POLICY BRIEF

DATA TO POLICY WORKSHOP

PQ7/TQ - สั้นกว่า ก็ดีกว่า: ความคุ้มค่าของการใช้สูตรยาสั้นลงในการรักษามาลาเรียระยะแฝง

(The shorter, the better: cost-effectiveness of shorter course for *Plasmodium vivax* malaria radical treatment in Tak, Thailand)

ใจความสำคัญ

- ในปี 2568 มีผู้ป่วยมาลาเรียในประเทศไทยกว่า 5,600 ราย โดย 91% ของผู้ป่วยเกิดจากเชื้อ *Plasmodium vivax* [B]
- อัตรากลับเป็นซ้ำของผู้ป่วยมาลาเรียจากเชื้อ *P. vivax* ปัจจุบันในไทยอยู่ที่ 14% [B] ในขณะที่การศึกษาอื่น ๆ พบอยู่ที่ไม่เกิน 8% [AE] ซึ่งคาดว่าเกิดจากการกินยากำจัดเชื้อระยะแฝงไม่ครบ (24% กินยาไม่ครบ 14 วัน [AA])
- การลดระยะเวลากินยา Primaquine จาก 14 วัน เหลือ 7 วัน หรือใช้ยาที่กินครั้งเดียว เช่น Tafenoquine ช่วยลดปัญหาการกินยาไม่ครบได้ [AA], [AC]
- ตัวเลือกที่สามารถลดระยะเวลารักษาและมีประสิทธิผลสูงสุดคือ **สูตรยา Primaquine 7 วัน** (ขนาดยารวม 3.5 ม.ก./ก.ก. เท่าเดิม) ซึ่งมีความคุ้มค่ามากกว่าการใช้ Tafenoquine 30-36%
- การศึกษาความครบถ้วนของการกินยา Primaquine ในไทยยังไม่ชัดเจน หากสัดส่วน**ผู้กินยาครบในไทยต่ำกว่าค่าจากการศึกษา**ที่ใช้อ้างอิง จะทำให้ความ**คุ้มค่าของการใช้ Tafenoquine สูงขึ้น**

TL;DR

- There are more than 5,600 malaria cases in Tak province, 2025. 91% of them are caused by *Plasmodium vivax* infection[B].
- *P. vivax* malaria in Thailand had 14% incidence of relapse[B] compared to 8% in other studies[AE].
  The possible cause is inadequate drug adherence to 14-day long treatment primaquine course (24% adherence loss[AA]).
- Decreasing primaquine duration to 7 days or single dose of tafenoquine are likely to improve adherence[AA], [AC].
- The most efficient option is using **7-day, double-dose primaquine course**
  (30-36% more efficient than tafenoquine).
- **Adherence study** of **14-day single-dose** and **7-day double-dose primaquine** needed in Thailand. Low adherence confirms that **single-dose Tafenoquine** may be the more effective alternative.

PROBLEM STATEMENT

Thailand's malaria elimination program aims to reduce 90% of indigenous cases by 2030. 91% of malaria in Thailand caused by P. vivax infection.

14% of P. vivax malaria in Thailand had relapsed while less than 8% relapse rate in other countries. The possible cause is inadequate drug adherence to 14-day long treatment primaquine course.

POLICY BRIEF

DATA TO POLICY WORKSHOP

PQ7/TQ - The shorter, the better:

Cost-effectiveness of shorter course for P. vivax radical treatment in Tak, Thailand

POLICY OPTIONS

Due to 14-day **long period** of traditional primaquine radical treatment (PQ14), 24% of patients lost their adherence [AA]. This is leading to **decreasing effectiveness**, resulting in **more relapses** [AG].

To reduce the treatment time, we propose alternative options either by doubled-dose, halved-duration primaquine (PQ7) or using single dose tafenoquine (TQ).

1. 14-DAY PRIMAQUINE (PQ14) - STATUS QUO

PQ 0.25 mg/kg/day * 14 days (total PQ 3.5 mg/kg)

- Proven efficacy in clinical trials when completed as prescribed
- Long-standing national standard for radical cure of P. vivax in Thailand

2. 7-DAY PRIMAQUINE (PQ7)

PQ 0.5 mg/kg/day * 7 days (total PQ 3.5 mg/kg)

- Reducing from 14 to 7 days could increase adherence rate from 76% to 94% [AA]
- Same drug, same supply chain as status quo
- Required qualitative G6PD test which already established in hospitals.

3. 1-DOSE TAFENOQUINE (TQ)

300 mg TQ single dose

- Long-acting analogue of primaquine
- Equivalent efficacy to 7-day high-dose PQ (7 mg/kg), and superior to the standard low-dose 14-day regimen [AC].
- Approved by Thai FDA and included in latest malaria clinical practice guideline [AB].
- Requires quantitative G6PD level before prescribe.

ECONOMIC EVALUATION

We use the decision tree model to evaluate cost-effectiveness of the options. The total population is all residents in Tak province who are equal or more than 16 years old. Malaria-relapsing case averted was considered as outcomes.

	PQ14 + no G6PD test	**PQ7** + G6PD quali test	**TQ, if already had instruments**	**TQ, if no instruments**
No. of relapse	3,082.871	3,047.084	3,044.618	3,044.618
Total cost (THB)	4,814,749 .00	6,924,747.00	7,750,623.00	7,885,623 .00
ICER (per relapse averted)	-	58,958.87	76,748.29	80,277.41
Political feasibility	High	High	High	High
Operational feasibility	High	High	Medium	Medium

Assumptions:

- Hospitals are only visiting sites for all individuals.
- The proportion of uninfected individuals visiting hospitals is 0.005.
- All individuals visiting hospitals received a malaria RDT test.
- Patients who are non-eligible for TQ/PQ7 will be treated with PQ14.
- Prevalence of G6PD among general populations equal to prevalence of G6PD among those with *P. vivax* infection.
- Relapse probabilities differ by adherence level but are identical across regimens.
- Relapsed cases were treated with the prior regimen if G6PD is documented; otherwise use PQ14.
- Relapsing could only happen once in an individual and always happen in infected individuals without treatment.

CONCLUSION

From an economic perspective, PQ14 (status quo) might be the most efficient option. Because the other options require around 60,000 – 80,000 THB to avert one relapsing case.

However, from an **elimination perspective**, both **PQ7** and **TQ** provide **more effectiveness of relapse prevention** which helps in elimination of goal achievement.

Comparing these two options, PQ7 is more efficient and should be the new standard treatment for *P. vivax* malaria in high prevalence areas such as Tak province. But on the other hand, TQ offers unique strategic value. Its single-dose administration eliminates adherence failure, making it particularly advantageous for mobile, hard-to-follow, or forest-working populations who drive persistent P. vivax transmission in border provinces.

Drug adherences in each regimen are referenced from a study in a foreign country. If the adherences of PQ14 and PQ7 are lower than the reference, TQ might be more efficient or even the most efficient one. Further studies about primaquine adherence in Tak province and Thailand are required.

RECOMMENDATIONS

1. DDC should adopt **PQ7** as the **new default standard of care** for *P. vivax* malaria in high-prevalence areas like Tak province, replacing PQ14

2. DDC should consider **integrating TQ** into the national malaria strategy as a strategic, targeted treatment for **specific groups** who are challenging to manage and who drive persistent transmission.

3. DDC should study primaquine **(PQ14 and PQ7) adherence** in key transmission areas, particularly Tak province and other border regions, is required.

REFERENCES

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- [AA]: Shortening the Journey to Cure: A Quasi-experimental Trial Comparing Seven-Day and 14-Day Primaquine Radical Therapy for Vivax Malaria - PubMed
- [AC]: Effectiveness and Safety of High Dose Primaquine and Tafenoquine in Plasmodium vivax Patients (EFFORT) - A Multi-Centre, Open Label, Superiority Randomised Controlled Trial
- [AG]: Effect of adherence to primaquine on the risk of Plasmodium vivax recurrence: a WorldWide Antimalarial Resistance Network systematic review and individual patient data meta-analysis - PubMed
- [AB]: Thailand's clinical practice guideline for malaria, 2025

WE THANK YOU FOR YOUR CONTINUED SUPPORT IN OUR EFFORTS TO CONTRIBUTE TO THE SDGS.

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