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Communication barriers to emergency medical services among stateless and displaced populations in Thailand: provider perspectives and the development of a community intermediary model

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Abstract

Background:

Stateless and displaced populations in Thailand are legally entitled to emergency medical care, yet a profound equity gap persists between legal entitlement and actual access. These marginalized groups rarely utilize the national emergency number (1669). Empirical evidence on restructuring emergency medical services (EMS) to reach them remains scarce. This study aimed to examine systemic communication barriers to EMS access from the perspective of providers, compare them with community experiences, and develop a theory-grounded community intermediary model to close this access gap.

Materials and Methods:

We conducted a three-phase, mixed-methods intervention development study informed by the Medical Research Council (MRC) framework and INDEX guidance across two geographically contrasting settings: Chiang Mai (highlands) and Ranong (islands). Phase 1 engaged 76 EMS, healthcare, local government, and civil society personnel through questionnaires and semi-structured interviews, comparing their insights against a parallel community survey (n = 269). Phase 2 translated these empirical findings into intervention design principles using health communication and access theories. Phase 3 refined the resulting model through expert interviews and a consultation meeting with 15 key stakeholders.

Results:

Stateless individuals rarely contact 1669 directly, relying instead on an indirect help-seeking chain (employers, volunteers, and community leaders), which causes critical delays and information loss. Providers reported that clients favored local administrative agencies over the 1669 hotline (92.9% vs 54.8% in Chiang Mai). Providers' lowest self-rated competence was conducting clinical assessments in clients' native languages (means: 2.71 and 2.88 out of 5). Five core themes emerged: an indirect help-seeking chain; language and geographic isolation barriers; layered institutional fears (legal status, costs, and authority); divergent definitions of medical emergencies; and individual goodwill lacking systemic support. Notably, providers over-estimated infrastructural barriers but under-estimated obstacles stemming from their own linguistic limitations and medical jargon ($p < 0.05$). The co-designed Community Intermediary Model establishes formally registered, community-nominated intermediaries backed by a targeted fear-reduction campaign, a multilingual interpreter registry, visual communication toolkits, offline-first digital channels, and formal cross-agency safe-zone policies.

Conclusions:

Communication barriers span every dimension of healthcare access—from perceiving need to engaging with providers. Designing EMS frameworks around trusted community intermediaries, rather than enforcing direct-to-system contact, offers a structurally competent and feasible pathway to translate universal legal entitlements into equitable emergency care access.

Background

Prehospital emergency care depends on a sequence of actions that begins before any ambulance is dispatched. A person must recognise that a situation is an emergency, know whom to contact, describe the problem and the location, and be willing to ask for help. Each of these steps assumes that the caller shares the language of the system, holds the information the system requests and trusts that contacting it will not cause harm. For people who do not share the language of health services, who lack identity documents or who fear the state, any of these steps can fail. Emergency care systems are increasingly recognised as an essential part of universal health coverage [1], yet they are often designed around an idealised caller who can dial a number, speak the dominant language and give an address.

Language barriers between health providers and service users remain a major obstacle to equitable and safe care. Miscommunication contributes to diagnostic errors, lower satisfaction and reduced access, and its effects fall most heavily on people with limited proficiency in the dominant language of the health system [2]. In many settings the responsibility for overcoming language discordance is placed implicitly on service users rather than addressed through structural solutions, so that providers rely on ad hoc strategies such as family members, bilingual staff or gestures [3]. Migrants and ethnic minorities also face mistrust, unfamiliarity with services and concerns about cost when seeking emergency and urgent care [4], and fear of immigration enforcement can deter help-seeking even when life is at risk [5]. Providers themselves report that serving migrants is constrained by language, cultural difference, unclear entitlements and a lack of institutional support [6].

Thailand offers a particularly instructive setting for examining these problems. The Emergency Medical Act guarantees emergency care to all patients without discrimination [7], and the national emergency number 1669 links callers to provincial dispatch centres, local rescue units and hospitals. Thailand also hosts more than 592,000 registered stateless persons [8], as well as displaced Thais and ethnic minorities awaiting verification of their status, and a large population of migrant workers. Health entitlements for people with citizenship problems are tied to identification numbers and administrative categories that make access complex in practice [9], and interpretation and cultural mediation services in Thai health facilities remain unstandardised and underfunded [10]. These populations are concentrated in two contrasting environments: highland districts of the north, where many ethnic languages are oral only and villages lack formal addresses, and coastal and island areas of the south, where access to hospitals depends on boats.

From a health equity perspective, these conditions illustrate the difference between entitlement and access. Levesque and colleagues conceptualise access as the opportunity to identify health care needs,

to seek, reach, obtain and use services, and to have those needs fulfilled, and they emphasise that access results from the interaction between characteristics of services and the abilities of populations to perceive need, seek, reach, pay for and engage with care [11]. A legal guarantee of emergency care addresses only some of these dimensions. If people do not recognise when to call, cannot be understood when they do, or fear the consequences of contact with the state, a universal entitlement can coexist with highly unequal access. Inequity in emergency care is therefore shaped not only by the availability of ambulances and hospitals but also by communication at the interface between communities and the system.

Interventions that improve appropriate use of emergency and urgent care by vulnerable groups tend to operate through three mechanisms: navigation of the service system, more local access, and social and emotional support [4]. Community health workers improve access for populations that services fail to reach [12], trained interpreters reduce clinical errors and improve the quality of care [13], and health messages are more likely to be accepted when they come from trusted members of a community [14, 15]. Culturally competent care requires attention not only to individual skills but also to organisational and structural arrangements [16]. However, most of this evidence comes from high-income countries and from hospital or primary care settings. Little is known about how EMS systems in middle-income countries can reach stateless and displaced populations at the point of help-seeking, how providers perceive the barriers these groups face, and whether provider perceptions match those of communities. Few interventions in this field have been developed systematically with the providers and intermediaries who serve these groups.

Contemporary guidance recommends that complex interventions be developed by combining evidence, theory and stakeholder involvement before they are evaluated [17, 18]. Development studies of this kind make explicit how problems were identified, how they were translated into intervention components and how stakeholders shaped the result, which allows later evaluations to test whether the intended mechanisms operate in practice. To our knowledge, no published study has applied this approach to communication between EMS systems and stateless or displaced populations in Southeast Asia.

Study aims and objectives

Against this background, and in light of the persistent gap between legal entitlement and actual access to emergency care, this study aimed to develop a theory-informed communication model to improve access to EMS among stateless and displaced populations in Thailand. The specific objectives were (1) to identify communication practices, barriers and needs for communication support from the perspective of EMS, health, local government and civil society personnel in a highland and an island setting; (2) to compare personnel perceptions of barriers with those reported by community members; (3) to translate these findings, together with relevant theory, into design principles and intervention components; and (4) to refine the resulting model through expert and stakeholder consultation.

Materials and Methods

Study design and setting

We used a three-phase, mixed-methods intervention development design informed by the Medical Research Council framework for developing and evaluating complex interventions and the INDEX guidance on intervention development [17, 18]. Phase 1 identified problems and needs through a questionnaire survey and semi-structured interviews with the same participants; Phase 2 translated the findings into design principles and intervention components; and Phase 3 refined the draft model through individual expert interviews and a stakeholder consultation meeting. Quantitative and qualitative data were collected in parallel and integrated at the interpretation stage, following a convergent approach to integration [19]. Data from a parallel community survey of stateless and displaced people (n = 269) conducted within the same project were used to compare provider and community perspectives; the full community survey is reported separately in Thai. The qualitative components are reported in accordance with the Consolidated Criteria for Reporting Qualitative Research (COREQ) [20].

The study was conducted in two provinces selected to represent contrasting geographical and social contexts. In Chiang Mai, in the northern highlands, data were collected in Mueang and Chiang Dao districts, where stateless persons and ethnic minorities, including Dara-ang communities whose language has no written form, live in mountain villages that are often far from hospitals and lack formal addresses. In Ranong, on the Andaman coast, data were collected in Mueang and Suk Samran districts and on Sinhai Island, where displaced Thais, Moken communities and Myanmar migrants live in coastal and island communities that depend on boats to reach hospitals. In both provinces, emergency calls to 1669 are received by a provincial dispatch centre that coordinates local rescue units run by local administrations or foundations, community hospitals and provincial referral hospitals. Village health volunteers, community leaders and civil society organisations play an informal but important role in connecting communities with these services.

Participants and recruitment

Eligible participants were people who communicate with stateless, displaced or migrant populations in the course of emergency work, including staff of public health facilities, EMS and rescue units, local administrations, provincial and district offices, and civil society organisations, as well as community intermediaries such as village health volunteers and community leaders. Participants were selected purposively, through provincial health offices, local administrations, rescue organisations and existing project networks, to cover the main actors in the help-seeking pathway identified in preliminary meetings with provincial agencies. In total, 76 participants took part, 42 in Chiang Mai and 34 in Ranong. Every participant completed the questionnaire and then took part in an individual semi-structured interview, so that the quantitative and qualitative data came from the same people.

In Chiang Mai, participants came from local government EMS units at subdistrict and provincial levels, the provincial health office, a community hospital and two referral hospitals, rights and social welfare offices, a civil society foundation working on statelessness, village health volunteers and community leaders. In Ranong, participants came from health facilities, rescue foundations and EMS units, administrative and security agencies, the provincial disaster prevention and mitigation office, non-governmental and community organisations, and policy and planning units (Table 1). Participants received an information sheet in advance, and data were collected at their workplaces or in their communities between March and May 2026.

For Phase 3, two experts were first selected for individual interviews on the basis of expertise relevant to the main problems identified in Phase 1: strategic communication, and computer engineering with experience of low-resource communication technologies. The consultation meeting then brought together 15 experts and stakeholders from strategic communication, computer engineering, public administration and mass communication, together with executives of the National Institute for Emergency Medicine, the national agency responsible for EMS policy.

Sample size determination

As the study was developmental rather than designed to estimate population parameters or test hypotheses, no a priori power calculation was performed. The target was to include personnel and intermediaries from all agency types involved in emergency communication with the study populations in each district. Because every participant was also interviewed, the qualitative sample (n = 76) was large for an interview study; its adequacy was judged by information power rather than by numbers alone [21], considering the narrow study aim, the specificity of participants to the help-seeking pathway, the use of established theory and the depth of the interviews. Recruitment continued until all main agency types in each province had been included and no substantially new barriers or practices were reported. The consultation meeting size reflected the number of distinct disciplinary and institutional perspectives needed to assess feasibility and ownership of the model.

Ethical considerations

The project was approved by the Ethics Committee of the Institute for the Development of Human Research Protections (IHRP), Health Systems Research Institute (HSRI), Thailand (COA No. IHRP2026029; IHRP No. 178–2568; approved on 2 March 2026). The study was conducted in accordance with the Declaration of Helsinki and the ICH Good Clinical Practice guidelines. All participants received information about the purpose of the study, the voluntary nature of participation and their right to withdraw, and gave informed consent before data collection. Because some informants worked closely with people without legal status, particular care was taken not to record information that could identify community members. Informants are identified in this article by codes, and names of individuals and identifying details of organisations have been removed.

Survey instrument and interview guide

The personnel questionnaire was developed by the research team based on a four-domain cultural competence framework, distinguishing self-awareness and unintended bias, contextual knowledge, communication skills, and systems integration, synthesised by the research team from established models of cultural competence [16, 22]. The instrument was originally drafted in Thai and evaluated for content validity by an expert panel comprising three specialists in emergency medicine, health communication, and research methodology. Content validity was established via unanimous expert consensus, confirming that all items were highly relevant and appropriate. The final instrument was revised for conceptual clarity before field administration. Internal consistency reliability demonstrated a high degree of stability, with a Cronbach's alpha coefficient of .847. Notably, the list of perceived barriers deliberately utilized identical items to the community questionnaire, enabling a direct and rigorous comparison between provider perspectives and community experiences regarding identical barriers.

The semi-structured interview guide, developed by the research team for this study (Additional file 2), comprised eight open-ended questions on the main problems encountered in communicating with vulnerable groups and the groups affected; the most challenging communication situation experienced, its effect on assistance and how it was resolved; procedures followed when callers could not communicate in Thai or provide information on their identity and situation, and the adequacy of those procedures; the adequacy and appropriateness of communication tools, equipment and technologies provided by the agency; specialised training received on communicating with vulnerable groups and its relevance to practice; cultural bias and misunderstandings between personnel and vulnerable groups and their effect on work and decisions; the system improvement or resource that informants would prioritise if they had decision-making authority; and recommendations for improving communication and access to EMS in their area. Interviews were conducted in Thai, with community interpreters where needed, by members of the research team with training in qualitative methods. Interviews lasted between one and three hours, depending on the need for interpretation and the number of cases informants described. All interviews were audio-recorded with the informants' permission, transcribed verbatim and analysed thematically, and the findings were summarised by theme. The interview guide was reviewed for content validity by the same three experts and pilot tested in 10 trial interviews with personnel who had similar characteristics to the participants but were not part of the sample; minor wording revisions were made before data collection. Interviewers made field notes during and immediately after each interview, and at the end of each interview summarised the main points and asked participants to confirm or clarify them. Because most interviews took place at participants' workplaces, other staff who were not participants were sometimes present.

The 12 open-ended questions used in Phase 3 (Additional file 2) covered (1) the deepest and most difficult root problem; (2) whether to design one model or province-specific models; (3) transferable cases and practices; (4) desirable and undesirable features of a communication innovation; (5) technological solutions for areas without signal; (6) mechanisms to sustain staff skills; (7) psychological and social mechanisms of behaviour change; (8) the level at which implementation should start; (9)

reasons why health innovations for vulnerable groups fail; (10) ownership and the roles of agencies; (11) pilot sites and indicators; and (12) advice to researchers and policy makers.

Measures and variables

The personnel questionnaire covered five areas. Participant characteristics included sex, age, years of experience in emergency communication, position and the main client group served. Communication practices included the channels through which clients requested emergency assistance, as observed by personnel (local agencies, the 1669 hotline, local hospitals and others), and the frequency with which personnel informed clients of their entitlements to treatment (every time, often, sometimes, rarely or never). Perceived barriers among clients included items on language, accents and medical terms, fear of costs, uncertainty about entitlements, lack of phone signal or internet, preference for traditional treatment and preference to die at home. Needs for communication support included communication through personal media and community networks, communication in local languages, knowledge of entitlements and costs, and easy-to-use emergency contact channels. Finally, personnel rated statements on their own knowledge, communication skills and organisational support on five-point scales from 1 (lowest) to 5 (highest), including courtesy and willingness to help, the extent to which language barriers delayed their work, their ability to ask basic assessment questions in clients' languages, the adequacy of specialised training received and the adequacy of communication resources.

Data preparation and missing data

Survey data were checked for completeness and internal consistency. Multiple-response items on channels, barriers and needs were coded as binary variables. Because some participants did not answer every item, percentages for Chiang Mai were calculated among respondents to each item. Summary tables were cross-checked against item-level frequencies, and transcription errors identified during this process were corrected before analysis. Community data were available at individual level for Ranong but only as aggregated frequencies for Chiang Mai; provider–community comparisons were therefore conducted at group level in both provinces.

Data analysis

Descriptive statistics

Personnel characteristics, communication practices, perceived barriers and needs were summarised with frequencies and percentages, and rating-scale items with means and, where available, standard deviations. Results were reported separately for each province, as the two settings differed in population, geography and agency composition, and the study did not aim to test differences between provinces.

Comparison of personnel and community perceptions

For each barrier measured in both questionnaires, the proportion of personnel reporting the barrier among clients was compared with the proportion of community members reporting the same barrier, separately in each province, using chi-square tests on 2 × 2 tables constructed from group-level counts. Statistical significance was set at 0.05. These comparisons were exploratory and intended to identify where provider perceptions diverged from community experience, rather than to test causal hypotheses.

Qualitative analysis

Interview data were analysed thematically following the six phases described by Braun and Clarke [23]. Four researchers familiarised themselves with the data, generated initial codes inductively, and grouped codes into candidate themes describing how communication shaped access to EMS. Themes were reviewed against the full data set, refined through team discussion, and compared across provinces and agency types. Disagreements were resolved by discussion. Trustworthiness was supported by investigator triangulation, comparison of accounts from different agency types and from the two provinces, and by checking interpretations against the survey results. Transcripts were checked against the recordings, and field notes were used alongside the transcripts during coding and interpretation. No dedicated qualitative data analysis software was used; coding was performed manually, and codes and themes were organised in Microsoft Word and Excel. Quotations were translated from Thai into English by the research team and checked by a second bilingual researcher.

Integration and model development

Quantitative and qualitative findings were integrated at the interpretation stage using a joint display that mapped each barrier against the survey data, the qualitative themes and the four cultural competence domains [19]. Barriers that were supported by both data sources, or that explained divergences between them, were consolidated into root problems. Each root problem was then analysed against the source, message, channel and receiver elements of Berlo's SMCR model [24] to locate where communication failed, and against theories that could explain the problem and suggest mechanisms of change. These included the health belief model [25], the extended parallel process model [26], self-efficacy [27], the two-step flow of communication [14], cultural brokering [28], trust as social capital in health systems [29], crisis and emergency risk communication [30], health literacy and visual health communication [31, 32], appropriate technology [33] and community-based participatory research [34]. The synthesis also drew on a documentary review of good communication practices conducted earlier in the project. The research team used these inputs to formulate design principles, a help-seeking pathway, a layered model structure, a theory of change and intervention components, which were then specified separately for each province.

Expert and stakeholder consultation

Comments from the two individual expert interviews were organised by question, compared between experts, and synthesised into points of agreement and divergence. These syntheses, together with the draft model, were presented to the consultation meeting, which discussed the 12 questions in three

sessions. Agreement on each issue was reached through facilitated discussion and recorded by the research team as meeting consensus. Revisions to the model were documented by the research team.

Results

Sample characteristics

Table 1
Characteristics of participants in Phases 1 and 3

Characteristic	Chiang Mai (highland)	Ranong (island)
Questionnaire and interview (Phase 1)	n = 42	n = 34
Age, mean (years)	44.1	43.1 (SD 11.2)
Women, %	70.7	41.2
Experience in emergency communication, mean (years)	10.4	12.4 (SD 6.8)
Main client group, %	Stateless persons 90.2	Displaced Thais 55.9; migrants or unregistered persons 29.4
Main positions	public health (47.62%), local administrative organizations (14.29%), emergency medical services and rescue foundations (11.90%), the national human rights commission office (11.90%), non-governmental organizations and communities (9.52%), and social development sectors (4.76%)	health facilities (27.3%), emergency medical services and rescue foundations (24.2%), and administrative and security agencies (21.2%)
Agencies represented	Local government EMS units; community and referral hospitals; provincial health office; rights and social welfare officers; civil society foundation; village health volunteers; community leader	Health facilities 35.3%; rescue foundations 23.5%; administrative agencies 14.7%; disaster prevention and mitigation 11.8%; public health offices 5.9%; security agencies 5.9%; religious organisation 2.9%
Consultation (Phase 3)		
Individual expert interviews	2 (strategic communication; computer engineering)	
Consultation meeting, 25 August 2026	15 experts and stakeholders	

SD, standard deviation. All Phase 1 participants completed the questionnaire and an individual interview. Percentages for Chiang Mai are based on respondents to each item.

Personnel in the two provinces had similar mean ages (44.1 and 43.1 years) and substantial experience in emergency communication, which was slightly longer in Ranong (12.4 vs 10.4 years). The composition of the samples reflected the organisation of emergency services in each setting. Chiang Mai personnel were mostly women and worked predominantly with stateless persons (90.2%), reflecting the involvement of health facilities, local administrations and rights agencies in the highland districts. Ranong personnel were mostly men and worked mainly with displaced Thais (55.9%) and migrants or unregistered persons (29.4%), reflecting the larger role of rescue organisations and administrative and security agencies in coastal and island communities.

Communication practices and channels

Table 2
Communication practices, needs and self-rated competence of personnel

Item	Chiang Mai (n = 42)	Ranong (n = 34)
Channels clients use to request EMS (personnel view), %		
Local agencies (municipality, subdistrict administration, health centre)	92.9	73.5
1669 hotline	54.8	67.6
Local hospital	50.0	44.1
Informing clients of entitlements, %		
Every time	11.9	35.3
Every time or often	57.1	61.8
Needs for communication support, %		
Personal media and community networks	100.0	97.1
Communication in local languages	95.2	85.3
Knowledge of entitlements and costs	90.5	73.5
Easy-to-use emergency contact channels	83.3	70.6
Self-rated items, mean (1–5)		
Courtesy and willingness to help	4.05	4.76
Language barriers delay my work	3.79	3.50
Able to ask basic assessment questions in clients' languages	2.71	2.88
Received adequate specialised training	2.88	2.59

Multiple responses were allowed for channels and needs.

Personnel in both provinces reported that clients reached emergency services more often through local agencies, such as municipalities, subdistrict administrations and health centres, than through the 1669 hotline. The gap was largest in Chiang Mai, where 92.9% of personnel reported that clients used local agencies compared with 54.8% who reported use of 1669. In Ranong the difference was smaller (73.5% vs 67.6%). About half of personnel in both provinces also reported that clients went directly to local hospitals. These findings indicate that the formal channel designed for emergency requests was not the main route used by stateless and displaced people, particularly in the highlands.

Personnel rarely informed clients of their entitlements systematically. Only 11.9% of personnel in Chiang Mai and 35.3% in Ranong reported informing clients of their entitlements to treatment every time,

although a majority did so every time or often (57.1% and 61.8%). This contrasted with very high self-rated courtesy and willingness to help (means 4.05 and 4.76 of 5), indicating a gap between positive attitudes and routine practice. In the parallel community survey, only 15.1% of community members in Chiang Mai reported clearly knowing their entitlements, which suggests that inconsistent provision of information by providers contributes to low awareness among communities.

Perceived barriers: personnel and community perspectives

Table 3
Barriers reported by personnel and by community members

Barrier	CM personnel (n = 42) %	CM community (n = 106) %	p	RN personnel (n = 34) %	RN community (n = 163) %	p
Do not understand the language	85.7	49.1	< 0.001	44.1	36.2	0.386
Do not understand accents or medical terms	33.3	56.6	0.011	61.8	35.0	0.004
Fear of costs	85.7	67.0	0.022	82.4	76.1	0.428
Uncertain about entitlement to treatment	73.8	56.6	0.053	64.7	39.3	0.007
No phone signal or internet	83.3	25.5	< 0.001	67.6	27.0	< 0.001
Traditional treatment preferred	57.1	27.4	< 0.001	70.6	26.4	< 0.001
Preference to die at home	35.7	46.2	0.245	52.9	36.2	0.069

CM, Chiang Mai; RN, Ranong. Community data from the parallel community survey conducted within the same project. p values from chi-square tests (df = 1).

Table 3 compares personnel and community reports of identical barriers. In both provinces, personnel reported lack of phone signal or internet and preference for traditional treatment two to three times more often than community members did (for example, 83.3% vs 25.5% for lack of signal in Chiang Mai, and 70.6% vs 26.4% for traditional treatment in Ranong; all $p < 0.001$). Chiang Mai personnel also reported language barriers (85.7% vs 49.1%) and fear of costs (85.7% vs 67.0%) more often than community members, whereas Ranong personnel over-reported uncertainty about entitlements (64.7% vs 39.3%).

Two divergences ran in the opposite direction. Community members in Chiang Mai reported difficulty understanding accents and medical terms more often than personnel did (56.6% vs 33.3%, $p = 0.011$),

suggesting that providers under-estimated barriers arising from their own language and terminology. In Ranong, this pattern was reversed (61.8% vs 35.0%), possibly because Myanmar migrants in Ranong often understand spoken Thai but not regional accents or medical vocabulary, which personnel had learned to recognise. Fear of costs was the most commonly reported barrier among community members in both provinces (67.0% and 76.1%) and was perceived similarly by Ranong personnel. Preference to die at home did not differ significantly between personnel and community members in either province.

Needs for communication support and self-rated competence

Almost all personnel reported needing communication through personal media and community networks (100% in Chiang Mai and 97.1% in Ranong), and most needed support for communication in local languages (95.2% and 85.3%), knowledge of entitlements and costs (90.5% and 73.5%) and easy-to-use emergency contact channels (83.3% and 70.6%) (Table 2). Personnel agreed that language barriers delayed their work (means 3.79 and 3.50). The lowest self-rated items were the ability to ask basic assessment questions in clients' languages (2.71 and 2.88), the adequacy of specialised training received (2.88 and 2.59) and the adequacy of communication resources (2.90 and 3.28). Taken together, these results describe a workforce that was willing to help but lacked the skills, training and tools needed to communicate with these groups in emergencies.

Qualitative findings

Five themes described how communication barriers shaped access to EMS. Province-specific features are summarised after the themes.

Theme 1: "They never call 1669 directly" – an intermediary-dependent help-seeking chain

All informants agreed that stateless people rarely called 1669 themselves. Instead, requests passed from the patient to an employer or neighbour, then to a village health volunteer, village head or community leader, then to the local administration or 1669, and finally to the hospital. Informants explained this pattern by reference to language, fear and habit: people turned first to someone they knew and trusted, who could speak Thai and who knew whom to call. Each handover, however, added delay and lost or distorted information. Some local rescue units had to relay calls to 1669 and wait to be dispatched back to the same location. Callers who did reach 1669 were sometimes triaged as non-urgent and turned instead to the personal phone numbers of local officials.

"People often don't get help from 1669 because they are assessed as not an emergency, so they turn to the personal number of the local administration officer, who is easier to reach and knows the area better." (CM-04, village health volunteer)

Village health volunteers and community leaders were consistently described as the most trusted link. Informants reported that community members felt reluctant to bother officials or hospital staff, a feeling expressed in Thai as kreng jai, and that this reluctance was reduced when a familiar intermediary made the call. At the same time, intermediaries carried this role without formal recognition, training or protection, and their availability depended on personal commitment.

Theme 2: Language, location and the description of symptoms

Informants in Chiang Mai described language as a pervasive barrier, particularly for older people in highland villages. The Dara-ang language has no written form, and many older residents spoke little or no Thai. Callers could not describe their location in the terms dispatchers used, because villages and houses lacked formal addresses, and did not know the vocabulary needed to describe symptoms. Some reported being treated impatiently when they could not answer questions.

"Seventy to eighty percent of villagers, especially the elderly, cannot communicate with hospital staff, and sometimes staff scold them because they don't understand each other." (CM-04, village health volunteer)

One volunteer described her own experience of calling for severe abdominal pain, being unable to say where the pain was, being told to come by herself, and having her appendix rupture at the hospital. A referral hospital reported that about three in ten patients from these groups could not be identified on arrival, so that medical histories were lost at each visit and could not be linked across services.

"I called and said my stomach hurt badly. They asked which side, upper or lower abdomen. I said I didn't know, it just hurt. They said if it's like that, come by yourself. So I found my own way there, and my appendix burst at the hospital." (CM-04, village health volunteer)

Theme 3: Layered fears of legal status, cost and authority

Informants described fear operating on several levels at once: fear of being identified, arrested or expelled; fear of hospital costs after the emergency phase, including being asked to sign acknowledgements of debt; and a general reluctance to approach state agencies. These fears were rooted in past experience and in stories circulating within communities rather than in a simple lack of information. Changes of identification number interrupted entitlements, and some private hospitals refused patients whose claims could not be verified. As a result, people often waited until their condition was clearly critical before seeking help.

"These people are afraid. If it is a state agency or a network set up by the state, their trust drops, because they have no card, no rights, and they fear being pushed out of the area." (CM-02, rights officer)

"Some people would rather not be treated, and they don't dare to ask. If it really costs nothing, how do we tell them? Just tell them outright that it is free." (CM-02, rights officer)

Theme 4: Divergent definitions of an emergency and cultural beliefs

Informants noted that communities, providers and the state defined an emergency differently. For communities, an emergency was often defined by visible severity or by the ability of the family to cope, while dispatchers applied clinical criteria that callers could not describe. Some families preferred a relative to die at home, and in some communities a person who died outside the home could not be brought back into the village for funeral rites, which led families to take seriously ill patients home rather than call for transport to hospital. Traditional healers were often consulted first. Even informants who were state employees described hesitating to call 1669 because they were unsure whether their situation was serious enough.

"An emergency is not the same. An emergency in our view, in the villagers' view and in the government's view are not the same." (CM-04, village health volunteer)

Theme 5: Good will without supporting systems

Personnel consistently described a culture of not refusing patients, regardless of status, but communication depended on individual initiative rather than on systems. There were no standard manuals or procedures for communicating with callers who did not speak Thai, language skills left with staff who moved, training was rare, and agencies did not share data on patients or locations. Communication equipment was also fragmented: informants reported that radios of different agencies used different frequencies, which prevented coordination across agencies in emergencies. Informants proposed embedding emergency communication tasks in the routine duties and indicators of existing volunteers rather than creating new structures.

"At present there is no clear manual; we rely only on personal experience. There should be a single standard manual." (CM-06, hospital social worker)

"Creating a new mechanism would be difficult. Make it one of the indicators and activities of village health volunteers and migrant health volunteers. That would solve the problem, because other systems would require too much." (CM-05, academic expert)

Setting-specific features

In Chiang Mai, barriers centred on linguistic diversity, unaddressed highland locations, identification numbers and cultural beliefs about death. In Ranong, informants distinguished between Moken callers, who often could not communicate with dispatchers at all, and Myanmar callers, who could communicate in Thai but sometimes misreported the patient's condition. There was no public emergency boat, so families hired boats at their own cost, and a referral from an island passed from the health centre to the dispatch centre, a rescue boat and finally the hospital, taking close to an hour. Ranong informants considered the EMS system itself to be adequate and located the main problem in getting accurate messages to and from communities.

Integration of findings: root problems

Integration of the survey and interview findings identified five root problems. First, a layered fear barrier combined legal, economic and institutional fears; fear of costs was the most commonly reported barrier among community members, and interviews showed that fear of status checks deterred contact with any state-linked service. Second, language and limited ability to recognise and describe emergencies affected both sides of the interaction: personnel rated their ability to ask assessment questions in clients' languages lowest of all items, and community members lacked tools to judge when symptoms warranted a call. Medical acronyms such as FAST were not meaningful to people with limited health literacy [31]. Third, low awareness of entitlements among communities was matched by inconsistent provision of entitlement information by providers. Fourth, communication infrastructure failed in remote areas, both because of lack of signal and because agencies used incompatible radio systems. Fifth, the system depended on individuals rather than procedures, so that skills and relationships were lost when staff moved and there was no systematic feedback from communities.

Analysed through the SMCR model, the system was misaligned at every element. Sources had good will but limited skills and procedures; messages relied on written Thai and on terms that callers did not understand; the designed channel (1669) differed from the channels actually used (community networks and local agencies); and receivers' main gap was knowledge of entitlements and fear of consequences rather than language alone. Mapped onto the cultural competence framework, the gaps concerned self-awareness and unintended bias (over-estimation of community barriers and under-estimation of provider language barriers), contextual knowledge (limited understanding of fears and beliefs), communication skills (assessment questions and plain language) and systems integration (absence of procedures, data sharing and compatible channels).

Development of the community intermediary model

Model concept and structure

The model was designed around the pathway people already use. Instead of expecting patients to call 1669 themselves, it connects every real-world route to the EMS system through trusted, formally registered community intermediaries, while preserving the option of calling 1669 directly. It shifts three assumptions of the existing system: from patients calling 1669 themselves to all routes leading to 1669; from technology replacing people to technology empowering intermediaries; and from providing information to building trust before information. The core message proposed for the model is "life before nationality: in an emergency, tell someone close to you, and we will come to you".

The model has three layers. The community layer, comprising families, neighbours, religious leaders and schools, builds trust, recognises danger signs and passes on requests. The intermediary layer, comprising community communicators, village health volunteers, teachers and volunteer interpreters, translates language and culture, transmits accurate information, assures callers of their safety and

guides responders to the location. The system layer, comprising the National Institute for Emergency Medicine, dispatch centres, operational units and partner agencies, guarantees entitlements, does not use emergency calls to check legal status, supports multiple languages and dispatches care. Table 4 compares the help-seeking pathway described by informants with the pathway intended by the model.

Table 4
Help-seeking pathway reported by informants and intended by the model

Step	Pathway reported in Phase 1	Pathway in the community intermediary model
1. Recognition	Family judge's severity by own criteria; may wait, consult traditional healer or take patient home	Family recognises danger signs from picture cards; may tell someone close or call 1669 directly
2. First contact	Neighbour, employer or village head, depending on who is available	Neighbour calls the registered community communicator using the household sticker
3. Relay to system	Volunteer or leader calls local administration, an official's personal number or 1669; information lost at each handover	Communicator notifies 1669 by icon application, phone, radio or low-power relay, translating and assuring safety
4. Dispatch	Dispatcher cannot understand caller or location; call may be triaged as non-urgent	Dispatcher uses volunteer interpreter (three-way call) and community navigation map
5. Response and hospital	Responders search for location; family fears costs and status checks; entitlement unclear	Communicator guides responders and coordinates entitlements at hospital under the safe-zone agreement

Design principles

Eight design principles were derived from the root problems and the theoretical analysis (Table 5). Trust before information responds to the layered fear barrier by beginning with targeted fear reduction rather than large amounts of information. Designing for intermediaries responds to fears of surveillance and limited digital skills by placing digital tools in the hands of intermediaries rather than vulnerable people. Learning by doing responds to panic and inability to act by using rehearsal and role play to build self-efficacy and procedural memory. Pictures lead and sound repeats responds to oral languages and limited health literacy. Offline first responds to the absence of signal and electricity. One core adapted to context responds to the contrasting barriers in the two settings. Community ownership responds to the risk that equipment is abandoned when projects end. Finally, binding written commitments protect trust by ensuring that assurances communicated to communities are backed by authorised agencies.

Table 5
Root problems, design principles and theoretical basis

Root problem (Phase 1)	Design principle	Theoretical basis
Layered fear of legal status, cost and authority	1. Trust before information: start with targeted fear reduction rather than large amounts of information	Health belief model [25]; trust as social capital [29]
Fear of state surveillance; limited digital skills	2. Design for intermediaries: digital tools are used by intermediaries, not by vulnerable people directly	Cultural brokering [28]
Panic and inability to act in emergencies	3. Learning by doing: rehearsal of calls and role play to build self-efficacy and procedural memory	Self-efficacy [27]
Oral languages; limited health literacy	4. Pictures lead, sound repeats: visual language instead of text and acronyms, reinforced through community audio	Health literacy [31]; pictures in health communication [32]
No signal, no electricity, data costs	5. Offline first, online as supplement	Appropriate technology [33]
Contrasting highland and island barriers	6. One core, adapted to context	Mechanism-based design [4]
Abandoned equipment after projects	7. Community ownership from design to maintenance, with a maintenance agreement	Community-based participatory research [34]
Promises not matched by practice	8. Commitments must be binding and written before they are communicated	Trust [29]; crisis and emergency risk communication [30]

Intervention components

The model comprises five interacting components (Table 6). The first is a fear-reduction campaign that communicates only three core assurances, about status checks, transport costs and the right to emergency care, through trusted local sources and everyday objects. The second is a network of community communicators selected by community nomination, trained through a two-day standard curriculum, registered and certified by the National Institute for Emergency Medicine. The third is a visual communication toolkit comprising a household sticker with the communicator's number, picture cards of danger signs, a household health information pocket, an icon-based application for intermediaries, multilingual triage questions for dispatchers and community navigation maps for unaddressed villages. The fourth is a set of layered connection channels: telephone calls with three-way transfer to volunteer interpreters, community call points, village radio, low-power radio relay with solar power, and the person-to-person network. The fifth comprises system and policy mechanisms, including a standard procedure for informing patients of entitlements every time, a cross-agency safe-zone agreement, emergency

financing arrangements, a competence curriculum for personnel, registries of communicators and interpreters, and a feedback loop from communities.

Table 6
Components of the community intermediary model

Component	Aim	Main users	Gap addressed (cultural competence domain / SMCR element)
1. Fear-reduction campaign ("life before nationality")	Reduce fears of status checks, costs and authority; three core assurances only	Communities; wider society	Contextual knowledge / receiver
2. Community communicator network	Formally registered, trained and certified intermediaries selected by community nomination	Intermediaries	Communication skills / channel
3. Visual communication toolkit	Household sticker, danger-sign picture cards, household health information pocket, icon-based app for intermediaries, multilingual triage questions, community navigation map	Intermediaries; households; staff	Communication skills / message
4. Layered connection channels	Telephone with three-way transfer to volunteer interpreters; community call points; village radio; low-power radio relay with solar power; person-to-person network	Intermediaries; dispatch centres	Systems integration / channel
5. System and policy mechanisms	Standard procedure to inform entitlements every time; cross-agency safe-zone agreement; emergency financing; competence curriculum; registries; feedback loop	National EMS agency; partner agencies	Self-awareness; systems integration / source

Each component was specified as a set of core elements shared by both provinces and adaptations for each setting. The core elements comprise a common visual identity and core messages, a standard training curriculum and registry for community communicators certified by the National Institute for Emergency Medicine, and three-way call transfer from dispatch centres to registered volunteer interpreters. In Chiang Mai, the adaptations address language and location: audio and video media in oral languages, picture cards of danger signs, community navigation maps for unaddressed villages and village radio. In Ranong, the adaptations address transport and costs: messages on transport fees and entitlements, island-based communicators with access to boats, a registry of boats available for emergency transfer and one-touch alert devices for community leaders. The fear-reduction campaign and the community communicator network were designated as the starting point for the pilot.

Theory of change

The theory of change links inputs (funding from the national EMS agency and partners, field data, community networks and appropriate technology) with activities (the fear-reduction campaign, selection and training of intermediaries, development of the toolkit, installation of backup channels, standard procedures and cross-agency agreements). These are expected to produce outputs such as registered intermediaries, tested materials, backup communication systems and written safe-zone commitments. Short-term outcomes are reduced fear, increased trust and self-efficacy, and greater knowledge of entitlements. Longer-term outcomes are more frequent and earlier requests for help, more accurate triage, sustained local investment and continuation of the system by communities, with the ultimate aim of improving survival and equity of access to emergency care.

Expert and stakeholder consultation

Individual expert interviews

The two experts agreed that the core problem was not that people did not know the number 1669 but that they knew it and did not dare to use it (Table 7). The expert in strategic communication emphasised the layered fear of arrest, costs and officials, which led some communities to see EMS personnel as enforcers rather than rescuers. The expert in computer engineering emphasised misunderstandings about costs and language barriers among older people who were alone at home during the day and, even with a phone in hand, could neither dare nor manage to communicate with dispatchers. Both recommended a shared core model adapted to each setting, with legal status and language more prominent in Chiang Mai and costs and island geography more prominent in Ranong.

The experts drew lessons from failures. One described a costly helicopter mission that failed because of miscommunication about the landing site, illustrating that advanced services are ineffective without reliable communication at the community end. The other warned against technology that is installed and then abandoned when a project ends. Both advised against applications designed for vulnerable people themselves, because of fears of state surveillance, and against overloading communities with information. They recommended offline channels as the core, simple technology that communities can maintain, word-of-mouth through trusted intermediaries to replace fears that had themselves spread by word of mouth, and the use of schoolchildren as a channel to their families. To sustain skills, they proposed revising performance indicators for EMS personnel, non-financial recognition for people with local language skills, and maintenance agreements specifying responsibilities and budgets before projects end. They also warned that conflicts of interest within the system, such as competition between rescue units for per-case payments, could undermine a well-designed model. For evaluation, they proposed measuring fear before and after the intervention, the number of 1669 requests from pilot areas, survival, and whether the system continued to function six months after the research team withdrew.

Table 7
Key points from individual expert interviews

Issue	Expert 1 (strategic communication)	Expert 2 (computer engineering)	Common ground
Core problem	Three layered fears: arrest, costs, officials	Language among older people; misunderstanding of costs	People know 1669 but do not dare to use it
Main mechanism	Personal media; religious and community leaders	Intermediaries	Communication through trusted people
Technology	Village radio; local-language hotline	Low-power radio relay; icon-based interface	Offline as the core
Sustainability	Revised performance indicators; non-financial recognition	Community ownership; maintenance agreement	Community must own the system
Starting level	Community, fear reduction first	Community, with technology in parallel	Community level
Ownership	National EMS agency with several ministries	National EMS agency with communities and NGOs as partners	National EMS agency as lead
Key indicators	Reduced fear; more 1669 requests; survival	System still functioning six months after withdrawal	Measure real-life outcomes
Warning	Conflicts of interest within the system	Designing only to close a project	Measure in communities, not in reports

NGO, non-governmental organisation.

Consultation meeting

The consultation meeting reached consensus on seven issues (Table 8) and approved the model in principle. Participants agreed on a single core model that is flexible to each setting; a sequence of development that begins with fear reduction, then builds supporting systems and then co-designs messages with communities, while technology is developed in parallel; personal media and trusted intermediaries as the main mechanism, delivered through activities in which community members take part; technology that empowers intermediaries rather than asking vulnerable people to use applications, with offline systems as the core; the community as the starting level; the National Institute for Emergency Medicine as lead agency, integrating several ministries, with communities and non-governmental organisations as partners rather than recipients; and success criteria comprising reduced fear, increased help-seeking and continuity of the system after the research team withdraws. Revisions to the draft model included making fear reduction the explicit first step, redesigning digital tools for intermediaries rather than patients, prioritising offline channels and requiring written commitments from

authorised agencies before messages such as "no status checks" and "no transport fees" are communicated.

Table 8
Consensus of the expert and stakeholder consultation (25 August 2026, n = 15)

Issue	Consensus
Design direction	A single core model that is flexible to each setting
Sequence of development	Reduce fear, then build supporting systems, then co-design messages with communities, with technology developed in parallel
Main mechanism	Personal media and trusted intermediaries, through activities in which receivers take part
Role of technology	Empower intermediaries rather than ask vulnerable people to use applications; offline systems as the core
Starting level	Community level
Ownership	National EMS agency as lead, integrating several ministries, with communities and NGOs as partners
Criteria of success	Reduced fear, increased help-seeking, and continuity of the system after the research team withdraws

Discussion

Summary of main findings

This study developed a communication model to improve access to EMS among stateless and displaced populations in Thailand by combining a personnel survey, interviews with providers and intermediaries, comparison with community data, theory and stakeholder consultation in a highland and an island setting. Three findings are central. First, help-seeking in these communities is intermediary-dependent: people rarely call the emergency number themselves but approach someone they trust, who then contacts the system. Second, providers' perceptions diverged from community experience in systematic ways, with over-estimation of barriers located in communities and under-estimation of barriers arising from providers' own language. Third, layered fears of legal status, cost and authority, rather than lack of knowledge of the emergency number, were identified by providers, experts and stakeholders as the most fundamental barrier. The resulting model therefore treats intermediaries not as a workaround but as the primary channel to be strengthened, certified and connected to dispatch, and it sequences interventions so that fear reduction precedes system building and message design.

Help-seeking through intermediaries: from workaround to system

The intermediary-dependent pathway is consistent with the two-step flow of communication, in which information and influence pass through trusted opinion leaders [14], and with evidence that community health workers improve access for populations that services fail to reach [12]. It also corresponds to the mechanisms identified in a mapping review of interventions for vulnerable groups in emergency and urgent care, because intermediaries can provide navigation, bring access closer to the community and offer social and emotional support at the same time [4]. In the terminology of cultural brokering, village health volunteers and community leaders already act as brokers who bridge the gap between the health system and communities with different languages and cultures [28].

What our findings add is that, in the absence of formal recognition, this pathway generates delays, information loss and inappropriate triage at each handover, and it depends on the availability and goodwill of individuals. A similar pattern has been described for language support in multilingual health care, where providers rely on ad hoc strategies and personal devices in the absence of organisational support, so that responsibility for overcoming language barriers is shifted onto individual staff and service users [3]. Our findings suggest that the same informal arrangements characterise the earliest stage of emergency care, before patients reach any health facility. Strengthening the existing chain, by registering, training and equipping intermediaries and by connecting them directly to dispatch, is likely to be more acceptable and sustainable than attempting to bypass it with direct-to-patient technology.

Provider perceptions and the limits of good will

The finding that providers over-estimated infrastructural and belief-related barriers, while under-estimating difficulties with their own accents and medical vocabulary, has practical implications. Provider-designed interventions tend to target barriers located in the community, such as signal coverage and traditional beliefs, while barriers created by the service itself receive less attention. These divergences may also reflect providers' exposure to the most difficult cases, in which lack of signal or reliance on traditional healers had visible consequences, whereas everyday misunderstandings caused by accents or terminology may go unnoticed by the speaker. Similar gaps between good intentions and practice appeared in the low proportion of personnel who routinely informed clients of their entitlements despite very high self-rated willingness to help.

These patterns correspond to the self-awareness and unintended bias domain of cultural competence and to the organisational and structural levels of culturally competent care described by Betancourt and colleagues [16]. They are also consistent with evidence from providers in Thailand and elsewhere that serving migrants is constrained less by attitudes than by unclear entitlements, limited language support and the absence of institutional arrangements [6, 10]. Good will is necessary but not sufficient: without standard procedures, training and tools, communication depends on individuals and is lost when they move. The model therefore includes provider training, a standard procedure for informing patients of entitlements and multilingual triage questions alongside community-facing components.

Fear, trust and the sequencing of interventions

Layered fear emerged as the most fundamental barrier. Fear of immigration enforcement deters health care use among undocumented migrants elsewhere [5], and our findings show that in Thailand this fear extends to any service perceived as linked to the state, including emergency care. The extended parallel process model predicts that messages raising perceived threat without increasing perceived efficacy lead to defensive avoidance rather than protective action [26]. Campaigns that simply promote the emergency number or describe the danger of delay may therefore have little effect, or even increase avoidance, among people whose main concern is the consequence of contact with the system. For this reason, the model begins with fear reduction, limits its campaign to three concrete assurances and uses rehearsal to build efficacy.

An important safeguard is that these assurances are communicated only when backed by written commitments from authorised agencies. Trust in health systems is a form of social capital that is built through repeated experience and easily lost when promises are not kept [29]. The experts' observation that fear had spread by word of mouth, and could only be replaced by word of mouth, highlights both the potential and the risk of intermediary-based communication: a single case in which a caller was questioned about status or charged for transport could undo the campaign. The sequence agreed by the consultation, reducing fear before building systems and messages, reflects this logic and is consistent with principles of crisis and emergency risk communication that emphasise credible sources and two-way communication [15, 30].

Context-sensitive design: highland and island settings

The consultation's preference for one core model adapted to each setting reflects the contrasting barriers in the two provinces: language, unaddressed locations and beliefs about death in the highlands, and costs, boat transport and fragmented referral in the islands. The divergent findings on accents and medical terms illustrate that even the same barrier may operate differently in each setting, depending on the language profile of the population. Evidence-based interventions for vulnerable groups need to be designed around the causes of vulnerability in each group [4], and the model's province-specific items operationalise this principle while keeping a common structure that can be monitored and compared. This approach also responds to the experts' warning that health innovations for vulnerable groups often fail because they are designed without understanding communities' real concerns.

Technology as support for intermediaries

Participants consistently rejected technology designed for vulnerable people themselves, citing fears of surveillance, limited digital skills, lack of signal and the risk that equipment would be abandoned. The emphasis on offline channels and intermediary-facing technology is consistent with the concept of appropriate technology, which favours simple, low-cost tools that communities can maintain [33], and

with evidence that pictures improve attention, comprehension and recall of health information among people with limited literacy [32]. It also parallels findings from multilingual health care that translation technologies are used pragmatically but have limits in complex, relational communication and raise concerns about data protection [3]. In the model, technology is not a substitute for human communication but a means of making intermediaries faster, more accurate and better connected to dispatch.

Equity implications: closing the gap between entitlement and access

From an equity perspective, the findings show how a universal legal entitlement can coexist with highly unequal access. Mapped onto the framework of Levesque and colleagues [11], barriers were present on every dimension of access: the ability to perceive need (divergent definitions of an emergency), to seek care (fear of legal status and authority), to reach care (language, unaddressed locations and boat transport), to pay (fear of costs after the emergency phase) and to engage (communication with providers who lack language skills and standard procedures). Because the largest gaps lie on the demand side and at the interface between communities and providers, rather than in the formal rules of the EMS system, supply-side measures such as expanding hotline capacity are unlikely to reduce inequity on their own.

The model therefore works on both sides of this interface. It strengthens the abilities of communities through trusted intermediaries, visual tools and offline channels, and it changes provider and system practices through training, standard procedures and binding policy commitments. At the same time, reliance on intermediaries carries equity risks of its own. If intermediaries are unevenly distributed, unpaid or unprotected, the model could reproduce existing inequalities between communities with strong leaders and those without, or place an unfair burden on volunteers. Formal registration, training, recognition and integration into the routine indicators of existing volunteer programmes are therefore essential conditions for the model to reduce rather than reproduce inequity.

Strengths and limitations

This study has several strengths. It combined quantitative and qualitative data from a wide range of actors in two contrasting settings; it compared provider and community perspectives on identical barriers, which revealed divergences that would not have been visible from either source alone; it used explicit theory to move from problems to components; and it involved stakeholders, including the national EMS agency, in refining the model, which increases the likelihood of adoption.

Several limitations should be considered when interpreting the findings. First, participants were selected purposively and may not represent all personnel in the two provinces or in other settings in Thailand. Second, interview accounts from Ranong were less detailed than those from Chiang Mai, so themes specific to island settings may be under-developed. Third, community data for Chiang Mai were available

only in aggregate, which limited provider–community comparisons to the group level and precluded adjustment for characteristics of respondents. In addition, because most interviews took place at participants' workplaces, other staff who were not participants were sometimes present, which may have made some participants reluctant to criticise their own agencies. Fourth, the survey relied on self-reported practices and perceptions, which may be influenced by social desirability, particularly for items on courtesy and willingness to help. Fifth, consensus in Phase 3 was reached through facilitated discussion rather than formal rating procedures such as a Delphi process or content validity index, and the views of community members were represented through intermediaries rather than directly. Finally, the model has not yet been tested, and its effects on help-seeking, triage accuracy and outcomes remain to be evaluated.

Implications for practice

The findings suggest several changes that can be made within existing services. Dispatch centres can adopt short, multilingual triage questions and pictorial danger-sign cards, and can arrange three-way call transfer to volunteer interpreters for callers who cannot speak Thai. Personnel can be trained to inform patients of their entitlements every time, to avoid medical terms and to check understanding. Local rescue units and hospitals can recognise village health volunteers and community leaders as legitimate callers and agree procedures with them, rather than treating intermediary calls as irregular. Communication with communities should begin with concrete assurances about status and costs, delivered by trusted local sources, before broader information about the EMS system.

Implications for policy and EMS organisations

At the organisational level, the findings highlight a gap between the guarantee of emergency care in law and the absence of procedures and resources to make that guarantee usable by people without status. The National Institute for Emergency Medicine is well placed to lead a cross-agency agreement that emergency calls will not be used to check legal status, to clarify financing for emergency transport and treatment of uninsured patients, and to establish a national registry and certification scheme for community communicators and volunteer interpreters. Performance indicators for EMS could be broadened beyond response times to include the accuracy of information reaching dispatch and the continuity of community networks, and conflicts of interest arising from per-case payments should be addressed so that they do not undermine cooperation between units.

Implications for research

The model will be piloted in fiscal year 2027 in both provinces and evaluated using the RE-AIM framework [35], with indicators including reduced fear, increased and earlier help-seeking, the accuracy of information reaching dispatch, and continuity of the intermediary network six months after the research team withdraws. Future research should test the comprehensibility of visual materials with

each language group, examine the experiences of intermediaries and the burden placed on them, assess the costs and sustainability of certifying intermediaries within national EMS policy, and compare outcomes between communities with different levels of intermediary coverage. Studies that include community members directly in the co-design of messages would also strengthen the evidence base.

Conclusions

Stateless and displaced people in Thailand reach emergency care through trusted intermediaries rather than by calling the emergency number, and the barriers they face span every dimension of access, from perceiving need to engaging with providers. Providers are willing to help but lack the skills, procedures and tools to communicate effectively, and they tend to locate barriers in communities rather than in the service itself. Designing EMS communication around intermediaries, with fear reduction first, visual tools, offline-first channels and binding policy commitments, offers a feasible approach to closing the gap between legal entitlement and actual access, and thus to reducing a persistent inequity in emergency care. The community intermediary model developed in this study is ready for pilot implementation and evaluation in highland and island settings.

Abbreviations

COREQ
Consolidated Criteria for Reporting Qualitative Research
EMS
Emergency medical services
INDEX
Identifying and assessing different approaches to developing complex interventions
RE-AIM
Reach, effectiveness, adoption, implementation and maintenance
SMCR
Source, message, channel, receiver

Declarations

Ethics approval and consent to participate

The study protocol was reviewed and approved by the Ethics Committee of the Institute for the Development of Human Research Protections (IHRP), Health Systems Research Institute (HSRI), Thailand (Certificate of Approval No. IHRP2026029; IHRP No. 178–2568; approved on 2 March 2026). The study was conducted in accordance with the Declaration of Helsinki and the ICH Good Clinical Practice guidelines. All participants provided informed consent before participation.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

Author Contribution

VT conceived and designed the study, developed the questionnaire, supervised data collection, analyzed the data, and wrote the manuscript. SI, SD and CP coordinated and facilitated fieldwork, collected data in Chiang Mai and Ranong, managed the dataset, wrote the technical research report, and revised the outline of the manuscript. WC, WSa, SK, SU, PV, KE, and KB collected data in Chiang Mai and Ranong and coordinated with community leaders and interpreters. FL contributed to the analysis of the data. WS supervised the study and critically reviewed the manuscript. All authors read and approved the manuscript prior to submission for publication.

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Data Availability

The data that support the findings of this study comprise questionnaire responses and interview transcripts from emergency medical services, health, local government and civil society personnel in Chiang Mai and Ranong, Thailand, together with summary data from expert and stakeholder consultations. These data are not publicly available because they contain information that could identify participants and members of stateless and displaced communities without legal status. Public release would also be inconsistent with the conditions of ethical approval granted by the Institute for the Development of Human Research Protections, Thailand (COA No. IHRP2026029). De-identified questionnaire data and the questionnaire and interview guide are available from the corresponding author (Varataya Thammakittipob, varataya.t@ku.th) on reasonable request. Access requires approval by the ethics committee and a data use agreement. Interview transcripts cannot be shared beyond the research team because of the risk of re-identification of participants and the people they described. Community survey data were collected within the same project and are reported separately.

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