PacMOSSI
Pacific Mosquito Surveillance Strengthening for Impact

IMPLEMENTING *AEDES* VECTOR CONTROL IN THE PACIFIC

Practical Workshop

9-13 November 2026 | Madang, Papua New Guinea



Training Report

Rationale

Aedes-borne diseases such as dengue, Zika and chikungunya continue to threaten public health across the Pacific. Effective control requires practical, targeted and locally-appropriate vector control strategies.

This workshop focused on the operational implementation of *Aedes* vector control, including larval source management, residual spraying, emerging tools and community engagement. The workshop aims to strengthen operational capacity for coordinated *Aedes* control in order to reduce mosquito populations and minimise the risk of arboviral disease transmission across the Pacific region. Participants worked to strengthen their skills in using surveillance data to prioritise, plan and implement effective control activities suited to their local settings.

Course Overview

The workshop was held from 9 to 13 November 2026 in Madang, Papua New Guinea and was hosted by the Papua New Guinea Institute of Medical Research (PNGIMR) at the SVD Conference Centre, Nabasa field site and Belna Natnat Centre.

Objectives

The objectives of the workshop were for participants to understand the purpose and methods used for *Aedes* vector surveillance and to develop competence in their implementation, including to:

1. Implement key *Aedes* control interventions including larval source management and indoor/outdoor residual spraying
2. Apply sound operational decision-making in the field including intervention selection, correct insecticide and equipment handling, SOP/documentation compliance, and household engagement; and,
3. Understand the options and challenges for strengthening *Aedes* control programs including spatial emanators, surveillance, and local context.

Schedule

Sessions were held over 5 days and included classroom learning, practical field and laboratory demonstrations, and hands-on participation. There was an emphasis on ensuring that participants developed the capacity to conduct *Aedes* vector control to apply upon returning to their workplaces.

Attendees

In attendance were 16 participants from 15 PICs and 2 participants from the Torres Strait Islands in Australia. The workshop was delivered by 7 facilitators from 2 PacMOSSI core partner organisations (James Cook University and Papua New Guinea Institute of Medical Research).

Participants

Country	Name
American Samoa	Villa Tafaumu
Cook Islands	Aerenga Upokokeu
Fiji	Vineshwaran Rama
French Polynesia	Ariimoana Tata
Guam	Niel Tirador
Kiribati	Maritaake Ioane
Naoero	Felila Peter
Northern Mariana NMI	Max Keller
Palau	Osiro Lorin
Papua New Guinea	Mou Basa
Papua New Guinea	Mary Daun
Samoa	Justin Schmidt
Solomon Islands	Donald Hoho
Tonga	Sela Fau
Tuvalu	Miliesi Kapaufe
Wallis & Futuna	Malia-Kalemeli Selemago
Torres Strait Islands	Shai Galiki
Torres Strait Islands	Joseph Kris

Facilitators

Organisation	Name
James Cook University	Melanie Koinari
James Cook University & Papua New Guinea Institute of Medical Research	Petrina Johnson
Papua New Guinea Institute of Medical Research	Elias Omera
James Cook University	Rodney Bellwood
Papua New Guinea Institute of Medical Research	Lincoln Timinao
Papua New Guinea Institute of Medical Research	Solomon Langur
James Cook University	Huy Nguyen

Resources

The following key resources were used during the workshop, and are available online on the workshop page at https://pacmossi.org/event/pacmossi-workshop-aedes-vector-control-implementation/ .



PacMOSSI/PNGIMR Participant Workbook*:* provides a simplified overview of key technical content and activities delivered in the workshop.



PacMOSSI Standard Operating Procedures (SOPs): provide comprehensive, standardised protocols for mosquito surveillance and control tailored to PICs. SOPs for indoor residual spraying, outdoor residual spraying and larval source management formed the foundation of the training.



PacMOSSI Forms: give a standard template for supporting Premise mosquito inspection and control (Form A) and Summary of premises visited (Form B) that can be adapted to the specific program and context.



PacMOSSI/PNGIMR Presentations: Selected topics were overviewed in PowerPoint presentations developed by PacMOSSI, including content from the online course.

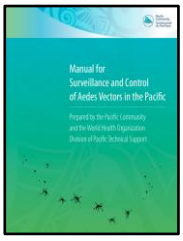
Training and other materials for the workshop are also available (including in editable format) by emailing pacmossi@jcu.edu.au.

Content

This workshop built on content from the PacMOSSI online course Module 9 on *Implementing Aedes vector control*, which was completed by all participants in advance. Modules can be accessed by registering via the PacMOSSI Online Course webpage. Additional content was drawn from the below reference documents.



PacMOSSI Manual for planning and managing control of *Aedes* vectors in the Pacific outlines best practices and highlights options for different scenarios, considering variations in vectors, environments and available resources across PICs. It provides priority activities that can be implemented even with limited resources, emphasizing the importance of community action in both surveillance and control.



SPC/WHO Manual for surveillance and control of *Aedes* in the Pacific is designed for programme managers, operational staff and collaborating partners responsible for planning, implementing, monitoring, and evaluating national vector control programmes.

Topics

Topics covered during the workshop included:

- *Aedes* mosquito control foundations
- Larval source management field implementation
- Residual spraying field implementation
- Spatial emanator demonstration
- Applying *Aedes* mosquito control in different contexts

These were covered by theme using various activities with different outputs, as summarised below. The detailed schedule for the workshop is provided in the participant workbook.

Day	Theme	Main activities / outputs
1	*Aedes* control foundations and LSM	*Aedes* refresher; intervention overview; LSM SOP and forms; container management; larvicide safety and calculations.
2	LSM field implementation	RCCE roleplay; household LSM practical; debrief; field data review; 24-hour larvicide assessment.
3	Spatial emanators and residual spraying operations	Spatial emanator demonstration at Belna NATNAT Centre; IRS/ORS SOPs and safety; sprayer inspection and technique; household briefing.
4	Residual spraying field implementation	Team deployment; supervised field exercise; equipment cleaning; quality and safety review; mist sprayer demonstration.
5	Applying *Aedes* control back home	Country priorities and resources; Pacific Solutions Exchange; regional priorities; individual 90-day action plan and commitments.

Preparation

Before the workshop, participants completed the PacMOSSI online Module 9, *How to Implement Aedes Vector Control in the Pacific*. This included the completion of a larval habitat form. A summary of information from forms provided by 14 participants indicated:

- **Common habitats across the region:** tyres and water-storage drums were the most widely reported larval habitats, followed by household containers, plant pots, discarded containers and water tanks. This matches the artificial-container profile of *Aedes aegypti*.
- **Storage of water for household use is common:** almost a third of the containers listed held water for drinking, cooking or washing. Since these can't be removed, larval control depends on tight lids or fine mesh, sealed tank inlets and hatches, and frequent scrubbing and cleaning.
- **Gaps in proposed control actions:** about 30% of the actions noted for larval habitat management needed further attention. For instance, these noted practices like emptying containers without scrubbing, cleaning less often than weekly, loose covers, and short-term fixes for tyres instead of removing them.
- **Larvicide in drinking water:** larvicide was often proposed for managing larvae in water tanks and drums, sometimes with no screening or sealing indicated. Larviciding should supplement container management measures, and it is important that this is done with products approved for use as such.
- **Good practice to share:** Wallis and Futuna's Eco-Taxe recycling incentive and the "empty, scrub and invert" approach used in some settings were notable examples that may be helpful to other countries.
- **Other habitats:** few participants listed natural or indoor habitats though these may harbour *Aedes* vectors. This should be confirmed through surveys.

These findings were used by workshop facilitators to guide their approaches and discussions.

Proceedings

Field, practical and classroom sessions were held to build participants' skills in putting *Aedes* vector control into practice in Pacific settings. In the field, trainers demonstrated premise inspections to find potential and actual larval habitats as well as source reduction and larviciding as components of larval source management. Participants then practised these methods in groups. Demonstrations and supervised practice also covered indoor and outdoor residual spraying (indoors and outdoors) and space spraying. These sessions included reading product labels before use, and how to manage, maintain and clean spray equipment.

Classroom sessions explained how each control method works and when it fits within an integrated approach to *Aedes* control, using real-world scenarios. An overview of the situation in the Torres Strait was also presented. Participants were introduced to newer tools, including spatial emanators. Risk communication and community engagement

ran through the workshop. Participants practised giving clear messages to householders through role-play and home visits during the field sessions, and practised presenting with a microphone and explaining things clearly.

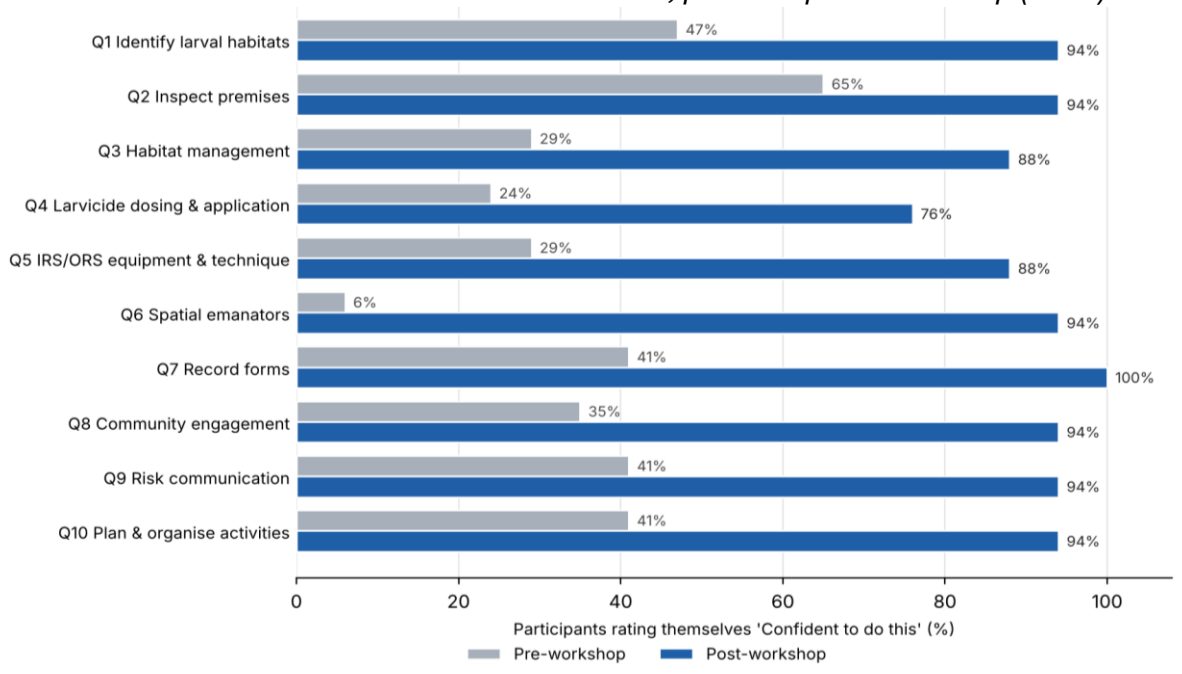
Finally, participants discussed how they would use what they had learned when they returned home, and what further support they would like from PacMOSSI. Several noted that their national programs are planning to introduce or expand residual spraying and larviciding.

Assessments

Pre- and Post-Course Tests
Participants were issued a standardised written assessment at the beginning and at the end of the workshop. This included a self-assessment of competency related to core *Aedes* control activities and 10 multiple-choice knowledge questions.

Participants rated their confidence in ten *Aedes* vector control competencies before and after the workshop, using a three-point scale (1 = not able to do this, 2 = need assistance, 3 = confident to do this). Self-assessed confidence rose across all ten competencies. The average rating increased from 2.3 to 2.9, and the share of ratings at "confident to do this" rose from 36% to 92%. The biggest gains were for the more technical skills. Confidence in using spatial emanators rose from 6% to 94% of participants, habitat management and IRS/ORS application each rose from 29% to 88%, and calculating and applying larvicide rose from 24% to 76%. Larvicide dosing and application had the lowest post-workshop confidence and may need further practical reinforcement. After the workshop, 12 of the 17 participants who completed the feedback form rated themselves confident in every competency.

Self-assessed confidence in Aedes vector control, pre- and post-workshop (n=17).



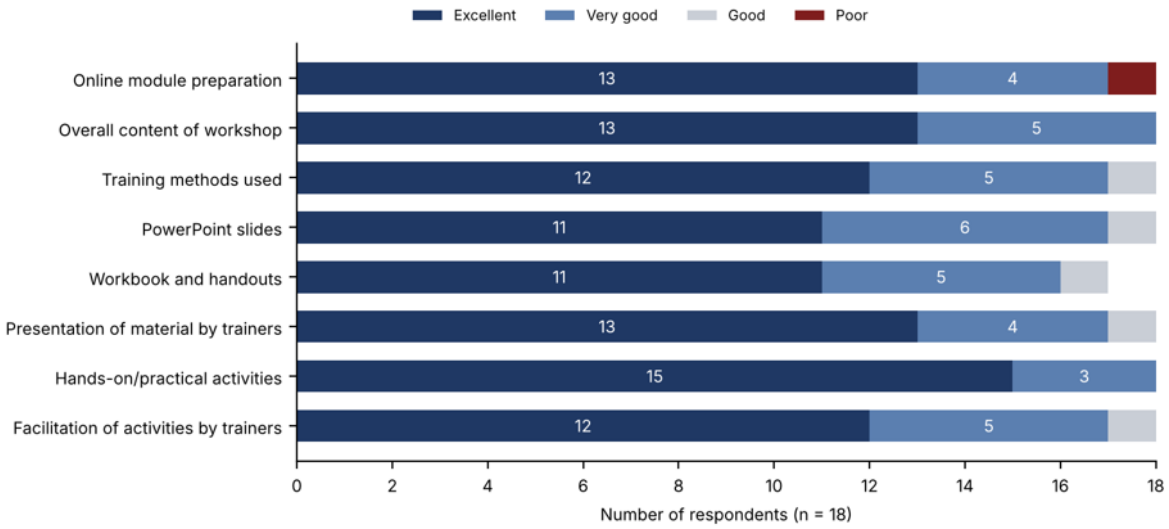
For the multiple-choice test, the average score before the workshop was 8.5 out of 10. This rose to 9.1 out of 10 on the post-course test, which used the same questions. Baseline knowledge was high: six participants scored full marks on the pre-course test, leaving no room for them to improve. Of the 11 participants who could improve their score, 64% (7 of 11) did so, indicating an overall increase in technical knowledge from the workshop.

Course Evaluation

Participants completed an evaluation of the workshop at the conclusion of the technical program. The evaluation included rating various course components (module, content, methods, materials, activities, facilitation) as 'excellent', 'very good', 'good', 'poor' or 'very poor'.

Reaction to the workshop was strongly positive.18 participants completed course evaluation forms. 96% of all element ratings (137 of 143) were Very good or Excellent; the overall mean was 4.64 out of 5. Only one rating fell below Good.

Ratings of 8 course components by participants (n=18).



Four open-ended questions gathered information on: course topics respondents would like more information on, which course topics were most and least useful for their *Aedes* control programs, and any other comments or suggestions to improve future trainings. Key findings were that:

1. Hands-on/practical activities were the highest-rated element (mean 4.83; 15 of 18 Excellent). Practical work was also the most frequent theme in the free-text comments.

2. Larval source management (LSM) was the dominant take-home content, cited as most useful on 15 of 18 forms, ahead of residual spraying (5) and risk communication/community engagement (4).

3. Demand for follow-on learning centres on larvicide formulations, surveillance data analysis and sample processing, IRS/ORS equipment and impact monitoring, spatial emanators, and community communication.
4. Audibility was the main delivery issue. Three forms raised sound or trainer volume; others raised air-conditioning, travel arrangements and participant selection.

Participants asked for more hands-on practice in future workshops, especially larval identification, installing spatial emanators, and handling and cleaning IRS/ORS and fogging equipment. They also asked for follow-up workshops and ongoing training on new vector control tools. The topics they requested most were:

- larvicide formulations
- surveillance, including sample processing, mosquito rearing, data analysis and mapping
- insecticide resistance testing
- monitoring the impact of residual spraying
- community awareness and communication skills

Outcomes

Basic training in mosquito control and risk communication was delivered to the satisfaction of the participants (see course evaluation results below), along with practice in planning for mosquito control in participants' local contexts.

Media coverage
Social media posts were made on owned channels, including Facebook, Twitter, and LinkedIn. These included posts before (see here) and after (see here) the workshop.

Closing

The final session concluded with facilitators thanking participants for their active and positive engagement throughout the entire workshop program. Participants and facilitators acknowledged that further work is required in each country to ensure that *Aedes* control is strengthened based on standard procedures with adaptation to the local context.

A vote of thanks was then issued by participants to PacMOSSI and the Papua New Guinea Institute of Medical Research for the work of the facilitators and support staff to ensure the course was useful, well-organised and enjoyable.

Conclusions

The training workshop was effective at providing basic training in *Aedes* mosquito control, with excellent feedback from participants showing strong gains in self-reported confidence to perform mosquito surveillance tasks and some gains in participant technical knowledge.

In line with participant feedback, future PacMOSSI training events will aim to be designed to enable further time for field activities and to practice applying the skills learned, with added focus on larval source management. A separate workshop focussed on mosquito control in arboviral outbreaks will be a priority.

About the PacMOSSI consortium

PacMOSSI is a regional partnership of 21 Pacific Island Countries and areas with 7 international institutions working to combat mosquito-borne diseases throughout the Pacific. It comprises a series of initiatives coordinated by James Cook University in collaboration with The Pacific Community (SPC). Support to PacMOSSI – including for this workshop – is provided by the Australian Government through Partnerships for a Healthy Region, the French Government, the New Zealand Government, and the European Union.

About Papua New Guinea Institute of Medical Research

PNGIMR is considered a world-class research facility investigating ways to improve the health of the people of PNG. The institute was established in 1968 and is a statutory body of the PNG government. The institute is led by a director, supported by Deputy Directors for Science and Corporate Affairs. PNGIMR is governed by the PNGIMR Council, which reports to the Health Minister. PNGIMR employs more than 400 staff. The PNGIMR headquarters is in Goroka, with major research sites, facilities, and laboratories in Madang, Maprik, Port Moresby and Kokopo.

Selected images from the course

Additional images are available here.



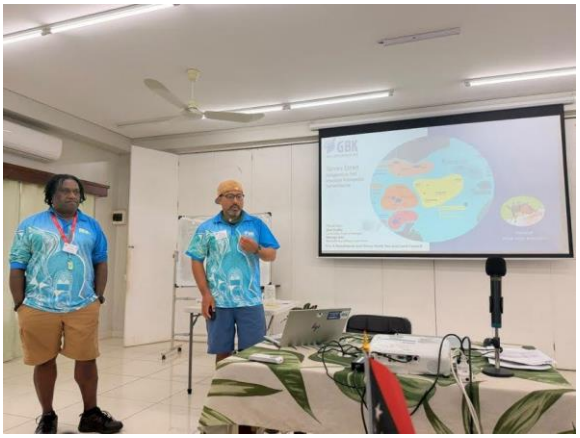

































HELLY HANSEN







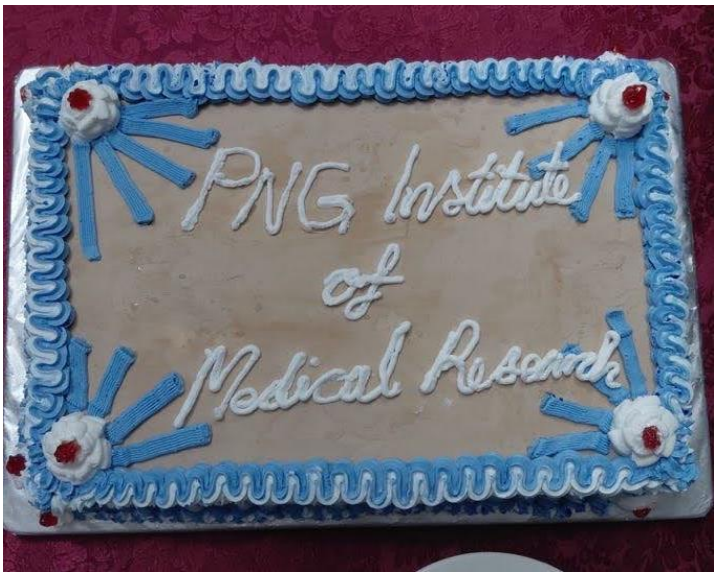





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