Research for

ONE HEALTH

Systems Strengthening Program

Papua New Guinea
Indonesia
Fiji
Cambodia
Vietnam
Laos
What is One Health?

One Health is an approach that addresses the inter-linkages between the health of humans, animals and the broader environment.

One Health promotes different sectors and disciplines working together to ensure the best health outcomes for people, animals and our planet at all levels - local, national, regional and global.

Why do we need a One Health approach?

Food production systems across the world are changing rapidly, placing our ecological systems under pressure from land clearing, pollution, population growth, climate change and other stressors.

These changes are creating major threats to human health from new infectious diseases such as COVID-19 and SARS, chemical and heavy metal pollution and the rise of drug-resistant bacteria.

The spread of diseases is also easier than ever in our interconnected world, making it vital for nations to invest in prevention, early detection and control.

Taking a One Health approach to tackling old and persistent issues, as well new challenges we face, brings together many communities.

Experts with diverse backgrounds such as agricultural scientists, veterinarians, medical doctors, social scientists, economists and ecologists collaborate on research, programs, policies and regulation in an effort to better manage our resources, improve health security and prevent threats to the health of humans, animals and the environment.

What is the Research for One Health Systems Strengthening program?

The Australian Centre for International Agricultural Research (ACIAR) and the Indo-Pacific Centre for Health Security, within the Department of Foreign Affairs and Trade, are co-funding a group of research projects in the Asia-Pacific region to help

- Explore social, ecological and systems-based drivers and mechanisms for improved disease control
- Enhance surveillance and diagnoses of zoonotic diseases and antimicrobial resistance to reduce their impact
- Strengthen One Health collaboration within the region.

The raft of exciting projects under the Research for One Health Systems Strengthening program engages with leading Australian institutions to tackle a range of significant One Health challenges with partners in Cambodia, Fiji, Indonesia, Lao PDR, Papua New Guinea and Vietnam.

The scientific, technical, social and economic research will address gaps in policy and practice, strengthen One Health partnerships and bolster the regional response to disease threats across the Asia-Pacific.

Find out more at aciar.gov.au/one-health
INDONESIA

EVALUATING MONKEY TO HUMAN TRANSMISSION OF MALARIA PARASITES

Project leader - Dr Matthew Grigg, Menzies School of Health Research
Project partners – Eijkman Institute for Molecular Biology, University of Sumatera Utara, James Cook University.

Budget: AUD $3,025,060

Zoonotic or monkey-malaria, spread by the parasite *Plasmodium knowlesi*, is an increasing problem in southeast Asia as countries strive towards malaria elimination. This research is evaluating monkey-to-human transmission of malaria at three sites (north Sumatra, north Kalimantan and Sabang, Aceh). It aims to improve detection of malaria in humans, determine the disease burden and evaluate how agriculture and land-use changes affect the behaviour of both primates and disease-carrying mosquitoes to inform how the burden of disease for rural communities might best be reduced.

ESTABLISHING A SURVEILLANCE NETWORK FOR ZOONOTIC MALARIA PARASITES

Project leader - Dr Matthew Grigg, Menzies School of Health Research
Project partners - Eijkman Institute for Molecular Biology, University of Sumatera Utara.

Budget: AUD $250,000

This project is establishing molecular surveillance of zoonotic malaria parasites, particularly monkey malaria *Plasmodium knowlesi*. Through pilot activities at health facilities in North Kalimantan, North Sumatra and Sabang (Aceh), the project is supporting capacity building in the use of new molecular testing tools that can diagnose multiple malaria species to aid better understanding the burden of zoonotic malaria in Indonesia.
FIJI

ENHANCING MANAGEMENT OF ANTIMICROBIAL RESISTANCE

**Project leader - Dr Paul De Barro, CSIRO Biosecurity Flagship**
*Project partners – University of Technology Sydney, University of South Australia, Fiji Ministry of Health & Medical Services, Fiji National University.*

Budget: AUD $2,740,747

Antimicrobial Resistance (AMR) is one of humanity’s most urgent health threats. AMR has led to the evolution of ‘super bacteria’ which do not respond to standard treatments, causing untreatable disease in humans and animals. This project is scoping the magnitude of AMR in Fiji, particularly from agricultural and environmental sources, including the cost of control. It will also develop appropriate diagnostic technologies and a prototype One Health surveillance system to inform AMR management strategies for local, national and regional policymakers.

IMPLEMENTING THE NATIONAL ANTIMICROBIAL RESISTANCE ACTION PLAN

**Project leader - Dr Walter Okelo, CSIRO**
*Project partners - University of Technology Sydney, Fiji Ministry of Health & Medical Services.*

Budget: AUD $250,000

This research will help establish Fiji as a leader in AMR management in the Pacific region by identifying needs and opportunities across policy, practices, research and training for implementation of the National AMR Plan. The project will help to understand the risk and economic burden of AMR in Fiji, to develop a business case for longer-term control.
CAMBODIA, LAOS AND VIETNAM

IMPROVING VETERINARY SERVICES

Project leader - Prof. Barbara McPake, Nossal Institute for Global Health
Project partners – Cambodian Ministry of Agriculture, Cambodia National Institute of Public Health.
Budget: AUD $ 1,635,166
Timeframe: Jan 2020 - Jun 2022 | Project code: LS/2019/118

Outbreaks of African Swine Fever and avian influenza have highlighted the role of veterinary services in human health and wellbeing in Cambodia, Laos and Vietnam. This research will investigate options for stronger veterinary services in Cambodia so that the benefits, particularly public health benefits, inherent in better animal health and welfare can be better realised.

POLICY RESPONSE FOR AVIAN INFLUENZA

Project leader - Prof. Barbara McPake, Nossal Institute for Global Health
Project partners - Peter Doherty Institute for Infection and Immunity, Vietnam Health Strategy and Policy Institute, Pasteur Institute Vietnam, Hanoi University of Public Health, Cambodia National Institute of Public Health, Pasteur Institute Cambodia, Lao Tropical and Public Health Institute, Pasteur Institute Lao PDR.
Budget: AUD $250,000

Highly Pathogenic Avian Influenza (H5N1) passes between wild birds, domestic poultry and humans. In outbreaks, the human case fatality rate has been from 33-82%. Vietnam, Cambodia and Laos have all seen outbreaks leading to human infection. This project is reviewing the policies that are designed to help protect poultry and humans against H5N1 to learn how prevention of H5N1 transmission between animals and humans may be improved.

ONE HEALTH LITERACY IN THE MEKONG

Project leader - Prof. Richard Osborne, Swinburne University of Technology
Project partners - Cambodian Ministry of Health National Centre for Health Promotion
Budget: AUD $ 250,000

The WHO 2016 Shanghai Declaration positioned health literacy as one of three pillars to support nations to reach the UN Sustainable Development Goals. Through considering the perspectives of both human and animal health, this One Health approach to health literacy conducted in Cambodia and Lao PDR has furthered our understanding on what individuals understand, how they come to understand it, and how and why they take action to support improved health services.
PAPUA NEW GUINEA

BOOSTING SURVEILLANCE OF ZOONOTIC MOSQUITO-BORNE DISEASES

Project leader - Dr David Williams, CSIRO Australian Centre for Disease Preparedness

Project partners – Burnet Institute, James Cook University, PNG Institute of Medical Research, PNG National Agriculture Quarantine and Inspection Authority, Divine Word University, PNG Central Public Health Laboratory.

Budget: AUD $250,000

The Japanese encephalitis (JE) virus is endemic in PNG. It is mosquito-borne, with reservoirs in pigs and wild birds. It mainly affects rural communities, with the highest rates of disease in children. This research is strengthening PNG’s infectious disease surveillance and response systems to allow rapid identification and containment of outbreaks, resurgence and resistance for JE and other zoonotic mosquito-borne infections. As well as developing policy options, the project is supporting partnerships between public health and veterinary organisations and agencies in PNG.

IMPROVING TUBERCULOSIS DIAGNOSIS AND RESPONSE

Project leader - Dr Philipp DuCros, Burnet Institute

Project partners - Victorian Infectious Diseases Reference Laboratory (VIDRL), PNG Institute of Medical Research, PNG National Department of Health, PNG Central Public Health Laboratory.

Budget: AUD $ 250,000

Tuberculosis (TB) is one of the top 10 causes of death globally and the leading cause from a single infectious agent. Aside from the commonly known human TB species, there are also zoonotic and environmental forms of disease. Whilst TB is a major problem in PNG, there is little information on the TB species circulating in the country. This research will help improve TB diagnosis and care by identifying the rates of infection attributable to different TB species (including zoonotic TB) and the need for new diagnostic tools.
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