

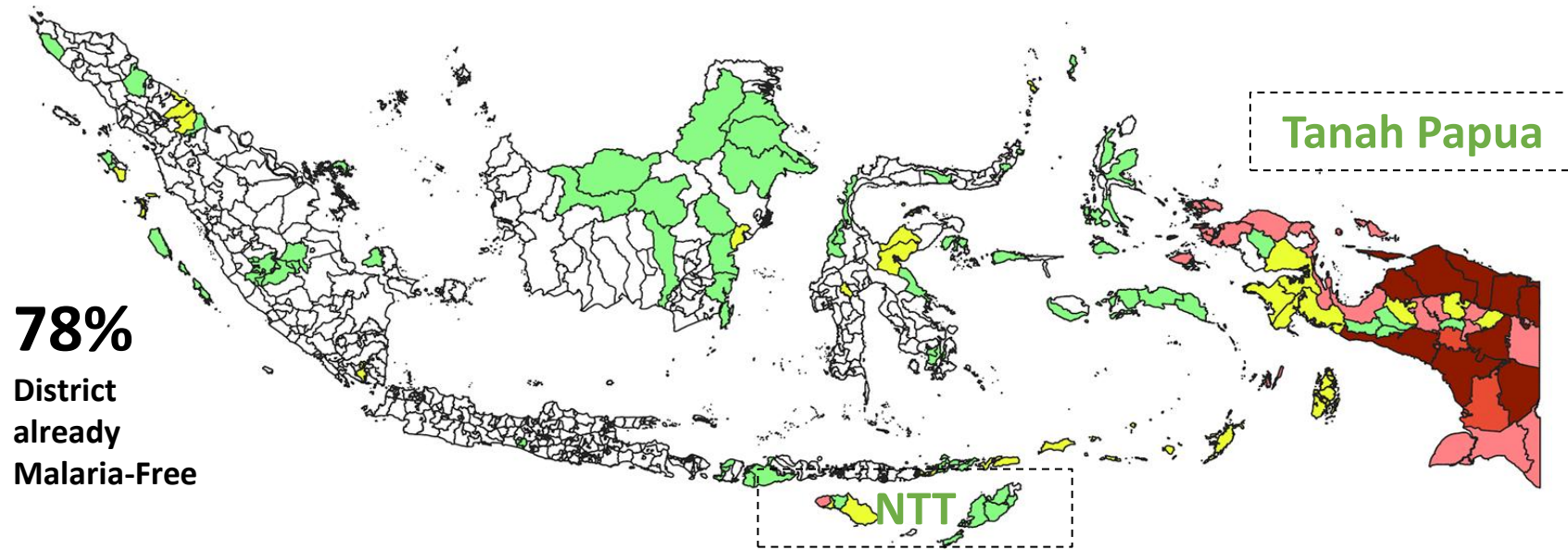
## Showcase: How Modeling Research Supports Public Health Improvement

# Social Determinants Influencing Access to Malaria Services – A Formative Study in NTT, Papua and West Papua Indonesia

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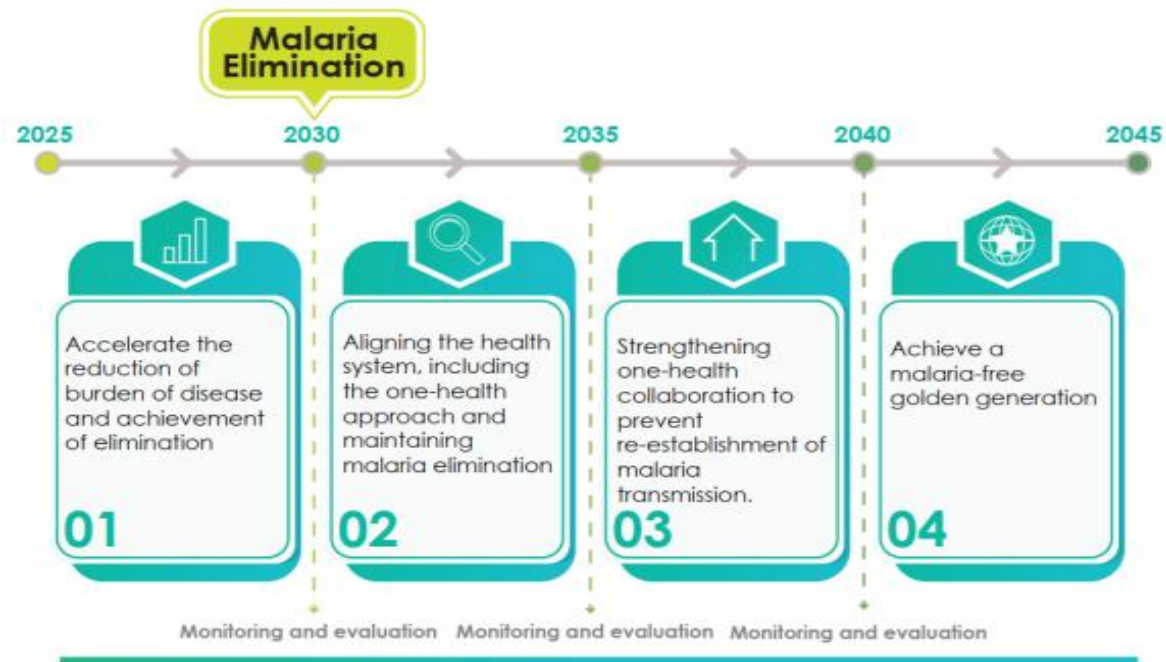
# Malaria Situation in Indonesia



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- ❑ More than 90% of the population is now living in malaria free areas.
- ❑ **District Certification** (Jan 25): 401 of 514 districts (78%) are certified for malaria elimination.
- ❑ **Malaria Cases:** In 2024, Indonesia recorded 527,381 cases, with 489,334 (93%) from **Tanah Papua**—the highest transmission area—with **NTT** and **Maluku** as other hotspots.

# Indonesia Malaria Elimination Roadmap 2025-2045



Prof.DR. Susilo Bambang Yudhoyono &  
Minister of Health Budi Gunadi Sadikin

## The roadmap is anchored by a five-pillar framework:

1. Pillar 1 - Ensure universal access for prevention, diagnosis and treatment of malaria
2. Pillar 2 - Transformation of malaria surveillance into a core intervention
3. **Pillar 3 - Community empowerment and behaviour change communication to accelerate malaria elimination**
4. Pillar 4 - Strengthening the health system, health security and leadership to achieve malaria elimination program objectives based upon the principles of equity, human rights and leave no one behind
5. Pillar 5 - Health innovation and research

# Methodology

To understand the factors affecting access to malaria services in high endemic settings and support the search for local solutions to intransigent behaviour change challenges.

**Combined Light-touch immersion and People – Driven Design** – Driven Design research approaches through participatory community assessment:

- i. **Physical space** where people feel comfortable and at ease
- ii. **Conversational space** where people can talk freely and lead the direction of conversations and
- iii. **Experiential space** where people can augment what they say by showing and sharing their experiences



1. People behaviour in relation to malaria
2. Detecting malaria,
3. Malaria treatment,
4. Bednets usage and preference, and
5. Prevention practices



**Involved 889 people**  
over the course of the research.

These include focal families and their neighbors, health service providers, other service providers (e.g., village officials, faith leaders, kiosk owners) and other community members, and specifically including youth.



## People – Driven Design

### Step 1 | IMMERSION

Developing an in-depth understanding of daily life through immersion in a village.

### Step 2 | INSPIRATION

Exploring what was learned in step one through a process of inspiration to identify focus behaviors and generate ideas and strategies to improve them.

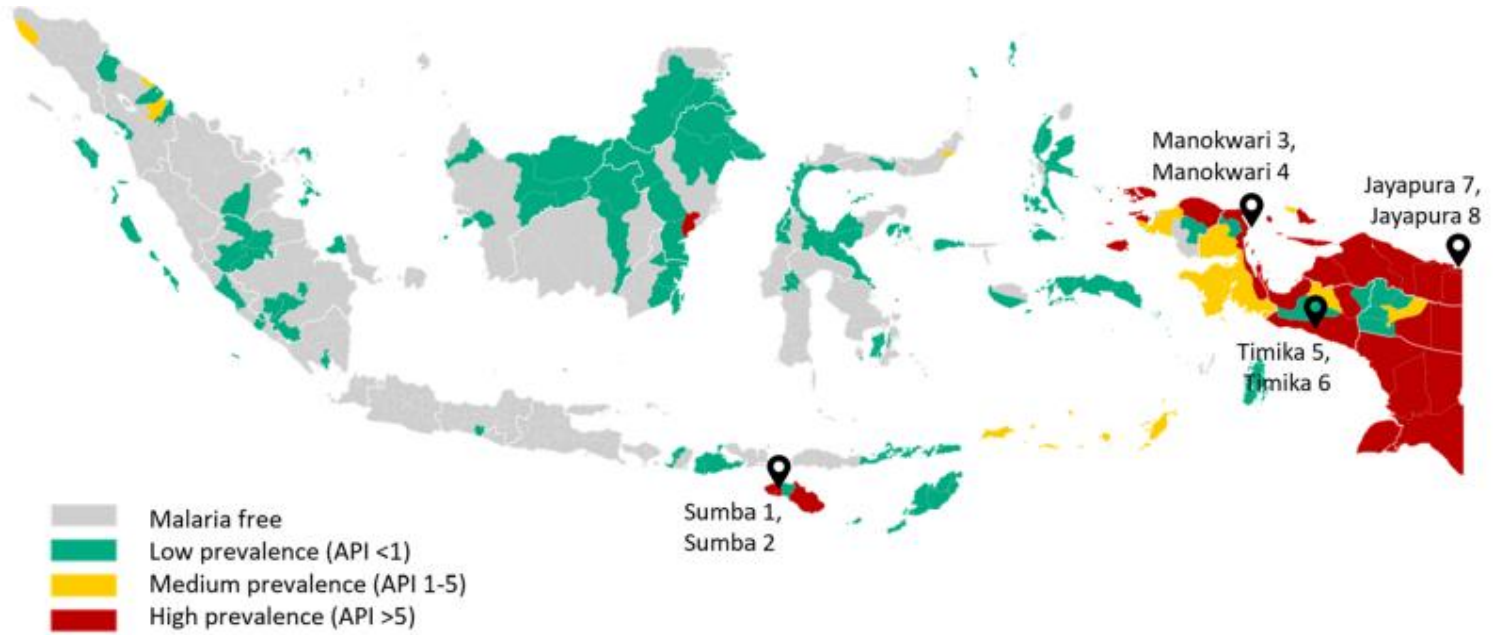
### Step 3 | DESIGN

Co-creating solutions in the village through a people-driven design process to address priority challenges identified

### Step 4 | TRIALING

Testing potential solutions generated in step three through a trialing process in the village to assess their usefulness and feasibility

# Location



	Districts	Settings
Papua	Jayapura	Forest
		Lake
Central Papua	Timika	City
		Island
West Papua	Manokwari	Urban
		Rural
Nusa Tenggara Timur (NTT)	Sumba Barat Daya	Remote
		Peri Urban



Jayapura Forest

Jayapura Lake

Manokwari Urban

Manokwari Rural

Timika City

Timika Island

Sumba Remote

Sumba Peri Urban

Rural, valleys, plains, open lands and forest

A kampung just by the Sentani lake. Limited transport

Urban area, city centre with government offices, main market, shops and banks

Rural area along a coastline and forest/small hills

Urban, low

Rural, swampy lowland surrounded by forest, mangrove, rivers. Access is >3 hours boat from the city's port to the district.

Rocky coastline, people mostly live inland. Many unused land areas with bushes. People live close to their farming land.

Rural, plains with paddy fields. Big river and a forest nearby.

# Study Findings - Behaviour

- 1. Evolving Service Provision:** Before 1980 epidemics emerged; 1990s scale-up with drugs reduced mortality.
- 2. Epidemiological Patterns:** Malaria was ubiquitous; children were infected annually, adults less concerned.
- 3. Cultural Normalization:** Malaria is normalized as inherent, undermining elimination efforts despite expertise.
- 4. Causal Beliefs:** Weak immunity, adverse weather, geography seen as causes over mosquitoes.
- 5. Behavioral Responses:** Local Papuans show greater resilience than migrants in malaria management.

**People across study areas were not highly concerned about contracting malaria**

*“We and malaria are already friends, becoming one”. Respondent in Jayapura Forest.*

Medicating with herbs

**1980s**

Active transmigration program, new migrants contract malaria with many deaths. Local people less deaths, immunity. Some quinine pills availability

**1990s**

Quinine pills, puskesmas, testing, freeport program

**2000s**

Less deaths, less infection, transmigrants know better. Bed nets distribution, spraying. Forests turned into neighborhoods

**2007-2008**

DHP (blue pills) + primaquine, restricted access with positive test

**2010**

Different programs on malaria, getting bed nets every year (mid 2010s); Cadre in the village (mid-late 2010s); Malaria kit in puskesmas (mid 2010s); Last known spraying (2017/2018)

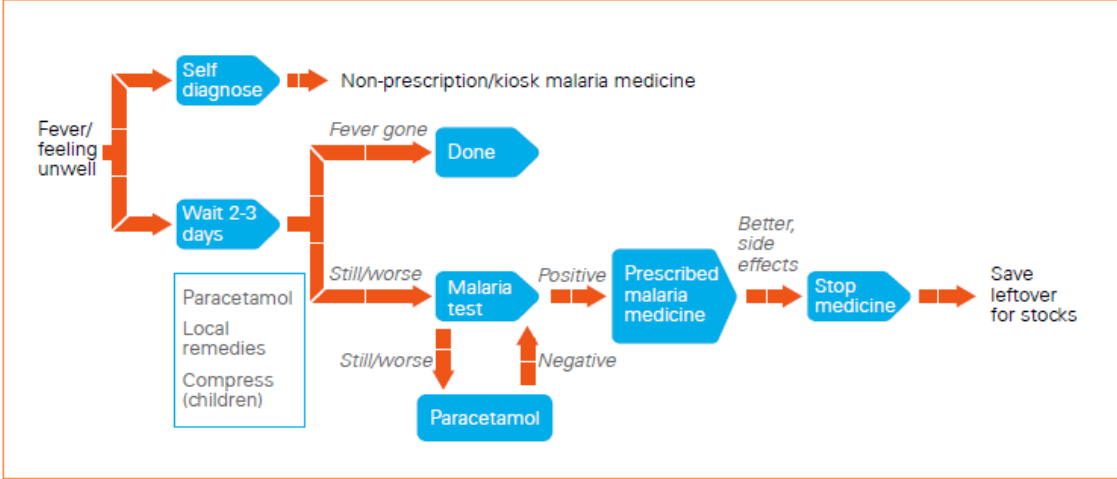
**2020**

Private foundation was established in some areas

# Study Findings – People’s Response to Malaria



- **Delayed Care:** They self-medicate with over-the-counter drugs and delay seeking care two to three days.
- **Gender Influences:** Men and older teen boys seldom pursue testing.
- **Familial Influences:** Parents treat childhood fevers as normal.
- **Provider Preferences & Diagnostic Perceptions:** People trusted nearby private providers despite cost, while distrust in rapid tests prompts re-testing.



Plants that people used to treat malaria symptoms (fever and headache)



Meniran leaves and “kumis kucing” (*Orthosiphon aristatus*), herbal medicinal plants often used across study locations.



Itchy leaves



Ello tree

*“I have a malaria “tulang” (bone malaria), my bones hurt and I want to get the pills”. At the puskesmas, she asked for an RDT. (Women in Timika)*

A child in Timka City being tested for malaria through mobile malaria test



# Study Findings – Experiences of Malaria Treatment

- **Therapy:** Oral DHP and primaquine are primary; other including suldox, quinine, and chloroquine supplement treatment.
- **Adherence:** Patients often discontinue therapy early after symptom relief or due to side effects.
- **Gender:** Males show lower adherence.
- **Household:** Mothers drive care.
- **Preferences:** Puskesmas serve as contacts, yet private clinics and trusted cadres are preferred.

*A young man (19 year-old) said to us, “Malaria is my friend,” as he contracted malaria three to six times a year.*

He said it was likely because he did not finish the 14-days primaquine for his malaria tertiana. *“It’s too long, I often forget especially when fever already gone.”*

*Many people in Timika City said something similar, “Malaria is like my favourite warung nasi [eating place], I come back again and again”.*

# Study Findings – Bednets: Usage and Preference



Bed net packaging showing how to maintain and wash bed nets.

- **Ownership:** Households universally own effective bed nets.
- **Usage:** Daily net use significantly rises with increased mosquito prevalence.
- **Demographics:** Women, children, and toddlers consistently use nets; teenagers and men less so.
- **Motivations:** Usage is largely driven by mosquito nuisance relief; discomfort severely limits compliance.
- **Product Satisfaction:** New green nets are widely disliked; older white nets are preferred.



A malaria cadre testing for malaria.

# Study Findings – Malaria Prevention Practices

- **Reactive Behavior:** Preventive measures respond to mosquito nuisance, not to preempt malaria.
- **At-Home Measures:** Households rely exclusively on bed nets; few use fans or sprays.
- **Field Interventions:** In farms or forests, repellents, long sleeves, and smoke deter mosquitoes.
- **IRS Programs:** Indoor residual spraying has markedly declined, now rarely applied.
- **Inconsistencies:** IRS coverage varies considerably; some sites never receive interventions.



IRS conducted by the Malaria Center in Timika

# Summary

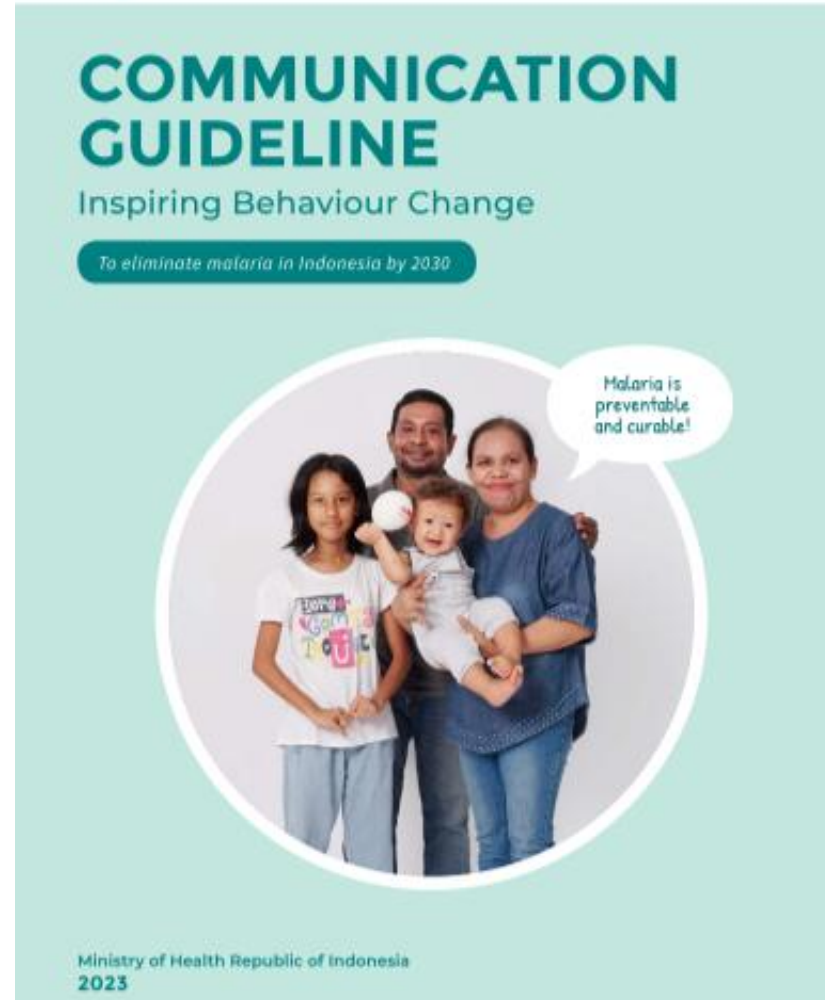
- **People's Perception of Malaria:** Effective treatments have undoubtedly fostered a remarkably casual approach to early testing and therapy adherence.
- **Malaria Tolerance:** Many now consider malaria less severe, prevalent, and risky, often viewing it as “biasa aja.”
- **Illness Severity:** There is widespread recognition that infants, young children, the elderly, and newcomers are particularly vulnerable.
- **Treatment Adherence:** Men and adolescent boys often discontinue medication early, while mothers ensure full adherence for children.
- **Mosquito Link:** Although many doubt a direct mosquito-malaria link, they still use bed nets for nuisance reduction.

“The findings from this study explains that prevalent attitudes towards malaria, including reluctance to use bed nets, seek early diagnosis, and complete treatments. Observed concern for vulnerable groups offers critical entry points for targeted social behavior change communication, thus facilitating contextually appropriate and innovative malaria prevention strategies”.

## This knowledge products has been used to support policy advocacy efforts in accelerating the achievement of malaria elimination agenda

Through this study, the understanding of human behaviors influencing malaria elimination was used to develop effective communication strategies in addressing social behaviour determinant factors affecting malaria elimination in Indonesia.

The results of this study has contributed to the refinement of Indonesia's malaria communication strategy.



This study has been published in **Malaria Journal**:

<https://malariajournal.biomedcentral.com/counter/pdf/10.1186/s12936-024-04865-7.pdf>

RESEARCH

Open Access

# How using light touch immersion research revealed important insights into the lack of progress in malaria elimination in Eastern Indonesia



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## Abstract

**Background** By 2022, the Government of Indonesia had successfully eliminated malaria in 389 out of 514 districts but continues to face a challenge in Eastern Indonesia where 95% of the total 2021 malaria cases were reported from Papua, West Papua and Nusa Tenggara Timur provinces. There is an increased recognition that malaria elimination will require a better understanding of the human behavioural factors hindering malaria prevention and treatment, informed by local context and local practice.

# Thank you

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for every child

 **Kemenkes**

  
empatika