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Sumatera Task Force - A Field Report of Final-Year Medical Student Deployment in Flash Flood Disaster Response

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Abstract

Background: Flash floods are a recurrent public health crisis in Indonesia, causing acute morbidity in communities with limited access to health care. Final-year medical students represent a potentially valuable but underutilised workforce in disaster response. This report describes the deployment of Satgas Padang (the Padang Task Force) — 25 final-year medical students from Universitas Pertahanan Republik Indonesia (UNHAN) — during the flash flood response in Aceh Tamiang, Aceh (11–18 December 2025), with clinical health-post operations conducted from 11 to 17 December 2025.

Methods: A qualitative descriptive field report supplemented by a narrative literature review. Data were obtained from patient service records, daily operational logbooks and direct field observation during the deployment. All clinical activities were conducted under the direct supervision of physicians from the National Defense Central Hospital (RSPPN) and Tri Matra military medical services.

Results: A mean of approximately 240 patient encounters per day was recorded at the Aceh Tamiang health post across the seven days of clinical operations (11–17 December 2025), corresponding to an estimated 1,680 encounters. Predominant presentations were upper respiratory tract infections (URTIs), dermatophyte infections, scabies, acute diarrhoea and traumatic wounds. Principal challenges were infrastructure collapse, shortages of oral rehydration salts (ORS), zinc and topical antifungals, absence of on-site laboratory support, and an unresolved regulatory question concerning practice by students who do not hold registration or a practice licence.

Conclusion: Supervised deployment of final-year medical students was feasible in this resource-constrained disaster setting and delivered primary clinical care, health education, psychosocial support and referral facilitation. As a single-team descriptive report without a comparison group, this account cannot establish effectiveness relative to any alternative staffing model. Formal regulatory frameworks, improved logistics planning and integrated disaster medicine curricula are needed to optimise future responses.

Keywords: Flash flood; disaster medicine; medical students; humanitarian health response; Indonesia.

Background

Indonesia is among the most disaster-prone nations globally, positioned at the convergence of the Eurasian, Indo-Australian and Pacific tectonic plates within the Pacific Ring of Fire, which renders it highly vulnerable to both geological and hydrometeorological hazards.[1]

Flash floods are among the most frequent and destructive hydrometeorological hazards in Aceh Province, where mountainous terrain, dense river networks and high annual rainfall combine to produce recurrent inundation events. Analysis of physical vulnerability in the small mountainous watersheds of Aceh Besar illustrates how catchment characteristics translate rainfall into rapid-onset flooding in this region.[2] Regional climate modelling projects that extreme rainfall events over Indonesia will intensify under continued warming, which is expected to increase flood hazard over coming decades.[3]

Beyond physical destruction, floods impose substantial public health consequences, including traumatic injury, disruption of health services, interruption of medicine supply chains and elevated incidence of communicable disease in displacement settings.[4,5] Population displacement restricts access to health facilities, with consequent risk of delayed diagnosis and complications.[4,5] A systematic review and meta-analysis of flood-associated health outcomes reports elevated mortality and morbidity risks in flood-affected populations.[6] In the December 2025 Sumatra floods, the United Nations Office for the Coordination of Humanitarian Affairs reported that 192 health facilities were affected, including 65 hospitals, and identified diarrhoea, acute respiratory infection and skin disease as leading health concerns among displaced populations.[7]

A growing literature describes contributions by medical students to emergency and disaster operations, including triage support, health education, community engagement and supervised clinical care. A rapid systematic review of student involvement in pandemics and other global health emergencies documents a wide range of clinical and non-clinical roles, alongside marked variability in supervision, preparation and governance.[8] Students have separately been proposed as a surge-capacity resource for emergency departments during crises.[9] We are not aware of any published study that directly compares the disaster-triage performance of senior medical students with that of emergency physicians, and no such comparison is made in this report. Field reports describing structured, frontline deployment of final-year medical students in real disaster settings — particularly in low-resource, infrastructure-disrupted environments — remain scarce.

This report describes the deployment of Satgas Padang, 25 final-year medical students from UNHAN, during flash flood response operations in Aceh Tamiang in December 2025. It documents clinical activities, operational challenges and interprofessional coordination, in order to inform discussion of whether and how supervised student deployment might be integrated into Indonesia's national disaster health response architecture.

Methods

Study Design

This is a qualitative descriptive field report, supplemented by a narrative literature review. Qualitative description is an appropriate design where the aim is a comprehensive, low-inference summary of events in everyday terms rather than theory generation or interpretive reframing.[10] Data were derived from patient service records, daily operational logbooks and direct field observation throughout the deployment. Because this was an operational humanitarian deployment rather than a prospective study, all quantitative figures reported here are aggregate tallies drawn from operational logbooks and should be read as estimates rather than as counts from a verified patient register.

Deployment Context and Settings

Satgas Padang comprised 25 final-year UNHAN medical students, mobilised under a directive from the Minister of Defense. Three joint task forces (Satgas Padang, Satgas Sibolga and Satgas Aceh) departed Kolinlamil, Tanjung Priok, Jakarta, on 2 December 2025 aboard KRI dr. Radjiman (Indonesian Navy). After the sea passage to Sibolga (4 December) and a further maritime leg to Padang (7-9 December), Satgas Padang was deployed to the disaster site at Palembayan, West Sumatra, on 10 December 2025. On the same day an operational reassessment identified a critical health-worker shortage in Aceh Tamiang, and the task force was reassigned by command order and moved by military air transport, arriving in Aceh Tamiang on 11 December 2025. Continuous health-post operations were conducted there from 11 to 17 December 2025, a period of seven days, with handover and return to Jakarta on 18 December 2025. The full chronology is given in Table 1.

Figure 1. The condition of Palembayan, West Sumatera — the team's originally assigned disaster site — on arrival of the UNHAN task force, 10 December 2025

Conditions on arrival at Aceh Tamiang, as recorded in the team logbook, were severe: no mains electricity or telecommunications, no handover from a preceding health team, and no baseline health data for the affected population. The team was the first non-local health personnel to reach this location and provided 24-hour health-post services together with mobile community outreach, working alongside local military medical personnel. These statements are field observations drawn from the deployment record and are reported as such rather than as findings supported by external literature.

Participants and Clinical Supervision

All 25 participants had completed core preclinical and clinical rotations. None held a registration certificate (Surat Tanda Registrasi, STR) or a practice licence (Surat Izin Praktik, SIP). Accordingly, all clinical activities — history taking, physical examination, diagnosis, treatment decisions, procedures and referrals — were conducted under the direct supervision of qualified physicians, consistent with the requirement under Health Law No. 17 of 2023 that the practice of medicine be undertaken by registered and licensed practitioners.[11]

General practitioners and a surgical specialist from RSPPN were present with the team from the first operational day at Aceh Tamiang (11 December 2025). Reinforcement from the Tri Matra medical services (Army, Navy and Air Force) — including internal medicine, paediatrics, pulmonology, orthopaedics, anaesthesiology and obstetrics-gynaecology — together with additional RSPPN specialists, arrived on 13 December 2025, the third operational day. The team therefore operated for the first two days without on-site internal medicine or paediatric specialist support.

Interventions and Activities

Humanitarian health services delivered by the task force comprised:

1. Triage, health assessment and primary clinical care for URTIs, dermatophyte infections, scabies, acute diarrhoea, clinically suspected leptospirosis, traumatic injuries and suspected helminthiasis
2. Paediatric care, maternal and child health (MCH) screening, nutritional assessment and antenatal support
3. Mobile health services, ambulance runs and medical evacuation for hard-to-reach areas
4. Facilitation of medical referral for secondary and tertiary care

5. Health education on waterborne disease prevention, wound care and hygiene
6. Humanitarian logistics distribution (food, clean water, medical supplies and emergency stockpile coordination)
7. Mental health and psychosocial support (MHPSS) for displaced adults and structured recreational activities for children at evacuation centres.

Ethical Considerations

This report describes humanitarian activities conducted under an official mandate from FK UNHAN and the Ministry of Defense. Patient data are reported in aggregate form only; no individually identifiable information is included. Institutional ethical approval was obtained from FK UNHAN. Operations were conducted in accordance with the humanitarian principles of humanity, neutrality, impartiality and independence as set out by the United Nations Office for the Coordination of Humanitarian Affairs.[12]

Results

Deployment Trajectory and Operational Overview

The deployment followed a non-linear, command-responsive trajectory across multiple provinces and transport modalities between 2 and 18 December 2025. Clinical health-post operations at the principal deployment site, Aceh Tamiang, ran from 11 to 17 December 2025, a period of seven days; 18 December was a handover and return day and is not counted as a day of clinical operations. All encounter figures reported below refer to this site and this seven-day period only; assistance provided during the earlier legs of the mission was not recorded in a form that permits aggregate counts. Table 1 presents the deployment chronology.

Table 1. Deployment Timeline — Satgas Padang, FK UNHAN, December 2025

Date	Event / activity
1 Dec 2025	Planned departure; delayed pending vessel readiness
2 Dec 2025	Departed Kolinlamil, Tanjung Priok, Jakarta aboard KRI dr. Radjiman (TNI AL); 75 students in three task forces (Padang, Sibolga, Aceh)
4 Dec 2025	Arrived Sibolga; task forces separated — Satgas Aceh deployed onward by C-130 Hercules; Satgas Padang provided short-term assistance at Sibolga (wound care, symptomatic treatment, logistics distribution)
4–6 Dec 2025	Satgas Padang: medical assistance at the Sibolga health post; offloading of logistics from vessel to community (rice, instant noodles, staple foods)
7 Dec 2025	Departed Sibolga for Padang
9 Dec 2025	Arrived Padang; received at Kodam XX Tuanku Imam Bonjol
10 Dec 2025	Deployed to the disaster site at Palembayan, West Sumatra; mission reassigned by command order to Aceh Tamiang owing to a critical health-worker shortage
10 Dec 2025	Departed Padang for Medan by C-130 Hercules; onward transfer by helicopter, assessed by command as faster than the overland route to Aceh Tamiang
11 Dec 2025	Arrived Aceh Tamiang — no mains electricity, no mobile network; team was the first non-local health personnel to reach the site; health-post operations commenced immediately under RSPPN general practitioners and a surgical specialist

11–12 Dec 2025	Core health-post operations; primary management of URTI, skin infection, diarrhoea and traumatic wounds, without on-site internal medicine or paediatric specialist support
13 Dec 2025	Reinforcement arrived: Tri Matra physicians (Army, Navy, Air Force), including internal medicine and paediatrics, with additional RSPPN specialists
13–17 Dec 2025	Continued operations: health post, MCH screening, medical referral, psychosocial support, paediatric recreational activities and logistics coordination
18 Dec 2025	End of clinical operations; handover and return to Halim Perdanakusuma, Jakarta

Conditions on Arrival at Aceh Tamiang (11 December 2025)

The vulnerable population encountered on arrival included displaced persons, children, older people, pregnant women and patients whose chronic disease medication had been interrupted, alongside frontline responders (TNI, POLRI, BNPB and local volunteers) who themselves faced physical exhaustion and occupational exposure. Recognised environmental threats in this setting include waterborne enteropathogens and Leptospira species, together with physical hazards embedded in flood debris.[4,13] No environmental or clinical microbiological testing was available on site, and consequently no causative organism was confirmed at any point during the deployment. These risks were compounded by infrastructure collapse, which required the team to operate on autonomous generator power and to rely on independent clinical judgement.

Figure 2. The condition of Aceh Tamiang upon the Arrival of the Unhan task force

Patient Volume and Health Post Operations

A mean of approximately 240 patient encounters per day was recorded at the Aceh Tamiang health post across the seven days of clinical operations (11–17 December 2025), giving an estimated total of approximately 1,680 encounters. These figures are daily tallies recorded in the operational logbook and are reported as estimates. Health-post operations ran on a 24-hour basis to maintain continuous access to emergency and essential services; personnel were organised into rotational shifts to sustain this coverage while mitigating fatigue. Daytime hours were characterised by a high volume of routine consultation and triage-managed patient flow, while several critical emergency presentations occurred overnight and required stabilisation under constrained conditions.

Table 2. Summary of Humanitarian Medical Activities

Domain	Activity	Location	Volume
Clinical	Triage & general health assessment	Health post, Aceh Tamiang	~240/day
Clinical	URTI management (antibiotics, antihistamine, symptomatic)	Health post	Predominant caseload
Clinical	Skin disease treatment (tinea pedis, scabies, wound infections); topical antifungal/antibiotic shared per-family due to supply constraints	Health post	High volume
Clinical	Diarrhoeal disease management — bacterial; leptospirosis screening; paediatric diarrhoea with ORS/zinc shortage management	Health post	Moderate–High
Clinical	Traumatic wound & laceration care (injuries from manual debris/mud removal)	Health post	Moderate
Clinical	Helminthiasis management (anamnesis: per-anal worm passage; empirical anthelmintic therapy)	Health post	Moderate
Clinical	Uncontrolled hypertension & chronic disease management	Health post	Moderate
Preventive	MCH screening: paediatric nutrition, antenatal care, infant assessment	Health post + community	Regular
Preventive	Medical referral facilitation for cases beyond field capacity	Coordination with district hospital	As needed
Preventive	Health education: hand hygiene, waterborne disease prevention, wound care at home	Health post + community	Daily
Psychosocial	Psychosocial support & trauma healing sessions for displaced adults	Evacuation centres	Daily
Logistics	Humanitarian logistics distribution (rice, noodles, foodstuffs)	Landing site / community	Periodically

Figure 3. Activities at the Aceh Tamiang Health Post

Health Conditions Encountered

The clinical spectrum encountered was consistent with established patterns of flood-related morbidity in tropical settings.[4,5,13] Table 3 summarises the conditions managed. The frequencies given are the supervising team's relative clinical impressions as recorded in the operational logbook; no denominator population, diagnostic coding system or laboratory confirmation was available, and these entries should not be read as measured prevalences.

Table 3. Health Conditions Encountered, Aceh Tamiang

Diagnosis / Condition	Frequency	Notes / Contributing Factors
Upper Respiratory Tract Infection (URTI)	Most prevalent	Exposure to moisture, overcrowded shelters, disrupted immune status
Tinea pedis & other dermatophytoses	High	Prolonged floodwater contact; topical oral antifungal
Scabies & secondary skin infections	High	Overcrowding, limited hygiene facilities in evacuation shelters
Traumatic wounds & lacerations	Moderate–High	Manual mud/debris removal from homes without protective equipment
Acute diarrhoeal disease	Moderate–High	Contaminated water sources; sanitation infrastructure collapse
Leptospirosis (suspected)	Moderate (clinical screening)	Floodwater contact with rat urine contamination — actively screened

Helminthiasis (per-anal worm passage reported)	Moderate	Pre-existing or exacerbated by post-flood environment; limited lab confirmation
Paediatric diarrhoea with dehydration risk	Moderate (high concern)	ORS/zinc supply critically insufficient; infants could not receive standard adult formulations
Nutritional risk — children <5 years	Moderate	Food supply disruption; formula/breast milk substitution concerns
Uncontrolled hypertension / NCD exacerbation	Moderate	Medication loss in flood, psychosocial stress, cold chain disruption
Acute stress reaction / psychological distress	Moderate	Displacement, property and livelihood loss, family separation

Upper Respiratory Tract Infections (URTIs)

URTIs were the most frequent clinical presentation managed by the team. Among children they most often took the form of acute rhinopharyngitis and bronchitis. Shelter overcrowding, difficulty maintaining thermal comfort and close-contact transmission are recognised contributors to respiratory morbidity in post-flood displacement settings.[4,13] Among adults, the team observed a higher proportion of prolonged or secondary presentations such as acute sinusitis and exacerbation of pre-existing respiratory disease. Team members attributed these in part to physical overexertion during debris clearance and to inhalation of dust from drying flood mud; this attribution is an on-site clinical interpretation and not a measured exposure–outcome relationship.

Dermatophyte Infections and Skin Morbidities

Tinea pedis and other dermatophyte infections accounted for a substantial share of the caseload. The team related this to prolonged dermal contact with floodwater and to the practical impossibility of keeping skin dry, particularly among adults engaged in manual mud clearance without protective footwear; occlusive, persistently damp footwear creates a warm and humid microenvironment favourable to fungal proliferation. A substantial volume of acute tinea pedis was managed, frequently with clinical features suggesting secondary bacterial infection where skin integrity had been lost. These are clinical descriptions; no mycological or bacteriological confirmation was possible on site.

Scabies and Secondary Skin Infections

Scabies and associated secondary bacterial skin infection constituted a significant dermatological burden. Crowded temporary shelters, compromised hygiene and limited clean water are recognised risk conditions for skin infestation and infection in post-flood displacement settings and favour direct transmission of Sarcoptes scabiei. [4,13] Intense pruritus and consequent excoriation breach the skin barrier and provide a portal of entry for opportunistic pathogens. The team frequently managed scabies with clinical features of secondary bacterial infection, including impetigo and superficial pyoderma, and treated these with concurrent antiparasitic and antimicrobial therapy. No cultures were available, so no causative bacterial species was identified.

Traumatic Wounds and Lacerations

Traumatic wounds and lacerations, including acute ulceration in patients with pre-existing chronic disease, represented a prominent category of acute demand. This burden was driven principally by residents and rescue personnel undertaking manual debris clearance and mud removal without adequate personal protective equipment in an environment containing sharp structural fragments. Patients with underlying chronic illness, particularly diabetes mellitus, were at heightened risk of rapid ulceration. Because open wounds were repeatedly exposed to contaminated floodwater, management prioritised thorough irrigation, debridement, tetanus prophylaxis and empirical antimicrobial therapy, since no microbiological guidance was available.

Acute Diarrheal Disease

Diarrhoeal disease was a major waterborne morbidity during the deployment. Flash flooding compromised local sanitation systems, and faecal contamination of drinking water sources and wells is a recognised driver of post-flood diarrhoeal disease.[4,13] Displaced families living in crowded temporary accommodation with limited clean water for handwashing and food preparation further facilitated transmission. The team encountered a high volume of acute watery diarrhoea across all age groups, with paediatric patients at greatest

risk of rapid dehydration. No stool culture or water microbiology was available, and consequently no enteropathogen was identified. Management prioritised oral rehydration therapy, selective intravenous fluid resuscitation for severe dehydration, and public health education on water boiling. WHO and UNICEF recommend oral rehydration salts together with zinc as key components of the management of acute childhood diarrhoea in resource-limited settings;[14] stocks of both were critically insufficient relative to the demand observed at this site

Environmental and Public Health Observations

Field observations documented several systemic public health vulnerabilities:

- Widespread contamination of household water sources (wells and piped supply) following floodwater inundation
- Inadequate sanitation facilities at evacuation centres
- Disruption of pharmaceutical distribution and cold-chain logistics, resulting in non-availability of chronic disease medication
- Interruption of food supply and consequent nutritional vulnerability, particularly among children under five
- Widespread absence of personal protective equipment among community members engaged in manual debris and mud removal

Operational Challenges

- Complete absence of mains electricity and mobile network connectivity during the initial deployment period, limiting communication, documentation and remote consultation
- Status as the first non-local health personnel on site at arrival, with no handover from a preceding team and no baseline health data
- Critical shortages of high-demand items (ORS, zinc, topical antifungals and paediatric formulations), requiring adaptive prescribing
- Absence of on-site diagnostic capability (no laboratory, no imaging), necessitating empirical clinical management across multiple condition categories
- The nearest referral hospital was approximately two hours from the health post by road
- Command-directed redeployment mid-mission (Padang to Aceh Tamiang), requiring adaptation to a new operational context with minimal transition time
- Multi-leg, multi-modal transport (vessel, C-130 Hercules and helicopter) to reach the principal deployment site

Reinforcement and Capacity Building (third operational day)

The arrival of Tri Matra military physicians and additional RSPPN specialists substantially augmented team capacity, adding on-site consultation in internal medicine, paediatrics, pulmonology, orthopaedics, anaesthesiology and obstetrics-gynaecology to the surgical and general practitioner capability already present from 11 December. This reinforcement relieved pressure on the student team and allowed more complex presentations — including those with surgical implications and high-risk obstetric features — to receive specialist assessment. The team regards this reinforcement as a turning point in the quality of care that could be delivered at field health-post level.

Discussion

Post-Flood Morbidity Patterns and Field Diagnostic Constraints

The clinical spectrum in Aceh Tamiang — dominated by URTIs, infectious skin disease and acute diarrhoea — is consistent with established post-flood morbidity patterns in tropical low- and middle-income settings, driven by crowded shelters, damp environments and compromised sanitation.[4,5,13] This predictability provides an empirical basis for pre-positioning pharmaceuticals in future responses.

Diagnostic predictability, however, introduces a risk of cognitive anchoring. With approximately 240 patients per day and no laboratory support, febrile presentations may be attributed by default to the expected post-flood infections. This risk is well documented for leptospirosis in Indonesia. In a multicentre study of acute febrile illness, 56.9% of laboratory-confirmed leptospirosis cases had initially received a different diagnosis — most commonly dengue — while 40.5% of clinically suspected cases could not be confirmed, indicating misclassification in both directions; the same study reported that the microscopic agglutination test (MAT), the reference standard, was available at only three centres nationally, and that a substantial proportion of confirmed cases lacked the classic markers of hyperbilirubinemia or raised creatinine.[15] Leptospirosis and murine typhus are both established causes of acute undifferentiated fever in this country.[16] At our site neither MAT nor rapid IgM serology was available, so empirical doxycycline or penicillin therapy carried diagnostic uncertainty that we cannot quantify.

Dengue is endemic throughout Indonesia, with sustained transmission over the past two decades even as case fatality has declined,[17] and its early clinical presentation overlaps closely with that of leptospirosis. Without NS1 antigen testing or serial platelet counts —

unavailable owing to the power outage — this differentiation could not be made on site. We did not have access to province-level dengue surveillance data for Aceh covering the deployment period, and we therefore make no claim regarding local dengue incidence.

Species-level identification of soil-transmitted helminths rests on stool microscopy, which was not available to us;[18] digital mobile microscopy with automated image analysis has been evaluated as an alternative in resource-limited settings, but was likewise unavailable.[19] Enterobius vermicularis, which is not a soil-transmitted helminth, is confirmed by the perianal adhesive-tape test rather than by stool examination; that test was also unavailable. A reported history of per-anal worm passage is compatible with several species, and because first-line therapy is not identical across them, our empirical anthelmintic treatment was necessarily species-blind. These diagnostic constraints are epistemological limitations of field clinical data and should be documented explicitly rather than smoothed over.

Medical Students as First Responders: Evidence and Limitations

The task force demonstrated that final-year medical students, under direct physician supervision, can be deployed within the first response wave rather than as a delayed auxiliary asset. Arriving as the first organised health team on 11 December, the 25 students, supervised by RSPPN general practitioners and a surgical specialist, worked alongside local military medical personnel from the first operational day and sustained a caseload of approximately 240 patients per day.

The wider literature describes extensive student involvement in health emergencies but does not settle the question of effectiveness. The rapid systematic review by Martin and colleagues documents a broad range of student roles in pandemics and global health emergencies while highlighting variability in supervision, preparation and governance;[8] students have separately been proposed as an emergency department surge resource.[9] A clinical disaster medicine training programme has been shown to improve medical students' disaster literacy;[20] we are not aware of evidence that such training improves clinical decision-making outcomes under resource-constrained field conditions, and we do not claim that it did so here. We also could not identify a published systematic review establishing that supervised senior medical students effectively delivered primary care following the 2010 Haiti or 2015 Nepal earthquakes; statements to that effect should not be attributed to the literature.

The UNHAN military education framework may confer operational advantages — familiarity with austere conditions, responsiveness to command structures, and competence in non-clinical roles such as logistics and community facilitation. This report contains no comparison group and cannot test that proposition; it is offered as a hypothesis for future evaluation rather than as a finding.

Critical legal boundaries were nonetheless exposed. UNHAN students hold neither STR nor SIP, which Health Law No. 17 of 2023 establishes as prerequisites for the practice of medicine.[11] Direct specialist supervision provided clinical oversight in practice, but the legal position of supervised, unlicensed final-year students during a declared disaster is not, on our reading, explicitly addressed by that Law or by its implementing regulation, Government Regulation No. 28 of 2024.[21] Calls for explicit ethical and governance frameworks for student participation in health emergencies have been made elsewhere,[22] and students' own perceptions of and motivations for such roles have been studied.[23] We present this as an unresolved regulatory gap identified during deployment, not as a settled legal interpretation; a definitive reading would require analysis of the specific articles and implementing rules by qualified legal counsel.

Regulatory Gaps and Policy Recommendations

Health Law No. 17 of 2023 establishes registration and licensing requirements for medical practice,[11] and Government Regulation No. 28 of 2024 sets out its implementing provisions;[21] neither, so far as we can determine, creates an explicit emergency pathway for supervised final-year students during a declared disaster.

Other jurisdictions have statutory instruments for rapid health workforce expansion during emergencies. In the United States, the Uniform Emergency Volunteer Health Practitioners Act provides for recognition of out-of-state volunteer health practitioners' licences, together with associated liability and workers' compensation provisions, during declared emergencies.[24] In Australia, the national regulator established a temporary pandemic response sub-register that restored registration to tens of thousands of previously registered practitioners.[25] Both mechanisms operate on practitioners who are already registered; neither authorises practice by unlicensed students. We therefore do not claim an international precedent for supervised student practice. The relevant contrast is narrower, but material nonetheless: Indonesia lacks any comparable statutory instrument for rapid, legally defined health workforce expansion during declared disasters.

Three structural measures are proposed. First, the Ministry of Health should issue regulations governing

supervised emergency medical practice by final-year students during declared disasters, defining competency thresholds, supervision ratios and legal protections. Second, a formal memorandum of understanding between the Ministry of Defense and the Ministry of Health should codify UNHAN student deployment so as to establish legal certainty in advance of the next event. Third, BNPB should consider integrating supervised medical student teams as recognised components of the National Disaster Management Plan (Renas PB).

Hydrometeorological events, and flooding in particular, account for a large share of the disaster events recorded in the national disaster database maintained by BNPB.[26] We did not perform a reproducible extraction from that database for a defined period. We therefore make no claim here either about a temporal trend in hydrometeorological disaster frequency or about the precise ranking of disaster types; establishing either would require a specified query, date range and analytical method, which we invite future work to supply.

Medical Logistic

Resilient health supply chains are widely regarded as fundamental to crisis response, with logistics failures associated with compromised population health outcomes.[27] The account that follows is drawn from the deployment manifest and operational logbook and is presented as field evidence about this mission.

The initial pharmaceutical inventory was assembled for the originally planned Padang deployment and was not recalibrated after the mid-mission, command-directed redirection to Aceh Tamiang. Three military transport modalities were used: KRI dr. Radjiman for the maritime leg (Kolinlamil–Sibolga), which offered substantial storage capacity; C-130 Hercules for the fixed-wing legs (Sibolga–Aceh and Medan–Jakarta); and helicopter for the final leg into Aceh Tamiang, which imposed the tightest payload constraint of the three and required prioritisation of personnel and compact items. Shortages of ORS, zinc and topical antifungals were present from the outset of clinical operations at Aceh Tamiang.

We cannot establish which of these factors caused the shortages, and we no longer assert a direct causal link. The inventory was not sized for the Aceh Tamiang caseload, and the final delivery leg was payload-constrained; both are plausible contributors, and our records do not permit them to be separated. What can be said is that this pattern — a demand profile that changed after the plan was fixed, combined with a constrained final delivery leg — is precisely the class of last-mile problem that the humanitarian logistics literature models explicitly.[28] That literature is cited here for the general principle only; it did not study this deployment, and no inference about our mission should be drawn from it.

As noted above, ORS with zinc is recommended by WHO and UNICEF as a key component of paediatric diarrhoea management.[14] The WHO Classification and Minimum Standards for Emergency Medical Teams sets out the capability and minimum standards expected of deployed teams.[29] We are not able to identify within that document a provision setting a numerical ORS or zinc stockholding requirement per operational week, and any such figure should not be attributed to WHO. Judged against the demand actually observed at this site rather than against a published numerical benchmark, our initial inventory was insufficient. Aligning domestic military medical kits with WHO EMT minimum standards, and recalibrating them when a mission is redirected, remains a reasonable planning objective.

Specialist Deployment Sequencing

General practitioners and a surgical specialist from RSPPN accompanied the team from the first operational day, but internal medicine and paediatric specialists did not arrive until 13 December, the third day of operations. During those first two days the team managed a high-volume caseload with a substantial paediatric component — including children with diarrhoea and dehydration risk — without on-site paediatric or internal medicine specialist support. We regard this as the most operationally significant finding of the deployment.

We state explicitly that we could not identify a provision of the WHO Emergency Medical Teams framework requiring internal medicine, paediatrics, general surgery and obstetrics-gynaecology to be present in the first response wave, and we no longer present that specialist package as a WHO standard.[29] It is our own recommendation, grounded in this deployment and in the predictability of tropical post-flood morbidity,[4,5,13] that these four specialties be co-deployed from the first day where the anticipated caseload includes large numbers of children. The broader literature on disasters, armed conflict and public health supports the general principle that response capability should be matched to the anticipated burden of disease.[30]

Disaster Medicine Education

The deployment revealed a mismatch between academic preparation and field demand. The FK UNHAN curriculum covers risk mitigation, the incident command system, triage concepts and inter-institutional coordination, but a gap exists in disaster clinical reasoning — specifically, managing paediatric diarrhoea without first-line medication, or establishing

referral criteria without laboratory support.

A scoping review by Batt and colleagues (2020) examined how competency frameworks are developed across the health professions and found substantial variability in development methods together with limited use of validated evaluation approaches;[31] that review addresses competency frameworks in general rather than humanitarian education programmes specifically, and it is cited here for that general point only. A systematic literature review of existing disaster medicine curricula for medical students found considerable heterogeneity in content, duration and assessment across programmes.[32] Başer and Sofuoğlu demonstrated improvement in students' disaster literacy following a clinical disaster medicine training programme.[20] A letter in Disaster Medicine and Public Health Preparedness has argued that disaster medicine should be treated as a core medical competency given rising global disaster frequency;[33] as a correspondence piece, its evidentiary weight is that of expert opinion rather than of primary research.

FK UNHAN should therefore develop a complementary module built on simulation-based learning and objective structured clinical examinations tailored to resource-constrained disaster scenarios, bridging systemic disaster management understanding and patient-level clinical response.

Psychosocial Support

Integrating MHPSS into the task force mandate is consistent with Inter-Agency Standing Committee guidance for emergency settings.[34] Flood-affected populations face severe psychosocial disruption — loss of assets, displacement and trauma exposure — alongside physical health burdens, and children in evacuation centres are particularly vulnerable to acute stress reactions without structured support. By providing structured play activities and adult psychosocial support sessions, the task force worked within the holistic conception of need articulated in the Sphere Handbook.[35] The further proposition that disaster clinicians should function simultaneously as biomedical providers and as agents of community recovery is our own interpretation and is not presented as a normative statement drawn from Sphere.

Toward an Integrated National Deployment Model

The Padang Task Force suggests a template with three interdependent components: final-year medical students with scenario-based pre-deployment clinical training; a core specialist team (paediatrics, internal medicine, general surgery and obstetrics-gynaecology) co-deployed from the first day; and a logistics chain aligned with WHO EMT minimum standards[29] and integrated within military supply lines. In our view, formalisation through binding regulation rather than ad hoc institutional policy would be required for such a model to function as a reliable national safeguard. We emphasise that this template is a proposal derived from a single deployment; it has not been evaluated comparatively and should be tested before adoption at scale.

Limitations

This is a descriptive report of a single team and cannot support causal inference or claims of comparative effectiveness. Clinical diagnoses rested on supervised clinical assessment without laboratory or imaging confirmation; no causative organism was identified for any presentation during the deployment. The condition frequencies in Table 3 are the team's relative clinical impressions recorded in the operational logbook rather than measured prevalences, and no denominator population was available. Patient encounter totals are aggregate logbook tallies rather than counts drawn from an individual patient register, and are reported as estimates. The seven-day clinical window captures only the acute phase of the response, and the absence of baseline population data limits interpretation of the morbidity pattern. Several aetiological explanations offered in the Results are the team's on-site interpretations rather than measured exposure–outcome relationships, and are identified as such in the text. Future work should employ standardised field data collection instruments, pre-deployment baselines and longitudinal follow-up at 30 and 90 days.

Conclusion

The deployment of the Padang Task Force in response to flash flooding in Aceh Tamiang showed that the supervised deployment of final-year medical students was feasible in a resource-constrained disaster setting, and that under the direct supervision of qualified physicians the team was able to deliver the services described below. During the assignment the team delivered primary health care, health education, psychosocial support, medical referral and humanitarian assistance to affected communities despite infrastructure damage, communication failure and limited health facilities. Because this is a single-team descriptive report without a comparison group, it cannot establish the effectiveness of this staffing model relative to alternatives.

Field findings indicate that the post-disaster morbidity pattern was dominated by acute respiratory infection, skin infection and acute diarrhoea, consistent with post-flood patterns reported internationally. Limited diagnostic and laboratory capacity posed substantial challenges to diagnosis and clinical decision-making,

making adaptive clinical reasoning a central competence in disaster health care.

The deployment also exposed gaps in disaster health management: an unresolved regulatory position for supervised student practice, the case for deploying core specialists from the earliest stage of the response, and the readiness of the health logistics system in emergency conditions. The implementation of mental health and psychosocial support further demonstrated that disaster health responses must be delivered holistically, addressing psychosocial recovery alongside clinical need.

Taken together, this experience supports the integration of disaster medicine competencies into undergraduate military medical education and indicates the need for regulatory, logistical and command-level reform to optimise future military-supported disaster health responses.

Recommendation

For FK Unhan and Military Medical Institutions

- Develop a disaster medicine framework within the clinical curriculum specific to floods, earthquakes and tsunamis, rather than a generic overview
- Integrate mandatory pre-deployment certification in tactical field skills and non-medical logistics to ensure team self-sufficiency
- Standardise pre-deployment protocols covering field triage, disaster-specific diagnoses, paediatric emergency care and empirical treatment strategies
- Establish standing supervisory agreements with RSPPN and the Tri Matra health corps to guarantee specialist presence from the first day of deployment.

For Ministry of Defense and TNI

- Optimise emergency mobilisation standard operating procedures to streamline cross-command administrative processes, enabling immediate tactical air deployment from day one
- Develop and pre-position tailored tactical medical containers; flood-specific kits should include dedicated stocks of ORS, zinc and topical antifungals, optimised for helicopter transport, with any chemoprophylaxis stocks determined in line with current national guidance
- Create a standing rapid medical student response cadre with pre-calibrated equipment kits and clear command-chain integration protocols
- Include core specialist physicians (internal medicine, paediatrics, surgery and obstetrics-gynaecology) in first-wave deployments alongside student teams
- Develop inter-service protocols for rapid transport of student medical teams using military assets (naval vessels, C-130 Hercules, helicopters).

For BNPB, BPBD, and Ministry of Health

- Establish a joint Ministry of Health–BNPB regulatory framework for temporary emergency disaster practice authorisation, providing legal coverage for final-year students operating under military health supervision
- Integrate supervised defence university medical student teams into provincial and district health emergency response plans as recognised augmentation forces
- Pre-position disaster-specific kits (ORS, zinc, topical antifungals and anthelmintics) at level-1 field health posts.

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Author Contributions

All authors act as guarantors of the manuscript. AA is the principal investigator. AA, AAMI, HFS, MRK, RM and DARN participated in the conception, data acquisition, data interpretation and writing of the report.

AA, AAMI and HFS participated in data compilation and descriptive analysis. All authors have reviewed and verified the reference list of this revised version against the original sources and approve the revised manuscript.

Conflict of Interest

All authors declare no conflict of interest. No author has received payment, honoraria, speaker fees, consultancy fees or any other financial benefit from any pharmaceutical company, medical device manufacturer or commercial entity in connection with the subject matter of this manuscript. No pharmaceutical company sponsored the medications, medical supplies or interventions described in this field report; all medical supplies were procured through institutional and governmental channels as part of the official disaster response operation.

Use of Artificial Intelligence

Generative artificial intelligence tools were used during the preparation of this manuscript, including in the drafting of text and in the assembly and formatting of the reference list. The authors did not carry out adequate source-by-source verification of the reference list before original submission. For this revised version, every reference has been checked against the publisher record, DOI resolution and indexed metadata, and every citation has been checked against the specific claim it supports. The authors take full responsibility for the content of the manuscript, including all references.

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