



BED NETS DECREASE
MALARIA PREVALENCE

Page 3



UNDERSTANDING HIV
PREVALENCE IN PNG

Page 4



MATERNAL HEALTH ISSUES IN THE
BENA AREA

Page 5

New Unit for Environment & Public Health Research

"THIS NEW UNIT WILL BE LOOKING INTO THE EMERGING DISEASES AND PROBLEMS ASSOCIATED WITH HEALTH THAT HAVE CROPPED UP AS A RESULT OF DEVELOPMENTS TAKING PLACE."

BY GERALDINE VILAKIVA

The Institute has created a new research unit.

The new Environment and Emerging Diseases Unit (EEDU) will look into emerging and re-emerging diseases in PNG and will be headed by Dr Paul Horwood.

In the last three years, new diseases such as cholera have emerged in our society and also diseases which have been thought to have declined in the past 10-15 years have suddenly re-emerged in society too. Examples of some of these diseases are Pigbel and Yos (big ulcer). Reports of these re-emerging diseases are a big public health concern, not only for health workers, but also for the whole community.

These emerging diseases have been assumed to be resulting from the recent socio-economic developments in the country. Being a government institution, IMR has been tasked by the government to look into these public health concerns. As such, IMR has made strategic moves to align its research arm to take on board new research activities such as investigating the reasons behind emerging diseases and also to look into other environmental and social economic problems



that have cropped up.

This has led to the set up of another new research unit at IMR, the EEDU, which will look into these health concerns. This unit is headed by Dr Paul Horwood and will focus primarily on health issues that arise as a result of developments such as logging, mining, petroleum and gas, just to name a few.

The unit will not be investigating nor doing checks and balances for the mining, petroleum and logging companies, but will look into the health problems that have arisen as a result of these developments taking place.

The idea has always been there, but having a research arm that targets this particular health issue is a tremendous gain for the Institute and we are looking forward to more research opportunities as the new unit gets underway.



Dr Andrew Greenhill and his wife Suzie, cutting their farewell cake.

IMR Management & Staff farewell Dr Greenhill & Family

BY GERALDINE VILAKIVA

The IMR staff and management farewelled Dr Andrew Greenhill and his family last Wednesday. Dr Greenhill was a senior scientist and was the Head of the Infection and Immunity Unit as well as the Head of the Bacteriology Section. After four years of serving the Institute, Dr Greenhill left at the end of March for Australia to take up his new post as a lecturer at the Monash University in Melbourne, Australia.



Prof. Peter Siba

Director's Message

Welcome to the 37th Issue of the IMR Newsletter.

In the last three years, new diseases such as cholera have emerged in our society and also diseases which have been thought to have declined in the past 10-15 years have suddenly re-emerged too. Reports of these emerging and re-emerging diseases are a big public health concern.

IMR has been tasked by the government to look into these public health concerns. As such, the management had made strategic moves to align the Institute's research arm to take on board new research activities such as investigating emerging diseases and also to look into other environmental and social economic problems that have cropped up.

The establishment of a new research unit, the Environment and Public Health Unit, is part of these new changes within the Institute. We hope that this new unit will provide answers to some of these health concerns.

Apart from the creation of new units, we are also venturing into new studies and programs. One new study is the Human Papilloma Virus (HPV) study. This is a new study which will look into the virus that causes cervical cancer and will evaluate a new pilot health intervention that is being carried out at two provincial hospitals. This study is done in close collaboration with the National Department of Health and other external collaborators. We hope this study will provide a baseline data on cervical cancer and treatment in PNG.

We hope that by realigning our research priorities, the Institute can work towards our overall goal, which is to improve the overall health of Papua New Guineans by conducting research into the diseases and health problems and find suitable solutions to them.

Thank you.
Prof. Peter Siba

content

New Research Unit.....	1
Australian Volunteers at IMR.....	3
Studies to understand HIV prevalence.....	4
Biomed Technican attends US training.....	6
IMR Clinic gets new equipment.....	7
New TB lab for Kikori.....	8
Training Updates.....	9
Focus - The IPTp Study.....	10

DR POMAT TAKES THE REINS

Dr William Pomat is the new head of the Infection and Immunity Unit. He has taken over the reins from Dr Andrew Greenhill, who left in March for Monash University in Australia. While announcing this, Professor Peter Siba took this time to thank Dr Andrew Greenhill for his contribution and efforts over the last three years in raising the bar of research and human capacity development within the unit. Prof Siba said Dr Pomat has been with the Institute for 25 years and brings with him a wealth of experience which will continue to contribute to the qualified research output in the unit. The unit is currently conducting major research studies into various infectious diseases; one such is pneumonia research, of which Dr Pomat is one of the principal investigators of the study. This study is currently investigating pneumonia in children under five years, searching for a suitable vaccine that can be given to children to prevent them from getting pneumonia at an early age. This study is being co-sponsored by ExxonMobil and Pfizer, a major international pharmaceutical company.



BEDNETS BEAT PNG MOSQUITOES AND 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,”

Malaria-carrying mosquitoes desperate for human blood have been forced to bite earlier in the night as more Papua New Guineans sleep peacefully under treated bednets, say researchers from the PNG Institute of Medical Research (IMR).

A study has found that repeated large-scale free distribution of long lasting insecticide-treated Nets across PNG has led to a significant increase in net usage and subsequent reduction in malaria.

However, researchers also found that canny mosquitoes adapt to the use of nets, bringing forward their evening meal in an attempt to feast before human bedtime.

Dr Manuel Hetzel, head of the IMR’s Population Health and Demography Unit, said that country-wide, the prevalence of malaria infections in the community had decreased dramatically, from over 12% in 2009 to below 8% in 2011.

“Insecticide-treated bednets have been distributed widely in the community since 2004 by Rotarians Against Malaria and the National Department of Health (NDoH), with 80% of households across PNG now owning at least one long lasting insecticide-treated net, up from about 10% before the widespread distributions began,” Dr Hetzel said.

The survey found that nearly 50% of people now sleep safely under a treated net.

“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,” he said.

This was accompanied by a decrease in the number of malaria infected *Anopheles* mosquitoes biting humans.

“To win the battle against malaria, we need a continuous supply of treated nets, consistent treatment with the newly introduced Artemisinin-based Combination Therapy (Mala-1) and further research on ways to control malaria,” Dr Hetzel said.

The IMR study is part of the evaluation of the National Malaria Control Program (NCMP) that is supported by the Global Fund to Fight AIDS, Tuberculosis and Malaria. The NCMP is a partnership between NDoH, Rotarians Against Malaria, Oil Search Health Foundation, Population Services International, World Health Organization and IMR.

PNG is a highly malaria endemic country, with four malaria species (*Plasmodium falciparum*, *P. vivax*, *P. malariae*, *P. ovale*) and a variety of *Anopheles* mosquitoes.

For more information on this study and other malaria control studies, email us on: info@pngimr.org.pg or visit www.pngimr.org.pg

IMR welcomes Aussie Volunteers

The Institute has recently welcomed three Australians who will be working at the Institute in assisting as well as providing training and mentoring staff at the Institute.

Wendy Levy and Monika Vnuk are from Australian Volunteers International (AVI), while Robert Hyndman is employed independently.

They are attached to the various units in the Corporate Affairs division of the Institute.

Wendy is attached to the Communications Unit and assisting with Public Relations tasks while Monika is providing support and training to various project management functions. Rob is working closely with the Institute’s Finance Unit.

Wendy and Monika arrived in March this year to take up positions for one year and two years respectively, while Rob will be here for six weeks ahead of a two year AVI assignment in Cambodia."

Deputy Director for Corporate Affairs, Samson Akunaii welcomed the specialists and said that the management is happy to recruit these specialists to train and assist the key officers in the CASS respective units.

“The management is anticipating that their expertise will help to train our staff and in general improve the overall staff performance.”



(L-R) Monika Vnuk, Wendy Levy and Robert Hyndman.

Studies helps to understand HIV prevalence

"THERE IS STILL MUCH WE DO NOT UNDERSTAND ABOUT HIV TRANSMISSION IN PNG"

BY DR CLAIRE RYAN

HIV prevalence in the general population in Papua New Guinea is currently estimated at 0.7% (National Department of Health).

This figure is further validated by the findings from the baseline data for the Papua New Guinea and Australia Sexual Health Improvement Project (PASHIP), which found the same prevalence of HIV among the population.

Also in contrast to previous figures, the 2010 National Surveillance report indicates that HIV prevalence is higher in urban settings, compared to rural settings. As one would expect, the prevalence of HIV among what are considered higher risk groups (i.e. people going to voluntary counselling and testing centres, tuberculosis patients, and STI clinic patients) is higher than that among general populations (antenatal clinic attendees and blood bank donors).

Despite the good news from the 2010 Surveillance Report that the HIV prevalence in PNG appears to have peaked and is dropping, we should not be complacent. There are a lot of things that we do not understand about HIV transmission in PNG.

There are marked differences in the proportion of HIV cases from each of the four regions of PNG. More than half the HIV diagnoses are confirmed in the Highlands Region (57%), and one quarter in the Southern Region. 14% of cases are reported from Momase Region and the Islands Region reported 2.9% of all HIV diagnoses.

These figures represent the proportion of all



diagnoses, not the prevalence of HIV in each region.

It must also be noted that figures from the National HIV Surveillance Report are collected through passive surveillance of reporting sites.

To date, there has been very limited surveillance in specific population groups at higher risk in PNG, but there are suggestions of elevated levels of HIV infection in some subgroups.

A recent survey among people who exchange sex for money or goods in Port Moresby indicated an HIV prevalence of 18% (Kelly et al, 2010).

An earlier survey of sex workers by Bruce et al (2010) found the prevalence of chlamydia, HIV, gonorrhoea, syphilis and trichomonas to be 29%, 20%, 46%, 41% and 51% respectively. Similarly high prevalence figures were found among female sex workers in the Eastern Highlands Province in PNG. Some testing centres in the highlands have found that 10% of people

presenting have HIV infection, but this figure cannot be taken as representative as it could reflect symptomatic self-referral in advanced cases.

Whilst HIV prevention programs appear to have been effective among the general population in PNG, the need for continued interventions is still of utmost importance.

HIV prevention along the Highlands Highway must continue, as does surveillance among higher risk populations.

There is still much we do not understand about HIV transmission in PNG. Molecular investigations looking into transmission are planned by the PNGIMR for 2012. Other interventions, such as male circumcision and the use of a topical microbicide are also being investigated for their efficacy in this setting.

"THE NEED FOR CONTINUED INTERVENTIONS IS STILL OF UTMOST IMPORTANCE"

Claire Ryan, PhD is the section head for the HIV/ STI Laboratory which is part of the Sexual & Reproductive Health Unit (SRHU). For more information on the studies being done at the HIV/STI lab, email info@pngimr.org.pg

Trained midwives keeps birthing mothers safe

This Mother's Day, spare a thought for the families of the 1,500 PNG women who die each year as a result of pregnancy and childbirth. PNG has one of the highest maternal mortality ratios in the world, with 733 mothers dying for every 100,000 live births.

Most deaths occur in rural areas, where women give birth alone or without a trained midwife.

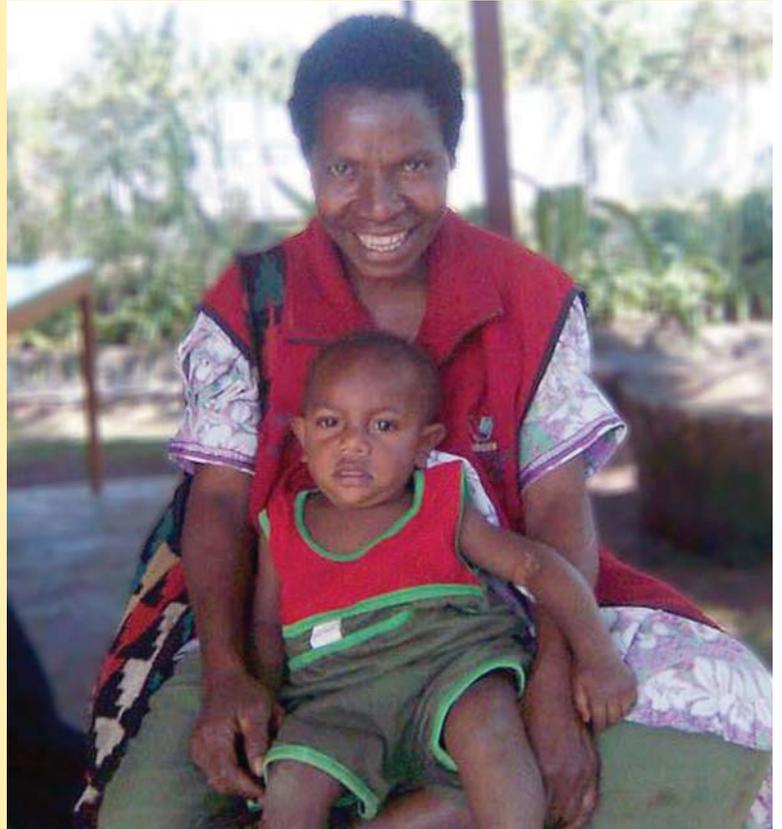
Access to good health services, especially trained midwives, is the key to a safe birth, yet many women do not seek medical help, even when it is available, said Lisa Vallely, Section Head, Maternal and Child Health, at the PNG Institute of Medical Research (IMR).

Mrs Vallely and her team are investigating maternal health in Upper Bena, a village with access to a health centre and day clinic that is less than one hour by road from Goroka in the Eastern Highlands. "We spent six months interviewing Upper Bena women and men to learn about the key issues and constraints facing women during pregnancy and childbirth," Mrs Vallely said.

"Both men and women could recall women dying from excessive bleeding, among other complications, yet health centre records showed that three-quarters of the women who attend the Antenatal Clinic fail to use the service to give birth, with dangerous outcomes for mother and baby.

IMR is working to strengthen facilities and will conduct a feasibility study in Upper Bena later this year, collaborating with the National Department of Health and other stakeholders.

Women who attend Upper Bena's Antenatal Clinic will receive a clean birth kit containing disposable items such as soap, a plastic sheet, cord ties, a blade and tablets to prevent post partum



haemorrhage – the leading cause of maternal death in developing countries.

"The key message will be for women to go to the health facility during labour and child birth; the kits will be provided for use in the situation where women cannot reach the facility," Mrs Vallely said.

"We want more mothers to survive and celebrate Mother's Day each year with their loved ones," she said.

IMR STAFF PROMOTE HEALTHY WOMEN, HEALTHY PNG

Healthy Women, Healthy PNG (HWPNG) elected new office bearers during its annual general meeting in April.

The new officers are Pamela Toliman as Chairperson, Sarah Javati as Vice Chairperson, Celestine Aho as Secretary and Cynthea Leahy as Treasurer, with five other volunteers to assist the executive.

The April meeting discussed the lifespan of the group, and whether to wrap it up or to continue the work.

The female staff unanimously voted to continue the HWPNG group and voted in new office bearers.

Outgoing Chairperson, Susan Gandi, was happy with new blood showing interest in taking forward the group and pledged her full support. Although Susan has since resigned from IMR, she encourages female staff and the executive to continue to support the group.

HWPNG is a community group made up of female staff working at the IMR. The group

was formed in 2000 to promote the concept of healthy women, healthy PNG through awareness as well as support for the Goroka Hospital's Well Women's Clinic.

The group also has branches in three other IMR sites – Madang, Maprik and Port Moresby.

For more information about HWPNG, email info@pngimr.org.pg

Biomed Technican attends US training

Jason Maiasa, the Institute's biomedical equipment technician, is currently studying for six months in the United States under the Biomedical Repair Training Program.

Jason was selected by MediSend International of USA, following a competitive entry exam supervised by the IMR Training Office. His training is funded by Esso Highlands under their PNG International Scholarship Program to address the current shortage in PNG of certified biomedical equipment technicians.

This is an intensive training program targeting technicians in developing countries who

are taking leading roles in their hospitals or medical research organizations, as skilled and certified biomedical technicians.

Trainees learn how to install, repair and maintain all types of biomedical equipment that can be found in a developing-country hospital or research institute. The program focuses on practical skills, providing hands on training in installing, using and repairing a broad range of biomedical equipment.

Jason is studying in Texas and at the end of his course in July 2012, he will be able to identify and solve open-ended prob-



Jason Maiasa

lems with medical relevance, including repairing mechanical, electro-mechanical and electronic failures of biomedical equipment.

He will have the skills to inspect, calibrate and perform preventative maintenance and safety

checks, and will know how to install equipment and provide instructions to physicians and nurses. He will also have received training in effective scientific, technical, communication and resource management skills.

Talking back through local radio



Pictured are Pamela Toliman and Janet Gare, Senior Scientific Officers with the HIV/STI Lab, discussing on the Talkback program about drug resistance in HIV and STIs.

Radio is one of the important means of communicating information to the public.

It is a very effective means of information dissemination, and IMR recognises the importance of radio for disseminating information about its various research projects to the public.

IMR's Communications section has made arrangements with KBK FM / NBC Eastern Highlands to use its regular Talkback Show as the medium to communicate our research work to the public.

The IMR Talkback Program started in February this year and will continue throughout 2012. The program comes on every fortnight and IMR is asked to provide experts from certain sections to discuss their studies and allow listeners to comment or even ask questions relating to the studies that are being conducted.

If you would like to know more about this radio program, email media@pngimr.org.pg

BOOSTING DATA ANALYSIS SKILLS

THERE WAS A FOCUS ON ANALYSIS OF DATA AND REPORT WRITING TO ENABLE TRAINED RESEARCHERS TO PRODUCE PERTINENT AND TIMELY REPORTS.

Data analysis and interpretation in epidemiological studies was the focus of a training workshop held in Port Moresby from February 2012.

The two-week workshop targeted 25 junior researchers and academics from research, academic and health institutions across PNG. It was conducted with assistance from the National Aids Council Secretariat (NACS) Research Coordination Unit in partnership with AusAID.

The workshop was attended by four IMR staff – Pamela Toliman (Scientific Officer, HIV/STI Laboratory), Tawarot Kurumop (Scientific Officer, HIV/STI (SRHU), Mexy Kakazo (Principal Scientific Officer, PIH) and Geraldine Maibani-Mitchie.

Training covered the principles of data analysis in epidemiological studies and other qualitative studies, especially HIV/AIDS.

Attendees looked at the different methods and

software available for data entry, data analysis and graphical presentations of data. They explored the skills required to publish high quality reports with well analysed data that brings out answers to the research questions of the study. There was a focus on analysis of data and report writing to enable trained researchers to produce pertinent and timely reports.

Oxford First Aid Suppliers donate new clinic equipment for IMR

BY GERALDINE VILAKIVA

Oxford First Aid Suppliers have donated new clinic equipment for IMR.

An electric suction machine, a stethoscope and an otoscope were purchased by the IMR management to be used at the clinic to treat study participants, staff and their families who seek medical services there.

This equipment was bought from Oxford First Aid Suppliers, a national company, who, in realising the important work of IMR, went further to provide an additional electric suction machine free-of-charge.

Pioto Namuigi, officer in-charge of the clinic, was overwhelmed when he expressed his gratitude to the management for purchasing this equipment and Oxford First Aid Suppliers for support-

ing the work of the Institute by donating the additional equipment.

"The clinic is involved in providing the clinical aspects for many of the studies at IMR particularly the PCV study and this equipment will really help to improve the services that our clinical staff provides to study participants and staff alike," said Mr Nuigumani.

The clinic was established in 2001 and currently employs two Health Extension Officers (HEOs). The Pneumococcal Conjugate Vaccine (PCV) study team also uses the clinic to take blood and follow-up interviews for the study participants.



Pioto Nuigumani with staff from the Oxford First Aid Suppliers, Goroka branch with the donated electric suction machine in front of the IMR Clinic.

"...THIS EQUIPMENT WILL REALLY HELP TO IMPROVE THE SERVICES THAT OUR CLINICAL STAFF PROVIDES TO STUDY PARTICIPANTS AND STAFF ALIKE."

Partnership in Health Research (PiH) Project Updates

Various studies under the PiH project have started with their activity plans and programs in close consultation with the overall Principal Investigator for the project, Director, Professor Peter Siba.

Nutrition, socio-economic surveys, verbal autopsies, clinical settings on health facilities and non-communicable disease work plans have already started. Other studies such as TB, NCDs are still in development stages.

The nutrition and NCD collaborators' meeting has also taken place in Goroka, with a plan already drawn up on how the study will be conducted. The meeting included collaborators from University of Auckland, New Zealand; University of Queensland, Australia, and University of Tokyo, Japan together with IMR senior study staff.

Updates from each project site

1. **Hiri**

Census of four villages (Papa, Lealea, Boera and Porebada) has been completed and

the team there is now set to conduct a review census. Verbal autopsies, clinical morbidity, nutrition and socioeconomic surveys have also commenced with the non-communicable Diseases (NCDs) study soon to start.

Almost all staff recruitment needed for clinical, administrative and community employment has been done. Refurbishment work carried out on the office and laboratory in Papa Clinic will be completed soon.

2. **Hides**

Demographic census is still being conducted at Hides. The team for the nutrition and socio-economic study took a trip to the area recently with preparations already underway for the study to commence. The logistic issues posed on the team such as the massive landslide in Hides, resulted in the delay of the survey completion.

3. **Goroka**

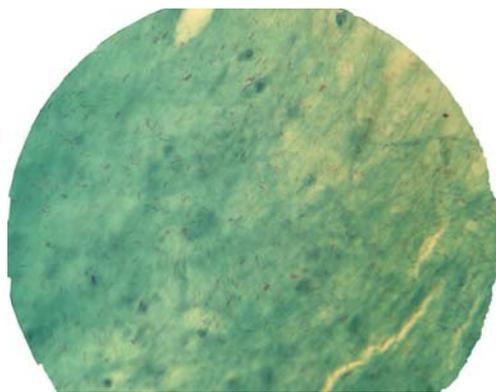
The census was put on hold towards the end of December 2011 until February 2012. A workshop to train and enhance reporters about the

community relations and for good support and cooperation was conducted. Job descriptions and contracts were signed and IMR policies were introduced at the workshop. Recruitment of the clinical team is nearly completed. Once recruitment is done, the clinical team will be based in four clinical settings - Asaro, Kongi, Tafeto and Uritoka. Other activities like the nutrition, socio-economic, verbal autopsies are continuing.

4. **Karkar**

Though Karkar started late with HDSS work, the census was completed in four Council Wards in Takia by March 2012. The nutrition team briefly touched the Island late last year. Other activities are still in the planning stages. In March-April 2012, we conducted community awareness; reporter and Community Relation Officers recruitment and training and getting work contracts were done for all field staff. Then census continued in mid April 2012 onwards in Waskia and part of Takia.

New TB lab for Gulf Country hot spot



The Mycobacterium tuberculosis, the bacteria that causes TB bacteria, seen under a microscope.

BY GERALDINE VILAKIVA

The Institute has set up a new TB laboratory at the Kikori General Hospital in the Gulf Province. This is part of the Institute's expansion of TB research and as Kikori is one of the hot spots for high TB cases, it is a suitable site for the establishment of the lab.

Kikori is sometimes known as the "capital city of TB" since it has the highest number of TB cases in PNG. Since TB DOTS is not adopted in the Gulf Province, there is no information about the TB burden and drug resistance.

TB is an airborne disease and is transmitted quickly when there are many people living in overcrowded areas. However, although the population density in Gulf Province is low, Kikori still has the highest number of TB cases. This unique setting for TB has caused TB researchers at IMR to expand their TB research program from Madang to include Kikori.

It is hoped that once the study is rolled out in the area, researchers will be able to answer questions such as:

- What is the TB transmission pattern?
- Is the village housing style and

structure contributing to the increase in TB cases?

- What are the host genetic factors?
- Using funding from the PNG Government, AusAID and Esso Highlands Ltd, the Institute has acquired space at the Kikori General Hospital and is in the process of building the laboratory as well as an office.

IMR TB research started in 2005 on the North Coast of Madang, to investigate the burden of TB in rural communities. In 2008, IMR secured funding from the National AIDS Council Secretariat (NACS) to investigate the HIV/TB co-infection, looking at the treatment outcome, side effects of the co-treatment and multiple drug resistance case management. This study is in Madang town and was completed early this year.

The interest in TB research has since expanded to other locations in PNG such as Alotau, Karkar Island, Central Province and Kikori.

Our main collaborators in TB research are Swiss Tropical and Public Health Institute, Queensland Mycobacterium Reference Laboratory, and the Walter and Eliza Hall Institute of Medical Research.



Staff packing equipment to be flown to Kikori General Hospital.

World TB Day 2012 activities in the EHP

24 of March 2012 was World TB Day. The theme of this year's World TB Day was "Stop TB in my lifetime".

PNG IMR was invited to join World Vision and the Eastern Highlands Provincial Health Authority for their World TB Day activities on the 29 March at Asaro Station, Daulo District. Therefore, on the morning of the 29 March our TB study team travelled to Asaro Station to help with the preparations on the ground.

A few hours later, a motorcade from Goroka arrived, making people aware of TB through loudspeaker announcements, posters and flyers. A microscope was set up by our IMR team, so people could have a look at a TB positive sputum smear and see *Mycobacterium tuberculosis*, the bacteria causing TB. Making people aware of the disease, its signs and symptoms, how TB spreads and how it can be cured, was the main focus of the day. Therefore, representatives of the province as well as TB experts were invited as guest speakers. Furthermore, the audience could enjoy plays about TB from the CIS and the Red Cross theatre groups.

For us from the IMR, it was great to be part of the event organising team, to help with the important task of TB awareness and last but not least to further strengthen our collaboration with the Provincial Health Authority and World Vision.



TRAINING NIUS 2012

DAINGEROUS GOODS TRAINING WITH AIR NIUGINI

When you work at a cutting edge research institute such as IMR, it is vital for staff to understand how to transport sensitive and dangerous materials safely. IMR now has six staff who have undergone dangerous goods training with Air Niugini, with three recently completing their certification training in Port Moresby in February 2012.

Sharon Aisa (Port Moresby), Wendy Kirarock (Goroka) and Henson Dima (Madang) all passed their exam and are certified to check and handle dangerous goods. Sharon is the office assistant in Port Moresby and will also assist with logistics there, as well as working with procurement officers in Goroka to follow up shipments, ordering and handling of goods. Henson is project laboratory manager for Malaria, Immunology and Vector Borne Diseases in Madang. Wendy is a Graduate Scientific Officer with the Infection and Immunity Unit, Goroka.

The other three certified staff are George Koki (Laboratory Manager), Jona Iga (Medical Laboratory Technician, Vector Borne Disease Unit) and Sauli Bebes (Laboratory Technician, Virology Unit), all based in Goroka.

MASTERS AND DIPLOMAS

- Martha Kupul from IMR Goroka travelled to Sydney in February to study for her Masters through the University of New South Wales. Her course will take 18 months.
- Benson Kiniboro from IMR Maprik graduated with a Diploma in Management from Divine Word University in Madang on 4 March 2012. He studied through their Faculty of Flexible Learning.

STUDENT PROGRAM

MOLECULAR BIOLOGY WORKSHOP WITH BURNET AND IMR

Following the success of a similar workshop two years ago, the PNG Institute of Medical Research hosted a Molecular Biology Workshop in January 2012 with Melbourne's Burnet Institute and Walter and Eliza Hall Institute. A total of 18 IMR staff attended – nine from Goroka, seven from Madang and one from Central Public Health Laboratory (CPHL) in Port Moresby. The workshop was facilitated by Australian post doctoral scientists, Dr Alyssa Barry and Dr Anna Hearps. The workshop covered the basic molecular biology topics, ranging from the theoretical basis of polymerase chain reaction to bioinformatics and more applied molecular biology tools. There were practical activities each day where participants were encouraged to apply what they had learnt to protocols applicable in PNG.

RESEARCH WRITING

AusAID funded three IMR staff to attend a training course in research writing at the University of New South Wales in January-February 2012. The Australia Leadership Award fellowship winners were Herick Aino, Agnes Meck and Glenis Rai, all from the Sexual and Reproductive Health Unit at Goroka.

WORKING WITH PATHOGEN GENOMES

IMR Virology section head, Dr Paul Horwood, attended a five-day course on working with pathogen genomes. The course was run by the Wellcome Trust. The workshop provided training in conducting second generation sequence analysis, allowing in-depth genomic characterisation of PNG pathogens and subsequent investigation of virulence factors and antibiotics resistance. Currently, Paul is the only person at IMR who can conduct these analyses. He will share his new skills with IMR staff through a seminar and tutorials.

MASTERS AND HONOURS STUDENTS SUBMIT THESESES

Both Masters and Honours students have been hard at work on their theses.

Masters in Medical Science student, Paul Harino, has submitted his thesis to University of Papua New Guinea (UPNG) for assessment. The title is "The Predictors of Treatment Outcome for Adult Pulmonary Tuberculosis in Madang Province, Papua New Guinea". The 2011 Partnership in Health honours students submitted their theses to the University of Papua New Guinea and successfully defended them in early March 2012. The four graduated on 30 March. Monalisa Kas was awarded First Class Honours, Cassey Simbiken and Grace Bande received Second Class Honours (Upper Division) and Wendy Kirarock achieved Second Class Honours.

bits & pieces

- Elisiba Malau, Scientific Officer for the Vector Borne Diseases Unit, graduated from the University of Melbourne in March 2012 with a Bachelor of Science, First Class Honours. Her thesis was called "Investigation of genetic polymorphisms in *Plasmodium falciparum* hrp2, hrp3, aldolase and pldh genes and their predicted impact on the performance of malaria rapid diagnostic test in PNG."
- Dickson Kuvi, IMR's training officer, has completed his course work for a Masters in Strategic Management at the University of Papua New Guinea. He has obtained a Post Graduate Diploma in Strategic Management and has begun his research for his Masters.
- Dr Patricia Rarau from the Partnership in Health project graduated in March 2012 with a Masters of Medical Science from the University of Papua New Guinea. Her thesis was "A prospective study on the co-infection with viral respiratory infection and malaria in children aged 3–27 months in Mugil, Madang Province, PNG".
- Christine Opa, HEO attached with the PCV study, graduated in March 2012 with a Diploma in Public Health from the University of Papua New Guinea.



RESEARCHING MALARIA IN PREGNANCY

BY DR ALEX UMBERS

In PNG, malaria in pregnancy causes poor health in mothers and their babies. IPTp (Intermittent Preventative Treatment during pregnancy) can protect from malaria during pregnancy, and involves two or more doses of anti-malarial medicine during pregnancy, given to women regardless of their parasite infection status.

The current PNG national guidelines of two doses of fansidar- and chloroquine- based malaria prevention is recommended based on results on clinical trials in African populations. Importantly, these populations differ from women in PNG in relation to malaria species, vectors and transmission intensity. In particular, the high prevalence of *Plasmodium vivax*, which is not found in Africa, and the current drug resistance to chloroquine, and potential resistance to fansidar, there is a need to redefine the current IPTp strategy in PNG.

The key aim of the IPTp study is to determine the best prevention strategy for malaria in pregnancy in women sleeping under insecticide treated bednets. The study is a collaboration between University of Melbourne, Australia and PNGIMR.

Recruitment of women started late in 2009 with a target to enroll almost 3000 women from seven sites around Madang in their second trimester of pregnancy. These women are followed until delivery and their babies until their first birthday.

Following-up participants throughout and after their pregnancies is a challenge, but one that the IPTp team have risen to the task. Dr Holger Unger from Scotland recently joined the IPTp team as project clinician

"I am excited to be the latest addition to a very

committed team undertaking a well-designed research project. I strongly believe that the findings of this hard work will influence clinical

"THE KEY AIM OF THE IPTP STUDY IS TO DETERMINE THE BEST PREVENTION STRATEGY FOR MALARIA IN PREGNANCY IN WOMEN SLEEPING UNDER INSECTICIDE TREATED BEDNETS."

practice and how we think about malaria and STIs in pregnancy. I am convinced that with this we will make a contribution to improving the health of mothers and their infants in PNG". In fact, the team is doing such a great job the IPTp study has the most successful follow-up rates compared to similar studies around the globe.

This achievement has been possible thanks to the committed team of clinicians, laboratory staff, a large number of nurses, community liaison officers, community reporters and management and logistic teams. The high follow up rates are key to measuring the impact IPTp has

THE IPTp STUDY

on improving serious health outcomes associated with malaria in pregnancy, such as maternal anemia and low birthweight babies, common causes of morbidity and mortality in PNG.

The IPTp study and its associated sub-study projects are of high interest to the international community.

EXPECTED OUTCOMES

1. UNDERSTANDING THE USE OF COMBINED TREATMENT OF MALARIA AND SEXUALLY TRANSMITTED INFECTIONS (STIS)

The incidence of STIs in the Madang Province and how these affect birth outcomes has not been reported, and this is the main topic for clinician Dr Regina Wangnapi's Masters project.

2. BETELNUT CHEWING AND PREGNANCY

The chewing of betelnut is associated with disease in adults, but how heavy chewing affects pregnant women and their growing babies is unknown. Using an ultrasound machine, Dr Maria Ome is measuring how chewing affects the placenta and how the baby grows in the uterus and will use this important research towards a Masters degree.

3. MATERNAL MALARIA PREVENTION AND EARLY CHILDHOOD.

Another important research question is how does maternal malaria prevention influence the risk of malaria or other illnesses in early childhood. There is some evidence to suggest that women with malaria in pregnancy go on to deliver babies that are more likely to get sick as infants.

-Fetal Immunity Study

To understand this more clearly, a new 'fetal immunity study', in collaboration with Case Western Reserve University is commencing in early 2012.

This study aims to answer this perplexing question by following the infants born to mothers who have had IPTp and monitoring their health in the first 3 years of life.

Much of the testing for this Madang based project is assisted by staff in the Sexual and Reproductive Health and the Infection and Immunity Units in Goroka, as well as the dedicated microscopy, data entry and molecular biology

teams at Yagaum."

"The IPTp project really demonstrates the cross disciplinary capacity of PNGIMR to undertake large clinical trials of malaria prevention", say Dr Alex Umbers, head scientist on the project. Another positive aspect of this large scale project is working in partnership with Modilon General Hospital in the Antenatal Clinic and Labour Ward. "IMR nurses and clinicians work hand in hand with hospital staff, supporting each other to provide the best possible patient care with the resources available. It's great to see how everyone gets stuck in and works together when there is a clinical emergency. At the same time our presence often generates an

interest in research, and how important it is to patient care to be observant, gain information

"I STRONGLY BELIEVE THAT THE FINDINGS OF THIS HARD WORK WILL INFLUENCE CLINICAL PRACTICE AND HOW WE THINK ABOUT MALARIA AND STIS IN PREGNANCY."

and ask questions", say's clinician Dr Unger. The study is 80% complete and data collection will conclude late in 2012. The IPTp team look forward to reporting on the potential benefits of the new treatment regime after the study concludes. The results of this trial will likely guide national policy on the best way to prevent malaria in pregnancy in the near future.



The IPTp clinical and research staff

FACTS ABOUT IPTp

- Start: late 2009
- Finish: 2012-13
- Funding: Malaria in Pregnancy Consortium
- Principle Investigators: Stephen Rogerson (University of Melbourne), Ivo Mueller (Walter and Eliza Hall Institute), Peter Siba and Inoni Betuela (IMR), Chris King (Case Western University), Clara Menedez (CRESIB), John Aplin (University of Manchester), Louis Schofield (Walter and Eliza Hall Institute), James Beeson (Burnet Institute).
- IMR sections involved in the study: Bacteriology, HIV/ STI laboratory in Goroka; Microscopy Unit, Molecular biology in Madang.
- Number of study participants: The target is 2791, to date, 2500 recruited.
- How many University of Papua New Guinea students were able to do honours or masters research as part of this work?
 - Two Masters students - Regina Wangnapi and Maria Ome
 - One honours students - Elvin Lufefe.

Our Locations



The IMR Nius is a quarterly publication of the Papua New Guinea Institute of Medical Research and is written and edited by Geraldine Vilakiva and Wendy Levy of the Institute's Communications Unit. News contributors include PNGIMR management, Research Units including Madang and Maprik branches. To be included on our mailing list, please contact us at the following address:

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