in all provinces.

NDOH and IMR

- TES by NDoH
- Health Facility Survey and Entomology

HMM

- Three new provinces including Western Province (funding from PNG SDP)



02/11/2011

The Realities Of Distributing Nets In PMG



RAM TEAM 2021

Thank You Very Much
Tenk Yu Tru
Tanikiu Bada Herea

