Strengthening the Malaria Reference Laboratory Capacity: Results from Australia-China-Papua New Guinea Pilot Cooperation on Malaria Control Project
World Malaria Congress, Melbourne

3rd July 2018, Melbourne Australia

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Malaria in PNG: urgent need to turn challenges into opportunities

- PNG represents a **challenge** but also **opportunity** to achieving a malaria-free Western Pacific Region (WPR) by 2030
  - **PNG comprises 77% of all malaria cases in WPR. If we can eliminate malaria in PNG, we are on track to eliminating malaria in our region.**

- Previous strong progress: between 2009 – 2014, incidence reduced by 60% due to universal coverage of bednets (2009) and introduction of RDTs + ACTs (2011)

- However, gains proved fragile: since 2014, declining funding support and ongoing health system challenges have resulted in rising malaria cases

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**PNG: Number of All (Clinical + Confirmed) Malaria Cases & Deaths 2000-2017 (NHIS)**

**Country-wide malaria parasite prevalence by age group (<1600m altitude)**

- P. falciparum
- P. vivax
- Any species

Source: PNG IMR Household Survey 2016-17

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*Health is Everybody’s Business*
Trilateral cooperation: increasing impact and mobilizing resources

- In resource-constrained settings, trilateral (South-South) cooperation is a viable model to increase efficiency and maximise impact of development interventions.

- **Australia-China-PNG Pilot Cooperation on Malaria Control Project:**
  - First ever trilateral cooperation project between the three countries
  - PGK 8m over three years (2016-18)
  - Trilateral partnerships model puts **APLMA Roadmap** actions into practice:

1. Tailoring products and services to local conditions
2. Using existing national systems
3. Engaging additional stakeholders to join the fight
Australia-China-Papua New Guinea Pilot Cooperation on Malaria Control Project Partnership Governance Model

**JPWG representatives**
- PNG National Department of Health
- PNG Department of National Planning and Monitoring
- Chinese Ministry of Commerce
- Chinese National Health and Family Planning Commission
- Australian Department of Foreign Affairs and Trade

**Technical Directors, Advisors and Implementing Institutions**
- PNG National Department of Health
- PNG Central Public Health Laboratory
- PNG Institute of Medical Research
- PNG School of Medicine and Health Sciences
- National Institute of Parasitic Diseases (China)
- Chinese Universities and Provincial Disease Control Agencies
- Burnet Institute (Australia)
- Walter & Eliza Hall Institute (Australia)
- Australian Defence Force Malaria and Infectious Disease Institute
- Australian National University

**Project Management Unit**
- Project Manager (PNG)
- China-based Project Coordinator (NIPD)

**Partnering outcomes**
- PNG national and provincial laboratories strengthened
- Operational research generates evidence relevant to PNG diagnostic and treatment policy
- Systematic monitoring of diagnostic and treatment services in PNG
- Lessons learned from effective cooperation between Australia, China and PNG
Trilateral Malaria Project: Laboratory Strengthening Component

Laboratory component aims to:

- strengthen national and provincial laboratories’ capacity for malaria diagnosis
- Support PNG’s national Central Public Health Laboratory to provide systematic monitoring of diagnostic products and services
Outcome 1: National and provincial laboratory institutions strengthened

1.1 National and provincial hospital laboratories participate in malaria laboratory strengthening programs

1. Revised diagnostic algorithm for malaria: Project partners supported PNG’s Central Public Health Laboratory (CPHL) to disseminate information to 198 health workers

2. 148 trained in microscope maintenance, malaria refresher training, evidence-based medicine training and competency assessments

3. WHO External Competency Assessment (ECA) of malaria microscopists: 23 Level 1 & 2 microscopists in 13 provinces
Distribution of ECAMM-certified microscopists by province 2015 – 2017

Source: CPHL (using spatial mapping skills developed through training at NIPD)
Outcome 2; Support PNG’s national Central Public Health Laboratory to provide systematic monitoring of diagnostic products and services

Results

• Completion of **National Reference Laboratory Scoping Study** – confirmation of feasibility and budget

• **Supervisory visits** to lower level laboratories – average of 6-8 per year (using Project funds)
Outcome 2 continued

- Established PNG’s first ever **Malaria Slide Bank** for training of PNG microscopists – 3000 slides
- **Established molecular diagnostics (PCR) at CPHL** for research and surveillance purposes – 300 samples
- Developed Quality Control (**lot testing**) for **Malaria RDTs** at Point of Care, Validation of BioCredit RDTs – 100 patient samples

**Challenges:**
- Provincial EQA compliance, PNG’s resource-constrained public health system
Way forward: National Reference Laboratory

• Justification of NRL
  – Need to provide a focal point for laboratories in PNG
  – Implement the National Medical Laboratory Policy
  – Integrate and coordinate laboratory functions under one building
  – Central Public Health Laboratory; National Blood Service and Clinical Pathology Services in one building to share limited resources
NRL Main functions

• Quality Assurance and External Quality Assessment Programs (Training included)
• Coordinate Procurement Supply Management to prevent stock outs of reagents
• Disease surveillance and coordinate outbreak response
• Monitor Laboratory Anti-microbial Resistance in PNG for Global Health Security
Progress of National Reference Laboratory Scoping Study

• Establishment of NRL (construction and human resources): example of China’s role in providing global health “hardware and software” as a key South-South donor

• 2017 Scoping Study commissioned by GoPNG, GoA and GoPRC
  – Physical structure (NRL plus residential accommodation)
  – An estimated 5 years capital and recurrent costs of operations

• Higher level government to government consultation currently underway between the three countries
For the people of Papua New Guinea, health workers need to address obvious challenges.
Reality of Malaria in PNG

- The country is facing a resurgence of malaria following reduction in control efforts (Pf>Pv)
- Furthermore 2 outbreaks reported in 2 provinces in 2018 (Highlands and ESP)
- School children were found to have asymptomatic malaria (>P vivax)
EQA PERFORMANCE IN PNG BY REGIONS 2013-2017

Islands region

Highlands Region

MOMASE Region

Southern Region

Islands satisfactory
Islands Unsatisfactory

Highlands satisfactory
Highlands Unsatisfactory

MOMASE satisfactory
MOMASE Unsatisfactory

Southern satisfactory
Southern Unsatisfactory
PNG IMR HHS / relevant NHIS data on malaria situation

Country-wide malaria parasite prevalence by age group (<1600m altitude)

Source: PNG IMR Household Survey 2016-17

PNG Malaria Data (NHIS)
Domestic efforts

- Strengthen WHO strategy of test, treat and tract in PNG
- Decentralise and strengthen EQA to provincial level to improve coverage
- Increase awareness to treating doctors, health extension, nurses and community health workers
- Strengthen and update curriculum in nursing and medical schools in PNG
- Research into diagnosis and treatment behaviours of health workers
A time to renew domestic and international efforts

- The vision of PNG’s National Malaria Strategic Plan – to achieve a substantial reduction in malaria burden by 2019-2024 – is under threat
- Alongside our trilateral cooperation activities, we need renewed commitment domestically and internationally to harness collective power to turn back malaria in PNG: please help us to ensure scaled up financing, political commitment, and technical capacity for diagnosis, treatment, vector control, and behaviour change campaigns
- PNG looks forward to supporting global initiatives and regional meetings to advocate for renewed support to address the disease’s danger of rebounding:
  - Malaria Summit (pre-CHOGM) London 2018: Ready to Beat Malaria
  - 1st Malaria World Congress Melbourne 2018
  - Asia Pacific Economic Cooperation (APEC) meetings Port Moresby 2018
Yumi Rausim Malaria  Acknowledgements to:

PAPUA NEW GUINEA INSTITUTE OF MEDICAL RESEARCH

Yumi Rausim Malaria
PNG NATIONAL MALARIA CONTROL PROGRAM

Australia - China - Papua New Guinea
Pilot Cooperation on Malaria Control Project

Australian Aid

DEPARTMENT OF HEALTH

The Global Fund

Rotarians Against Malaria

psi  Papua New Guinea

World Health Organization

Chinese Center for Disease Control and Prevention