

# From Local Evidence to Regional Leadership: Post-Preeclampsia Care in Thailand

Nam Hoang Tran <sup>1</sup>, Kanchana Piboon<sup>2</sup>

<sup>1</sup>International Center, Tokushima University, Tokushima, Japan; <sup>2</sup>Faculty of Nursing, Burapha University, Chon Buri, Thailand

Correspondence: Nam Hoang Tran, International Center, Tokushima University, Tokushima, Japan, Email [tran@tokushima-u.ac.jp](mailto:tran@tokushima-u.ac.jp)

**Abstract:** Hypertensive disorders of pregnancy, particularly preeclampsia, identify women at increased risk of persistent hypertension and later cardiovascular disease, yet postpartum services often remain organized around short-term obstetric recovery. Thailand is well positioned to address this discontinuity because prospective local studies have demonstrated elevated blood pressure, hypertension, and selected cardiovascular and renal risk markers at 6 weeks and 6–12 months after preeclampsia or gestational hypertension. The principal policy gap is therefore not the absence of warning evidence, but the lack of a standardized and auditable handover from maternity services to primary care and cardiovascular prevention. This commentary was informed by a targeted, non-systematic examination of peer-reviewed studies, international professional recommendations, World Health Organization resources, and publicly accessible national guidance available in English through June 2026. Evidence was selected to characterize longer-term cardiovascular and renal risk following hypertensive disorders of pregnancy, summarize relevant Thai postpartum findings, and identify regional health-system approaches that could inform continuity of care in Thailand. Vietnam, Malaysia, and Mongolia were purposively selected as complementary examples of community noncommunicable-disease integration, local-clinic follow-up after hypertensive pregnancy, and continuity of care across geographic distance, respectively. We propose a standardized multicenter pilot comprising documented risk communication and a named receiving provider before discharge; blood-pressure evaluation within 72 hours for women with severe hypertension and no later than 7–10 days for other women with hypertensive disorders; structured assessment at 6–12 weeks and 6–12 months; permanent recording of hypertensive pregnancy history; and annual cardiovascular-risk review. National scale-up should follow evaluation of feasibility, completion, equity, and clinical outcomes. The aim is not to create a parallel specialty service, but to convert an established obstetric warning sign into accountable long-term cardiovascular and renal prevention.

**Keywords:** hypertensive disorders of pregnancy, postpartum care, cardiovascular disease, continuity of care, Thailand, Southeast Asia

## Introduction

According to the International Society for the Study of Hypertension in Pregnancy (ISSHP), de novo preeclampsia is defined as gestational hypertension arising at or after 20 weeks of gestation accompanied by one or more new-onset features of proteinuria, maternal end-organ dysfunction, or uteroplacental dysfunction.<sup>1</sup> This broader definition emphasizes that preeclampsia is a multisystem disorder and should not be defined by hypertension and proteinuria alone. Delivery ends the pregnancy, but it does not erase the cardiovascular information revealed by it. Quantitatively, meta-analytic evidence indicates that previous preeclampsia is associated with approximately 3.7-fold higher risk of subsequent hypertension, 2.2-fold higher risk of ischemic heart disease, and 1.8-fold higher risk of stroke,<sup>2</sup> while a later meta-analysis reported an approximately fourfold increased risk of future heart failure.<sup>3</sup> More recent international evidence confirms this association: an updated systematic review and meta-analysis found approximately twofold higher risks of cardiovascular death and coronary artery disease, a 2.5-fold higher risk of heart failure, and a 1.8-fold higher risk of stroke following preeclampsia.<sup>4</sup> International evidence quantifies the magnitude of this association: a systematic review and meta-analysis involving approximately 3.5 million women reported relative risks after preeclampsia of 3.70 for subsequent hypertension, 2.16 for ischemic heart disease, 1.81 for stroke, and 1.79 for venous thromboembolism.<sup>2</sup> Risk is particularly high after recurrent, severe, early-onset, or preterm disease, although it is not confined to these groups.

International recommendations increasingly recognize hypertensive disorders of pregnancy (HDP) as an opportunity for cardiovascular risk identification and prevention.<sup>1,5,6</sup> More recently, the American Heart Association has emphasized the postpartum period as an important opportunity for cardiovascular risk-factor identification and prevention after adverse pregnancy outcomes, with the first postpartum year representing a critical period for assessment and initiation of preventive strategies.<sup>7</sup> Thus, the long-term implications of preeclampsia are now recognized internationally as extending beyond obstetric outcomes to cardiovascular prevention across the life course.

The implementation problem is discontinuity. Acute management belongs to obstetrics, whereas later risk is expected to be managed by primary care, internal medicine, or cardiology. Unless responsibility is explicitly transferred, a woman may receive high-quality intrapartum care and still disappear from preventive follow-up after the conventional postpartum period. A generic instruction to seek future cardiovascular assessment does not establish who should provide it, when it should occur, what minimum assessment is required, or how completion should be measured.

Thailand offers a strong setting for policy translation because Thai investigators have already demonstrated persistent blood-pressure and cardiovascular abnormalities after hypertensive pregnancy.<sup>8,9</sup> Thai evidence also shows that hypertensive disorders remain a major contributor to severe maternal outcomes: in a 16-year review at a quaternary university hospital in Southern Thailand, hypertensive disorders were among the three leading causes of maternal death.<sup>10</sup> These local observations are consistent with the broader international literature showing that hypertensive pregnancy disorders identify a population with elevated cardiovascular risk well beyond pregnancy.<sup>2,3,11</sup> The next step is not simply to generate more evidence that risk exists, but to test a pathway that acts on it. Although international recommendations recognize HDP as a marker of later cardiovascular risk, they do not by themselves establish an operational handover pathway for Thailand. This commentary therefore translates Thai postpartum evidence and selected Asian health-system lessons into a minimum, auditable continuum of care suitable for multicenter pilot testing.

We conducted a targeted, non-systematic examination of peer-reviewed studies, World Health Organization resources, and publicly accessible national guidance available in English through June 2026. Evidence was selected according to its relevance to three predefined purposes: (1) characterizing the longer-term cardiovascular and renal consequences of preeclampsia and other hypertensive disorders of pregnancy; (2) identifying evidence specifically describing postpartum outcomes in Thailand; and (3) identifying health-system approaches relevant to continuity of care after hypertensive pregnancy. International professional recommendations were used to establish the broader clinical context and principles of postpartum cardiovascular risk assessment.<sup>1,5,6</sup> Thailand was selected as the focal country because direct Thai postpartum evidence permits a clear transition from clinical findings to policy action. Vietnam, Malaysia, and Mongolia were selected purposively because publicly documented material illustrates three functions relevant to pathway design: community NCD integration, operational local-clinic follow-up after hypertensive pregnancy, and continuity across geographic distance. These examples are design inputs, not rankings or claims of uniform national implementation. Published guidance does not prove consistent delivery, while limited English-language documentation does not demonstrate that local practices are absent. The strongest direct postpartum comparator is Malaysia. Vietnam and Mongolia contribute indirect but relevant health-system lessons: a potential community receiving platform and the need to design for unequal access, respectively.

Because this was a targeted commentary rather than a systematic review, no formal meta-analytic synthesis, risk-of-bias assessment, or exhaustive study-selection process was undertaken. Published guidance was interpreted as evidence of recommended practice rather than proof of uniform implementation, and the absence of English-language documentation was not interpreted as evidence that local practices were absent.

## Persistent Risk Extends Beyond the Conventional Postpartum Visit

In a prospective Thai study, Sukmanee and colleagues assessed women with previous preeclampsia, gestational hypertension, chronic hypertension, and normotensive pregnancy at 6 weeks and again at 6–12 months postpartum. Women in the preeclampsia and gestational-hypertension groups had higher blood pressure and a greater burden of hypertension at both time points.<sup>8</sup> More specifically, at 6–12 months postpartum, women with previous preeclampsia and gestational hypertension continued to demonstrate elevated blood pressure, hypertension, and higher serum high-sensitivity C-reactive protein (hs-CRP), an inflammatory marker associated with cardiovascular risk. Increased urine

albumin-to-creatinine ratio (UACR), a marker of renal injury, was also observed at 6–12 months among women with previous preeclampsia and chronic hypertension.<sup>8</sup> These findings indicate that abnormalities relevant to both cardiovascular and renal risk may remain detectable during the first postpartum year, although they should not be interpreted as establishing a universal biomarker-screening strategy. The renal findings are also consistent with broader international evidence linking preeclampsia with later kidney disease. A systematic review and meta-analysis of 23 studies involving more than 5.7 million participants found that previous preeclampsia was associated with approximately twice the risk of chronic kidney disease and nearly five times the risk of end-stage kidney disease compared with pregnancies without preeclampsia.<sup>12</sup> These longer-term international findings provide context for the renal abnormalities observed within the first postpartum year in the Thai cohort, while not establishing that early biomarker abnormalities inevitably progress to chronic kidney disease.

Related Thai research documented elevated blood pressure, metabolic and renal abnormalities, and higher odds of hypertension for up to 7 years after preeclampsia.<sup>9</sup> A Thai-led systematic review further found that cardiovascular risk is already elevated in the early years after HDP, with the risk of chronic hypertension greatest within the first 5 years postpartum.<sup>13</sup> These studies do not establish national prevalence, but they answer a clinically important question: apparent obstetric resolution at delivery does not guarantee cardiovascular or renal normalization. An updated meta-analysis similarly reported increased risks of CKD and ESKD following preeclampsia, although the authors emphasized substantial heterogeneity and continuing uncertainty regarding causality.<sup>14</sup>

The first postpartum year is therefore not merely a waiting period before “lifelong” risk begins. It is an actionable interval in which persistent hypertension can be detected, medication reviewed, organ abnormalities reassessed, and women connected to routine prevention. Broader evidence indicates that transition to chronic hypertension can occur relatively early after preeclampsia.<sup>15,16</sup> A pathway ending with one routine postpartum visit is clinically incomplete.

The defensible policy claim is not that Thailand lacks all follow-up; practice is likely to vary among institutions. Rather, Thai evidence justifies a standardized and auditable pathway that extends beyond acute obstetric management and makes ownership visible. This need is reinforced by Thai data showing limited use of repeated postnatal care and persistent access barriers among postpartum women, including concerns about infection, service closure, transport, and cost during the COVID-19 period.<sup>17</sup> The HDP diagnosis, severity, medication plan, unresolved abnormalities, and review schedule should therefore pass from maternity care into a permanent health record and a named receiving service.

### Three Health-System Design Inputs for Thailand

Vietnam demonstrates both the continuing clinical burden of preeclampsia and the existence of community-level NCD infrastructure that could receive women after maternity discharge. Hospital research has documented substantial maternal and neonatal morbidity associated with third-trimester preeclampsia and other HDP in Vietnam.<sup>18,19</sup> Separately, WHO-supported initiatives have strengthened protocol-based hypertension and diabetes care at commune health stations through workforce training, standardized protocols, and expanded use of grassroots services.<sup>20</sup> These sources do not establish a national Vietnamese post-preeclampsia pathway. Their relevance is organizational: maternity services need not provide lifelong follow-up themselves if they identify a receiving primary-care service, transmit risk information, and define escalation criteria. Community services can perform repeated blood-pressure measurement, lifestyle counselling, medication monitoring, and referral when risk exceeds local capacity. For Thailand, the transferable lesson is to embed follow-up in existing chronic-disease infrastructure rather than create a parallel specialty program.

Malaysia provides the most direct operational precedent among the selected examples. Its national hypertension guideline advises women with hypertensive disorders in pregnancy to have blood pressure checked regularly at local clinics when hospital follow-up is delayed, recognizes that *de novo* or worsening hypertension may occur postpartum, identifies persistence beyond three months as chronic hypertension, and recommends long-term follow-up because of later ischemic heart disease, thromboembolism, and stroke risk.<sup>21</sup> The value of this example lies in converting broad recommendations into practical instructions about local blood-pressure review, medication adjustment, referral, and reclassification of persistent disease. Thailand could strengthen this approach further by assigning named responsibility, specifying a minimum schedule, and measuring completion.

Mongolia is not presented as a proven post-preeclampsia program. Its contribution is architectural. Preeclampsia remains an important maternal health problem, while national NCD prevention is challenged by dispersed populations, long travel distances, and specialist concentration.<sup>22,23</sup> Passive referral is especially vulnerable in such settings. The lesson for Thailand is that the pathway must function beyond urban tertiary centers. Blood-pressure surveillance should be available locally, specialist input should be accessible through explicit referral rules and teleconsultation, and transfer should be urgent when warning symptoms or severe hypertension are present. This principle is relevant to remote provinces, border areas, islands, migrant populations, and women facing transport or financial barriers. Digital support should reduce unnecessary travel, not replace examination or emergency transfer.

## A Minimum Post-Preeclampsia Pathway for Multicenter Pilot Testing

The discharge summary should record the HDP subtype, gestational timing and severity, maximum blood pressure, major maternal or fetal complications, clinically relevant laboratory abnormalities, antihypertensive treatment, and unresolved issues. Written and verbal counselling should cover immediate warning symptoms and later cardiovascular risk without fatalism: increased risk is not certainty, and follow-up is intended to preserve health rather than label a woman as permanently ill. Counselling should use plain language and confirmation of understanding, because recent Thai evidence indicates that postpartum health literacy is strongly shaped by social support and socioeconomic resources.<sup>24</sup> A named receiving provider or facility should be identified before discharge. Where electronic exchange is unavailable, the woman should receive a standardized one-page transfer document. The maternity service should specify the next blood-pressure review and clear thresholds or symptoms requiring urgent reassessment.

Women with severe hypertension should have blood pressure evaluated within 72 hours after discharge, while other women with HDP should be assessed no later than 7–10 days postpartum; earlier review may be required according to symptoms, medication, and organ involvement.<sup>25</sup> ISSHP also recommends blood-pressure monitoring during days 3–7 postpartum, when pressure commonly peaks.<sup>1</sup> Severe hypertension, neurological symptoms, dyspnea, chest pain, visual disturbance, epigastric pain, or concern for postpartum preeclampsia requires urgent assessment.<sup>26</sup> Home monitoring may support access when validated devices and a clinical response system are available, but measurement without escalation rules merely transfers uncertainty to the patient.

The 6–12-week review should assess blood pressure, medication, symptoms, weight, smoking, family history, renal recovery where indicated, reproductive plans, and conventional cardiovascular risk factors. This timing is consistent with recommendations that postpartum care should be an ongoing process culminating in a comprehensive visit no later than 12 weeks after birth.<sup>25</sup> Testing should be risk-based and feasible rather than an inflexible universal panel. Persistent hypertension, proteinuria, renal impairment, diabetes, or other substantial risk should trigger explicit transfer to primary care, internal medicine, nephrology, or cardiology as appropriate.

Thai prospective data support reassessment at 6–12 months,<sup>8</sup> consistent with increasing international emphasis on the first postpartum year as an opportunity for cardiovascular risk identification and preventive intervention following adverse pregnancy outcomes.<sup>7</sup> At this contact, maternity-related follow-up should either conclude with a documented prevention plan or transition decisively into chronic-disease care. Core requirements are repeat blood pressure, review of weight and lifestyle risks, confirmation that abnormalities have resolved or are being treated, and documentation of future review. Renal assessment, including evaluation of albuminuria or renal function, should be considered where persistent hypertension, previous renal abnormalities, or other clinical indications are present. Although Thai data demonstrate persistent elevations in hs-CRP and UACR in selected HDP groups during the first postpartum year, these findings support continued risk surveillance rather than routine universal biomarker testing. Advanced cardiovascular or inflammatory biomarkers should therefore not be ordered routinely without clinical indication.

A history of preeclampsia or gestational hypertension should remain visible in the permanent record and inform future cardiovascular assessment and preconception counselling. Annual blood-pressure and cardiovascular-risk review is a pragmatic minimum. Women with recurrent, early-onset, severe, or preterm disease, persistent hypertension, kidney disease, diabetes, or multiple conventional risk factors may require more intensive follow-up.<sup>1,5,6</sup> Table 1 summarizes how Thailand's existing postpartum evidence can be combined with selected health-system lessons from Vietnam, Malaysia and Mongolia to support a standardized and measurable post-preeclampsia cardiovascular care pathway.

**Table 1** Proposed Minimum Pathway and Accountability Measures

| Stage                          | Minimum Action                                                                                                                                                                                    | Responsible Service                                     | Pilot Indicator                                                                                                                                  |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Before discharge               | Document HDP subtype, severity, complications, treatment, unresolved issues, warning symptoms, and long-term risk; name receiving provider.                                                       | Maternity service                                       | Risk counselling documented; receiving provider named; transfer information completed.                                                           |
| Within 72 hours / by 7–10 days | BP evaluation within 72 hours after severe hypertension and no later than 7–10 days for other HDP; urgent escalation for severe BP or warning symptoms.                                           | Maternity, primary care, or linked local clinic         | Timely BP review completed; urgent referrals and readmissions recorded.                                                                          |
| 6–12 weeks                     | Assess resolution, medication, symptoms, renal recovery where indicated, reproductive planning, and cardiovascular risk; transfer persistent disease.                                             | Obstetrics and receiving primary/specialty care         | Review completed; persistent hypertension detected; transfer confirmed.                                                                          |
| 6–12 months                    | Repeat BP and cardiovascular-risk review; reassess persistent renal abnormalities where clinically indicated, including renal function and albuminuria; document resolution or chronic-care plan. | Primary care/ internal medicine with specialist support | Review completed; persistent hypertension and clinically relevant renal abnormalities identified and treated/referred; prevention plan recorded. |
| Annually                       | Maintain HDP history and review BP and cardiovascular risk.                                                                                                                                       | Primary care                                            | Annual review completed; risk record remains visible.                                                                                            |

## Why Thailand Can Provide Regional Leadership

Thailand should begin with a standardized multicenter implementation pilot rather than wait for a perfect national architecture or proceed directly to nationwide rollout. Participating maternity hospitals should use a common discharge and transfer template, identify defined receiving facilities, and agree on escalation pathways. The pilot should deliberately include tertiary, provincial, and community-linked settings because Thai maternal mortality data indicate that hypertensive disorders remain a major cause of death and that quality improvement is needed across levels of obstetric care.<sup>10</sup> Co-design should involve obstetricians, family physicians, internists, cardiologists, nurses, pharmacists, health-information teams, primary-care representatives, and women with lived experience of preeclampsia.

A small indicator set can test whether continuity is occurring: documented cardiovascular-risk counselling; discharge with a named receiving provider; completion of early, 6–12-week, and 6–12-month reviews; prevalence of persistent hypertension; confirmed transfer to chronic-disease care; emergency readmission; and loss to follow-up. Equity should be examined by geography, entitlement arrangements, socioeconomic position, migration status, and travel time. The pathway should measure whether information reached the receiving provider, not merely whether a referral form was produced. Research priorities include multicenter estimates of persistent postpartum hypertension, implementation comparisons between usual discharge and active handover, cost and workforce implications, women's understanding of long-term risk, and the effectiveness of remote blood pressure monitoring in rural settings. Phased national adaptation should follow only if the pilot demonstrates feasibility, acceptable workload, equitable completion, and clinically meaningful detection and management of persistent risk.

Thailand's comparative advantage is not that it has already solved the problem, but that it has generated locally relevant postpartum evidence and possesses the clinical and health-system capacity to test a practical response. Regional leadership should be defined by implementation and transparent evaluation rather than by issuing another broad recommendation. A pilot that records risk, assigns ownership, measures completion, and reports outcomes could offer a transferable model for other Asian settings while remaining grounded in Thailand's own institutions.

## Conclusion

Thailand has generated locally relevant evidence showing that cardiovascular risk after hypertensive pregnancy remains detectable beyond six weeks and throughout the first postpartum year. Persistent hypertension, elevated cardiovascular/inflammatory risk markers, and evidence of renal abnormalities reinforce the need for follow-up extending beyond routine obstetric recovery. The priority is therefore to convert this evidence into an accountable continuum of care linking

maternity services with primary care and longer-term cardiovascular and renal prevention. A standardized multicenter pilot should test timely early blood-pressure review, structured risk assessment at 6–12 weeks and 6–12 months, permanent documentation of hypertensive pregnancy history, and explicit transfer to a named receiving service when persistent hypertension or other clinically relevant abnormalities are identified. Feasibility, completion, equity, workload, and clinical outcomes should be evaluated before national scale-up. For Thailand, the central opportunity is to ensure that preeclampsia is treated not only as a pregnancy complication but also as an early cardiovascular and renal risk signal that can trigger appropriate long-term prevention.

## Data Sharing Statement

No datasets were generated or analyzed for this commentary.

## Ethics Approval and Informed Consent

Not applicable. This commentary did not involve human participants, identifiable information, or original data collection.

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