

Joint external evaluation of IHR core capacities of The Kingdom of Thailand

Mission report:

31 October – 4 November 2022



World Health
Organization

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Abbreviations

AAR	After-action review
ACE	ASEAN Centre for Energy
ACIP	Advisory Committee on Immunization Practices
AFNC	Anti-Fake News Centre
AFP	Acute flaccid paralysis
AFRIMS	Armed Forces Research Institute of Medical Sciences
AI	Artificial intelligence
AIIR	Airborne infection isolation room
AMR	Antimicrobial resistance
AOT	Airports of Thailand
APBA	Asia Pacific Biosafety Association
API	Application programming interface
ARI	Acute respiratory infection
ASEAN	Association of South East Asian Nations
ASEANTOM	ASEAN network of regulatory bodies on atomic energy
AST	Antibiotic susceptibility testing
BeSD	Behavioural and social drivers of vaccination
BIDI	Bamrasnaradura Infectious Diseases Institute
BLQS	Bureau of Laboratory Quality Standards
BQCLP	Bureau of Quality Control of Livestock Products
BSC	Biosafety cabinet
BSNT	Biosafety & Biosecurity Network of Thailand
CCS-AMR	WHO country cooperation strategy on AMR programme
CCS-PHE	WHO country cooperation strategy for public health emergencies programme
CCSA	Centre for COVID-19 Situation Administration
CDCU	Communicable Disease Control Unit
CONI	Covid-19 Network Investigations Alliance
CPG	Clinical practice guideline
CSSD	Central supply sterile department
CUOH	Coordinating Unit for One Health
DDC	Department of Disease Control
DLD	Department of Livestock Development
DMSc	Department of Medical Sciences
DNP	Department of National Parks, Wildlife and Plant Conservation

EAFI	Adverse events following immunization
EBRD	European Bank for Reconstruction and Development
EC	European Commission
ECDC	European Centre for Disease Prevention and Control
EHS	Essential health services
EIA	Enzyme immunoassay
EID	Emerging infectious disease
EMS	Emergency medical services
EMT	Emergency medical team
EOC	Emergency operations centre
EVSM	Effective Vaccine Store Management
FAO	Food and Agricultural Organization of the United Nations
FDA	Food and Drug Administration
FELTP	Field epidemiology and laboratory training programme
FETP	Field epidemiology training programme
FETP-V	FETP for veterinarians
GAP	Good Agricultural Practices
GAP-AMR	Global Action Plan on AMR
GAVI	Global alliance on vaccines and immunization
GDP	Gross domestic product
GPS	Global positioning system
GLASS	Global Antimicrobial Resistance Surveillance System
GPO	Government Pharmaceutical Organization
GVAP	Global Vaccine Action Plan
HAI	Hospital-acquired infection
HCAI	Health care-associated infections
HDC	Health data centre
HPV	Human papillomavirus
IAEA	International Atomic Energy Agency
IAM	Integrated AMR Management
IAR	Intra-action review
ICAO	International Civil Aviation Organization
iCAP	Initiative for Coordinated Antidotes Procurement
ICS	Incident command system
IHR NFP	IHR National Focal Point
IMS	Incident management system
INFOSAN	International Food Safety Authorities Network

IPC	Infection prevention and control
IPCS	International Program on Chemical Safety
IRB	Institutional Review Board
IT	Information technology
IVD	In vitro diagnostics
JRA	Joint risk assessment
MALDI-TOF MS	Matrix assisted laser desorption ionization-time of flight mass spectrometry
MBDS	Mekong Basin Disease Surveillance
MCATT	Mental Health Crisis Assessment and Treatment Team
MDES	Ministry of Digital Economy and Society
MDRO	Multidrug-resistant organism
MERT	Medical emergency response team
MHESI	Ministry of Higher Education, Science, Research and Innovation
MMR	Measles, mumps and rubella
MOAC	Ministry of Agriculture and Cooperatives
MOPH	Ministry of Public Health
MOU	Memorandum of understanding
NAPHS	National Action Plan for Health Security
NARST	National Antimicrobial Resistance Surveillance Centre, Thailand
NDRMP	National Disaster Risk Management Plan 2021-2027
NHSO	National Health Security Office
NIAH	National Institute of Animal Health
NICC	National Infection Control Committee
NIH	National Institute of Health
NIP	National Immunization Programme
NITAG	National Immunization Technical Advisory Group
NNREP	National Nuclear and Radiological Emergency Plan
NPRAS	Canada Nuclear and Radiological Program Administrative Support
NRL	National reference laboratory
NSP-AMR	National strategic plan on AMR
NT	National Telecom
OAP	Office of Atoms for Peace
OPV	oral polio vaccine
OSCE	Organization for Security and Cooperation
PBS	Thai Public Broadcasting Service
PCR	Polymerase chain reaction
PDP	National Power Development Plan

PHEIC	Public Health Emergency of International Concern
PHEM	Public health emergency management
PHEOC	Public health emergency operations centre
PHSM	Public Health and Social Measures
POE	Point of entry
PPE	Personal protective equipment
PRD	Public Relations Department
PVS	Performance of Veterinary Services
RASFF	Rapid Alert System for Food and Feed
RCCE	Risk communication and community engagement
RPHLN	Regional Public Health Laboratory Network
RRL	Regional reference laboratory
RRT	Rapid response team
RT-PCR	Real-time polymerase chain reaction
RVRDC	Regional Veterinary Research and Development Centre
SCP	Sanitary control point
SOP	Standard operating procedure
SPAR	State party annual self-assessment reporting tool
SPS	Sanitary and phytosanitary
SRRT	Surveillance and Rapid Response Team
Thailand-SAC	Thailand Surveillance of Antimicrobial Consumption
TISTR	Thailand Institute of Scientific and Technological Research
TSRI	Thailand Science, Research, and Innovation
UCS	Universal Coverage Scheme
UHC	Universal health coverage
UHPR	Universal Health and Preparedness Review
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund
US CDC	United States Centres for Disease Control and Prevention
VBAC	Veterinary Biologics Assay and Research Centre
VHV	Village health volunteer
VLMS	Electronic Vaccine Logistics Management System
VMI	Vendor Managed Inventory
WASH	Water, sanitation and hygiene

Executive summary

The Joint External Evaluation (JEE) team expresses its appreciation to Thailand for volunteering for a Joint Evaluation Exercise (JEE) – and for being the first country in the world to complete its second JEE. Thailand's response to COVID-19 and its participation in the JEE and other global public health initiatives have consistently demonstrated political commitment, foresight, leadership and accountability at the heart of the Royal Thai government, all of which have been critical to building and maintaining Thailand's core capacities under the International Health Regulations – IHR (2005).

Prior to this evaluation, 116 countries had completed a JEE using either the first or second edition of the JEE tool. The tool has since been revised into a third edition taking into account relevant lessons of the COVID-19 pandemic and other public health emergencies. In another leading move, Thailand is the first country to undertake a JEE using the new edition of the tool, in the 117th JEE process overall.

As more countries follow Thailand's example and undertake a second evaluation with the revised JEE tool, it is expected that, despite their progress in implementing the IHR (2005), some scores may be lower than with previous editions of the tool. This should be interpreted with caution, and in light of the reason for revision. The third edition of the tool reflects the key lessons of the COVID-19 experience. What was previously thought to be sufficient capacity to prevent, detect and respond to a topical public health threat was in fact not enough. A lower capacity score using the third edition of the JEE tool therefore does not necessarily mean that country has lost capacity.

Any country that makes the effort to undergo the JEE process should be commended for its hard work, transparency and commitment to the shared goal of increasing global health security.

Findings from the joint external evaluation

During the JEE mission in late October and early November 2021, Thailand's capacities in 19 technical areas were evaluated through a peer-to-peer, consultative process that brought a multisectoral group of national subject matter experts together with the JEE team for a week of discussion, collaboration and field visits. This process led to consensus on scores and priority actions across the 19 technical areas.

Prior to COVID-19, Thailand had been sustaining and improving its public health capabilities and capacities in line with the recommendations of its first JEE in 2017. The pandemic accelerated that process as Thailand worked hard under extreme pressure to continue to provide essential health services to all. Thailand has strengthened collaboration across the sectors responsible for public health; ensured sustainability through appropriate legislation, policies and financing; maintained its best practices of transparency, visibility, accountability and efficiency; and, through the proposed update of the Communicable Diseases Act, enabled a streamlined financing system for health security architecture.

Thailand's legal instruments and legislative actions prioritizing health promotion, disease prevention and gender, equity and human rights, along with its robust primary health care system, were fundamental to its effective response to COVID-19. The use of digital technology, telemedicine and telehealth in Thailand during the pandemic showed how foresight, innovation and coordination help a country increase its capabilities to prevent and prepare for emergencies and to detect, notify and respond to health challenges.

Building on the experiences of the pandemic, the Royal Thai government has seized the opportunity to build resilience in public health systems and sustain and further its progress towards universal health coverage (UHC) and health security.

While those areas are addressed in the respective sections of this report, the evaluation also generated five wider, overarching recommendations that are outlined below and supported by three underlying policy

priorities: sustaining best practices from coordination, infrastructure and innovation developed during the COVID-19 pandemic response; increasing the use and uptake of digital technology (e.g. telemedicine) to improve health system efficiency and services; and enabling UHC with a focus on primary health care and essential public health functions (i.e. the first point of contact between individuals, communities and national systems and a critical interface with health security).

These three policy priorities and the following recommendations address cross-cutting challenges affecting Thailand's capacities across many of the different technical areas that are explored in greater depth in the JEE process.

Overarching recommendations of the JEE

1. Implement the lessons from COVID-19, including the findings of the COVID-19 Joint Intra-Action Review (IAR), the Universal Health Preparedness Review (UHPR) and other multisectoral assessments; review and strengthen the necessary institutional and legislative frameworks; and, building on those frameworks, empower the relevant oversight mechanisms.

The IAR showed that during the first nine months of the SARS-COV-2 pandemic Thailand was able to limit community-based transmission of the virus with minimal impact on essential health services. These reviews outlined the key factors that contributed to this achievement, and the ways in which Thailand could further improve its capacity to respond to health emergencies in future.

2. Develop an integrated approach to planning for One Health that prioritizes funding for all relevant sectors, includes review and revision of the One Health governance system, emphasizes One Health capacity at subnational levels and addresses sustainable strengthening of surveillance that encompasses wildlife. Accompany it with annual operational plans.

Pathogens of animal origin are a growing global risk. The sustainable application of the One Health approach at all levels of the health system is an urgent necessity for combatting present and future health threats. It is essential that sectors such as animal health and wildlife are prioritized for funding alongside the human health sector.

3. Streamline and integrate financing mechanisms for health, with explicit focus on IHR core capacities, as part of building a resilient public health system – with sufficient financing not only for human health but also for related sectors such as animal health/wildlife. Work towards sustainable financing for health security and essential health services, not only by implementing the recommendations in Section 2 of this report but also by developing a National Action Plan for Health Security (NAPHS) that incorporates recommendations from the UHPR and assesses the financial needs of implementation across sectors.

While the JEE process showed that Thailand has strong operational frameworks for IHR-related activity, the financing landscape is fragmented. Its legal and administrative basis comprises a range of different acts and strategies. Not all IHR sectors receive the necessary budgets, with the animal health sector in particular being chronically underfunded. Additionally, the lack of a joint budget is a challenge for multisectoral joint activities, posing particular obstacles to the effective implementation of One Health. This would create an integrated, streamlined planning and financing mechanism that increases efficiency and enables intersectoral collaboration, coherence and shared accountability.

- 4. Establish a One Health training programme for regular joint training and exercising of professionals from the human and animal health sectors, from local to national level, emphasizing joint work, cooperation and standard procedures. This would be implemented easily in continuous education (e.g. through a One Health module for new public health and veterinary staff) but should also be integrated into initial education (e.g. through joint modules on One Health epidemiology and other relevant topics for medical and veterinary students). Joint training could also be conducted for targeted professional groups – e.g. joint PCR training for human and animal health laboratory technicians, or joint epidemiology training for public health officials and veterinarians.**

This would develop One Health from a concept that requires an effort to implement into a natural reflex of professionals across sectors. It would ensure a common understanding across sectors, help develop and strengthen multisectoral networks, and facilitate sharing of expertise and information between sectors.

- 5. Given the increasing involvement of the private sector in delivering health services in Thailand, sustain private sector participation in emergency preparedness, response and other public health services in order to foster and enable the widest possible implementation of the IHR (2005).**

The lack of involvement of the private sector in IHR activities has resulted in suboptimal reporting of events and delayed, inefficient and expensive response operations. The quality of national responses can also be affected if private sector preparedness and response capacity is not routinely aligned with national emergency preparedness. Effective integration of the private health sector will increase capacity to deal with emergencies collectively. It may be the case that there is important expertise within the private health sector, and that expertise beyond service delivery (such as in supply chain management) could significantly improve surge capacity, help establish better quality private services to support UHC and the Sustainable Development Goals, and establish wider, more effective coordination and collaboration mechanisms.

* * *

The members of the external JEE team are grateful for the open and honest discussions we had in Bangkok, and for Thailand's willingness to engage with the JEE process.

We sincerely thank all participants in the JEE, and especially the JEE presenters, their teams and the interpreters who facilitated the discussion, for their hard work in preparing, presenting and hosting the team.

Thailand scores and priority actions

The table below is the summary of the final scores for each technical area (details and priority actions are shown in the respective report chapters), as agreed by the national and external JEE teams. The principles of the scoring system are described in the JEE tool, available from:

<https://www.who.int/emergencies/operations/international-health-regulations/joint-external-evaluations>

Briefly, the scoring is a 5-step Likert scale in which a score of 1 designates no capacity, and incremental obligatory criteria for each indicator must be fulfilled to reach the next level. A score of 5 designates that the country has the required capacity and is able to sustain it. Indicators are proxies and are chosen with the aim of representing a probable wider capability than the actual measured factor.

For ease of overview, a "traffic light" colouring system is used, whereby scores of 1 are shown as red; scores of 2 and 3 are yellow; and 4 and 5 are green.

Scores and priority actions

Scores: 1=No capacity; 2=Limited capacity; 3=Developed capacity; 4=Demonstrated capacity; 5=Sustainable capacity.

Technical areas	Indicator no.	Indicator	Score	Priority actions
Prevent				
P1. Legal instruments	P1.1.	Legal instruments	5	<ul style="list-style-type: none"> Align all legislation, across different relevant sectors and levels of government, that enables Thailand to detect, assess, notify, report and respond to public health risks (including multihazard risks) and public health emergencies. Develop data collection guidelines on aggregation of data by gender (including data on the gender-sensitivity of relevant programmes) to support the design of policy and financing mechanisms that promote gender equity and equality. Map existing relevant authorities and responsibilities to detect, assess, notify, report and respond to public health risks and emergencies, and develop manuals and guidelines that support understanding and alignment of legislative powers and responsibilities across different sectors and levels of government.
	P1.2.	Gender equity and equality in health emergencies	4	
P2. Financing	P2.1.	Financing for IHR implementation	4	<ul style="list-style-type: none"> Document the experience of COVID-19 with an after-action review (AAR) focusing on the financial aspects of the emergency response and identifying possible areas for efficiency gain. The AAR report will provide a reference for future public health emergency response actions and should incorporate the following actions: <ul style="list-style-type: none"> » the Budget Bureau and the Office of the Economic and Social Development Council to review the budgeting procedures for emergency response; » the Comptroller General's Department to review financial flexibility in emergency response and develop guidelines for faster access to emergency funds; » the Ministry of Public Health to review use of emergency funds and the cost-effectiveness of emergency interventions (e.g. lockdown and quarantine rules, community risk communication campaigns, etc.); and » relevant departments (e.g. the Auditor General) to review financial integrity and accountability during emergency response. Ensure that IHR-relevant activities in all relevant sectors have separate, appropriately-labelled budget lines, to enable better IHR coordination and monitoring. Update investment plans to incorporate emerging needs, including by: <ul style="list-style-type: none"> » conducting multisectoral stakeholder consultations that determine the desired level of IHR capacities to be maintained post-COVID and result in a concrete multisectoral financing and action plan commensurate to those capacity levels;
	P2.2.	Financing for public health emergency response	4	

Technical areas	Indicator no.	Indicator	Score	Priority actions
				<ul style="list-style-type: none"> » piloting a joint budget for cross-sectoral activities in One Health, zoonosis, climate change-induced public health events, migrant health, etc.; and » filling financing gaps for identified IHR technical areas and emerging issues, including One Health laboratories; field epidemiology training; incentives for local staff (e.g. infection control nurses) and health volunteers; mental health care; health literacy; and digital health.
P3. IHR co-ordination, National IHR Focal Point functions and advocacy	P3.1.	National IHR Focal Point functions	4	<ul style="list-style-type: none"> • Review and update governance and institutional structures as appropriate to enhance IHR coordination, IHR NFP functions and advocacy. • Develop and implement strategic human resources approaches to strengthen and maintain business continuity for IHR technical capacity, key functions of the IHR NFP and the capacity and capability of all sectors relevant to core IHR capacities. • Continue to strengthen and maintain multisectoral coordination mechanisms through “evergreen” guidelines, procedures and SOPs. • Update plans, measures and SOPs to enhance coordinated preparedness and response for public health emergencies related to mass gatherings.
	P3.2.	Multisectoral coordination mechanisms	5	
	P3.3.	Strategic planning for IHR, preparedness or health security	5	
P4. Anti-microbial resistance (AMR)	P4.1.	Multisectoral coordination on AMR	5	<ul style="list-style-type: none"> • Maintain continuous, high-level, multisectoral government commitment and leadership at national, regional and provincial levels to ensure concerted actions. including adequate and sustainable allocation of resources to the implementation of the NSP-AMR 2023–2027. • Revise the relevant One Health M&E platforms (or develop new ones where needed) to generate essential evidence to guide strategic decisions and support effective implementation of the NSP-AMR 2023–2027. • Standardize AMR/HAI essential datasets and data collection frameworks within and across hospitals and laboratories and ensure they are interconnected through a national health information system. • Strengthen leadership and expand integrated AMR management in hospitals, including by training personnel and ensuring the availability of sufficient (human) resources for IPC, hospital epidemiology, laboratory diagnostics, AMR & HAI surveillance and antimicrobial stewardship. • Enhance public awareness of the threat of AMR and appropriate use of antimicrobials across all sectors through collaboration with a wider range of stakeholders, including the education system, the media, health volunteers, civil society organizations and the private sector, including food producers.
	P4.2.	Surveillance of AMR	4	
	P4.3.	Prevention of MDRO	4	
	P4.4.	Optimal use of anti-microbial medicines in human health	4	
	P4.5.	Optimal use of anti-microbial medicines in animal health and agriculture	4	

Technical areas	Indicator no.	Indicator	Score	Priority actions
P5. Zoonotic disease	P5.1.	Surveillance of zoonotic diseases	4	<ul style="list-style-type: none"> • Review and revise the One Health governance system at central and subnational levels by: <ul style="list-style-type: none"> » strengthening and formalizing multisectoral coordination at national level by establishing One Health Coordination Units in DDC, DLD and DNP (with appropriate human and financial resources in each sector) and facilitating routine coordination of One Health activities within and between sectors; » expanding the composition of the One Health Steering Committee to include other relevant sectors and specifying the roles and responsibilities of the Steering Committee and One Health Coordination Units; » creating subnational One Health units; and » strengthening the provincial Natural Resources and Environmental Offices so they can act as provincial wildlife focal points for One Health. • Coordinate and sustain community-level One Health training and communication to increase community engagement for disease surveillance, control and prevention, and expand the existing responsibilities of public health and livestock volunteers to make them community One Health volunteers. • Strengthen surveillance in wildlife by building sustainable capacity for early detection, sample collection and reporting, improving laboratory diagnosis, and developing a web-based system to collect, store and share surveillance data. • Operationalize the sharing of expertise and human resources between sectors in times of need (e.g. for laboratory work, epidemiology, risk assessment, etc.).
	P5.2.	Response to zoonotic diseases	4	
	P5.3.	Sanitary animal production practices	5	
P6. Food safety	P6.1.	Surveillance of foodborne diseases and contamination	4	<ul style="list-style-type: none"> • Increase the use of risk analysis principles, as outlined by the Codex Alimentarius texts, to assess, manage and communicate food safety risk across the entire food value chain, from production to consumption. • In collaboration and coordination with other food chain sampling programmes (e.g. for antimicrobial resistance and zoonoses), develop a routine surveillance system for prioritized pathogens and food contaminants, to develop risk assessment models and improve understanding of mitigation possibilities. • Formalize pathways for exchanging information with key stakeholders, including public and private partners, the public, and international organizations, to improve risk communication and emergency response. • Update the emergency response plan regularly with new risk analysis information and test it with table-top and simulation exercises, and perform after action reviews following any food safety emergency.
	P6.2.	Response and management of food safety emergencies	4	

Technical areas	Indicator no.	Indicator	Score	Priority actions
P7. Biosafety and biosecurity	P7.1.	Whole-of-government biosafety and biosecurity system is in place for human, animal and agriculture facilities	4	<ul style="list-style-type: none"> • Develop a unified national biosafety and biosecurity manual. • Review and update the law to provide biosafety and biosecurity policy oversight, and implement guidelines for Biosafety Level 3 (BSL-3) certification and maintenance across all sectors.
	P7.2.	Biosafety and biosecurity training and practices in all relevant sectors (including human, animal and agriculture)	4	<ul style="list-style-type: none"> • Set up an information system supporting specimen referrals and couriers for infectious substances. • Establish national guidelines and a curriculum on specimen referral, and implement a training-of-trainers programme for the guidelines.
P8. Immunization	P8.1.	Vaccine coverage (measles) as part of national programme	3	<ul style="list-style-type: none"> • Accelerate immunization coverage to offset the decline in vaccination rates due to the COVID-19 pandemic, including by: <ul style="list-style-type: none"> » monitoring and following up immunization in all provinces; » conducting OPV and MR campaigns;
	P8.2.	National vaccine access and delivery	5	<ul style="list-style-type: none"> » microplanning to support supplemental immunization activities (SIA); and » expanding the identification and documentation of nonvaccinated and under-vaccinated populations, particularly among vulnerable, hard-to-reach and hesitant groups.
	P8.3.	Mass vaccination for epidemics of VPDs	5	<ul style="list-style-type: none"> • Implement a multisectoral strategy among health and non-health partners, including in the private sector, to identify and address hesitancy and other access and demand issues in the deep-south provinces. Consider local, people-centred approaches to identify barriers and develop and tailor innovative solutions. • Improve immunization data and data systems, including by: <ul style="list-style-type: none"> » digitalizing the individual vaccination record system; » improving denominator data among migrants and in border areas; and » integrating behavioural and social drivers of vaccination (BeSD) tools into national surveys and subnational assessments to improve understanding of access and demand issues. • Strengthen and maintain immunization capacity, including by: <ul style="list-style-type: none"> » maintaining MR stockpiles for outbreaks; » ensuring sufficient expert immunization staff at all levels and providing training to fill any gaps; and » conducting rapid assessments to understand contributors to high staff turnover.

Technical areas	Indicator no.	Indicator	Score	Priority actions
Detect				
D1. National laboratory systems laboratory	D1.1.	Specimen referral and transport system	4	<ul style="list-style-type: none"> • Develop an integrated, costed One Health national laboratory strategic plan for 2023–2026, with annual operational plans that address the following recommendations: <ul style="list-style-type: none"> » Develop and implement interconnected laboratory information systems that link laboratory, epidemiological and clinical data across the human, animal and environment sectors. » Develop and oversee an appropriate laboratory licensing mechanism for public and private sector laboratories to ensure optimum quality of laboratory services. » Strengthen the skilled workforce through training and academic programmes and clear retention strategies (e.g. GLLP, molecular testing and BRM training). » Establish protocols and coordination mechanisms for the IVD development life cycle, including development, production, validation, evaluation and implementation of post-marketing surveillance of IVD during public health emergencies. » Decentralize testing capacity for priority and notifiable diseases to the lowest levels of the health system through improved training and procurement and strengthening networks and infrastructure. » Establish a regional training hub and community of practice to reinforce the role of NIH/DMSC in strengthening epidemiology, detection capacity, biosafety and laboratory systems in human and animal health sites across the region. » Improve the laboratory performance of the veterinary network in Thailand by performing proficiency testing for animal diseases diagnosis in compliance with ISO 17043. • Update animal health laboratory guidelines for a standardized referral and transportation system at national level.
	D1.2.	Laboratory quality system	4	
	D1.3.	Laboratory testing capacity modalities	4	
	D1.4.	Effective national diagnostic network	5	

Technical areas	Indicator no.	Indicator	Score	Priority actions
D2. Surveillance	D2.1.	Early warning surveillance function	4	<ul style="list-style-type: none"> Invest in data modernization, including in use of big data infrastructure and application of appropriate technologies for data integration, analytics, predictive modelling and risk analysis. Increase the use and uptake of digital technology to enhance event-based and indicator-based disease surveillance, improving reporting by making systems more user-friendly. Conduct policy and funding advocacy for increased disease reporting from public and private health-care facilities and the animal health sector; integration of data (e.g. epidemiological and laboratory data, etc.); and support for outbreak investigation. Increase human resources to strengthen surveillance at sub-national, national, regional, and global levels, including by: <ul style="list-style-type: none"> » expanding the number of district level livestock personnel and tasking them to strengthen surveillance and coordination with subdistrict-level health promotion hospital staff; and » engaging in multisectoral One Health fellowships and exchange programmes that enhance mechanisms to share surveillance information regionally and globally.
	D2.2.	Early warning surveillance function	5	
	D2.3.	Analysis and information-sharing	5	
D3. Human resources	D3.1.	Multisectoral workforce strategy	4	<ul style="list-style-type: none"> Reassess and update human resources policies to take account of the lessons of the COVID-19 pandemic. The review should include hiring, onboarding, work processes, compensation, leave, training, continuing education, promotion, work environments, retention, termination, implementation of an occupational health policy, and other key functions. It should cut across the health workforce in different technical areas including One Health, IPC, field epidemiology, surveillance, laboratories, AMR, port health and health-service provision. Diversify financing and ensure appropriate pay across the human, animal, wildlife and environmental health workforces. Increase and retain sufficient numbers of competent human, animal, wildlife and environmental health staff through strategies including, but not limited to, expansion of clear career opportunities and continuing professional development, improved incentivization, and provision of mental health and psychosocial support systems and services. Maximize the existing health workforce platform and establish key performance indicators for multisectoral workforce development across the human, animal, wildlife and environmental health sectors.
	D3.2.	Human resources for implementation of IHR	4	
	D3.3.	Workforce training	4	
	D3.4.	Workforce surge during a public health event	5	

Technical areas	Indicator no.	Indicator	Score	Priority actions
Respond				
R1. Health emergency management	R1.1.	Emergency risk assessment and readiness	4	<ul style="list-style-type: none"> • Develop an advocacy plan with embedded M&E to ensure sustainable post-pandemic funding for EOCs, emergency preparedness and risk management.
	R1.2.	Public health emergency operations centre (PHEOC)	4	<ul style="list-style-type: none"> • Ensure capacity for rapid response operations during public health emergencies by implementing policies and legislative mechanisms for expedited identification and release of funds, streamlined administrative procurement, and recruitment of surge staff.
	R1.3.	Management of health emergency response	4	<ul style="list-style-type: none"> • Enhance preparedness for chemical, biological, radiological, nuclear and high yield explosives (CBRNE) events within the existing health emergency management system, through formal engagement of relevant subject matter experts and institutions and mapping of stockpiles of medical countermeasures.
	R1.4.	Activation and coordination of health personnel in a public health emergency	4	<ul style="list-style-type: none"> • Establish and ensure sustainability of advanced PHEOC data analytics through an integrated data management platform that spans the EOC network and combines automated data analyses, geospatial mapping, data visualization and automated stakeholder reporting.
	R1.5.	Emergency logistic and supply chain management	4	<ul style="list-style-type: none"> • Formalize the public health emergency research framework (including financing and implementation mechanisms), prioritize operational research on health emergency risk management and related fields, and evaluate and document strategies for expedited bioethical institutional review board (IRB) approval during public health emergencies.
	R1.6.	Research, development and innovation	4	<ul style="list-style-type: none"> • Formalize a mechanism for cooperation and information-sharing between public health and security authorities. Ensure that the security sector has legal authority to share classified intelligence with potential public health implications with designated public health representatives. • Conduct regular joint public health/security authority training/orientation/discussion sessions, with appropriate senior government participation, to increase mutual understanding of respective roles and responsibilities during an emergency event, including through exercises based on real-world scenarios (e.g. intentional release of biological or nuclear materials).
R2. Linking public health and security authorities	R2.1.	Public health and security authorities (e.g. law enforcement, border control, customs) are linked during a suspect or confirmed biological, chemical or radiological event	4	<ul style="list-style-type: none"> • Formalize a mechanism for cooperation and information-sharing between public health and security authorities. Ensure that the security sector has legal authority to share classified intelligence with potential public health implications with designated public health representatives. • Conduct regular joint public health/security authority training/orientation/discussion sessions, with appropriate senior government participation, to increase mutual understanding of respective roles and responsibilities during an emergency event, including through exercises based on real-world scenarios (e.g. intentional release of biological or nuclear materials).

Technical areas	Indicator no.	Indicator	Score	Priority actions
R3. Health services provision	R3.1.	Case management	5	<ul style="list-style-type: none"> • Strengthen capacities for emergency preparedness and service continuity, including by ensuring that the health workforce is strong enough for primary care facilities to maintain essential health services and meet the health needs of the population during disruptive public health events. • Review and strengthen logistical capacities for essential medical supplies, including storage, cold chain and transportation, with a focus on subnational health facilities; and develop local production capacity. • Conduct a needs assessment for provision of essential health services in disruptive emergencies, with particular focus on the risk and vulnerability of elderly and marginalized populations. • Ensure that the upcoming revision of the Communicable Diseases Act (or its equivalent) requires that service continuity planning and the necessary multisectoral participation are in place at all levels of health services provision, from tertiary to secondary to primary care facilities. • Sustain public–private collaboration and coordination during emergencies through the PHEOC, and through other intersectoral mechanisms at other times.
	R3.2.	Utilization of health services	4	
	R3.3.	Continuity of essential health services (EHS)	4	
R4. Infection prevention and control (IPC)	R4.1.	IPC programmes	4	<ul style="list-style-type: none"> • Promote the IPC secretariat by dedicating full-time staff to support the NICC in executing the designated functions and objectives of a national IPC programme, including by: <ul style="list-style-type: none"> » clearly defining roles and responsibilities for national-level implementation; » granting authority to make decisions influencing implementation; and » providing a dedicated, protected budget for planned activities outlined in the National Plan for HAI Prevention and Control 2023–2027. • Support IPC staffing at facility level by enhancing the IPC career pathway, increasing incentives and compensation, and providing higher staffing levels – particularly for infection control nurses, at a ratio of at least 1 nurse per 150 beds. • Increase the number of hospitals participating in the HAI/AMR surveillance programme, leveraging digital technology and innovation to ensure the quality, accuracy, completeness and timeliness of real-time data analysis and feedback. • Strengthen the national IPC M&E framework by using IPC process indicators aligned with AMR initiatives (e.g. integrated assessment models/iAMs), using the Healthcare Accreditation group to provide tailored IPC interventions, and providing training to increase adherence to IPC practices.
	R4.2.	HCAI surveillance	4	
	R4.3.	Safe environment in health facilities	4	

Technical areas	Indicator no.	Indicator	Score	Priority actions
R5. Risk communication and community engagement (RCCE)	R5.1.	RCCE systems for emergencies	5	<ul style="list-style-type: none"> Establish a public health risk communication unit within each provincial public health office and/or enhance existing provincial public relations mechanisms for risk communication. Institutionalize a people-centred approach that co-designs solutions for public health challenges hand-in-hand with communities. Institutionalize a standardized Master Training Programme on risk communication for marginalized groups including, but not limited to, migrant workers and people living in border areas.
	R5.2.	Risk communication	5	
	R5.3.	Community engagement	4	
IHR related hazards and points of entry and border health				
PoEs: Points of entry and border health	PoE1.	Core capacity requirements at all times for PoEs (airports, ports and ground crossings)	4	<ul style="list-style-type: none"> Develop guidelines and SOPs and provide training to staff at ground crossings, in accordance with the IHR (2005) Annex 1B. Complement the existing indicator-based surveillance system at POEs by adopting an event-based surveillance strategy that feeds into the national surveillance system. Develop a set of guidelines, tailored specifically to POEs, for routine activities including maintenance of food hygiene and potable water, waste management and vector control.
	PoE2.	Public health response at PoEs	4	
	PoE3.	Risk-based approach to international travel-related measures	3	
CE: Chemical events	CE1.	Mechanisms established and functioning for detecting and responding to chemical events or emergencies	4	<ul style="list-style-type: none"> Ensure sufficient preparedness, resources and capacity to deal with chemical events in different sectors by conducting risk-based gap analyses to inform needs, including at national, intermediate and primary health care levels and at POEs, then meet those needs.
	CE2.	Enabling environment in place for management of chemical event	5	
RE: Radiation emergencies	RE1.	Mechanisms established and functioning for detecting and responding to radiological and nuclear emergencies	4	<ul style="list-style-type: none"> Finalize and enact laws to implement the Nuclear Energy for Peace Act (2019) across various sectors. Formalize SOPs for notifying and liaising with the IHR National Focal Point in case of a radiological or nuclear emergency. Provide more training for frontline officers and first responders, with the focus on table-top and field training exercises and cross-sectoral cooperation between relevant emergency agencies Ensure that clinical case management protocols for radiation emergencies are in place and personnel in dedicated hospitals are trained in their use. Establish arrangements and SOPs for access to pharmaceutical supplies (stockpiles) required to treat radiation injuries. Establish concrete arrangements to ensure that financial support, supplies and equipment are made available, including from the private sector.
	RE2.	Enabling environment in place for management of radiological and nuclear emergencies	5	

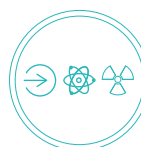
PREVENT



P1. Legal instruments

Introduction

The International Health Regulations 2005 (IHR 2005) provide obligations and rights for States Parties. In some States Parties, implementation of the IHR (2005) may require new or modified legislation. Even if new or revised legislation may not be specifically required, states may still choose to revise some regulations or other instruments in order to facilitate IHR implementation and maintenance. Implementing legislation could serve to institutionalize and strengthen the role of IHR (2005) and operations within the State Party. It can also facilitate coordination among the different entities involved in their implementation. See detailed guidance on IHR (2005) implementation in national legislation. In addition, policies that identify national structures and responsibilities as well as the allocation of adequate financial resources are also important.



Target

Adequate legal instruments are needed for States Parties to support and enable the implementation of all their obligations and rights created by the IHR. Thus the development of new or modification of legal instruments is necessary in some States Parties for the implementation of the Regulations. Where new or revised legal instruments may not be specifically required under a State Party's legal system, the State may revise some laws, regulations or other legal instruments in order to facilitate their implementation in a more efficient, effective or beneficial manner.

Level of capabilities

Thailand has a coherent set of laws and subordinate instruments that enable responses to all levels of risk at national and subnational levels. These laws are administered across several sectors, but the main laws are administered by the Ministry of Public Health (MOPH). The Constitution of the Kingdom of Thailand provides broad principles and overarching guidance for policy and law-making processes. These are given further effect by the Act on Legislative Drafting and Evaluation of Law B.E. 2562 (2019).

The key law is the 2015 Communicable Diseases Act, which was passed in 2015 with the purpose of supporting Thailand in its implementation of the IHR (2005). The Act establishes three key committees, at national and provincial levels and for Bangkok respectively. The National Committee is supported by the Technical Committee, which is convened by health and non-health sectors in collaboration with academic institutes to provide support on technical issues.

During the acute phase of the COVID-19 pandemic this law was used alongside the Emergency Decree of Public Administration in Emergency Situations, which established a multisectoral committee chaired by the Prime Minister. In this function the Prime Minister has broad powers to appoint competent officials to perform duties under the Emergency Decree and to carry out functions under laws that the Decree transfers to the powers and duties of the Prime Minister, who then passes them to people appointed as competent officials. The Prime Minister has further broad powers to make regulations as needed to remedy and promptly resolve an emergency situation, or to prevent the worsening of such a situation.

Together, these two laws confer risk management and emergency management functions on responsible authorities and provide the power to discharge them within Thailand and at POEs. Thailand has conducted an assessment of the implementation and adequacy of the laws during the COVID-19 pandemic, which identified gaps that included the following:

- insufficient alignment across laws and sectors;
- the Emergency Decree enabled a multisectoral response overseen by the Prime Minister, which included the security sector. However, this ceased once COVID-19 was deemed "endemic," after which incident management reverted to the Communicable Diseases Act, reducing multisectoral input;
- terminology on human-caused risks such as terrorism, demonstrations etc. that can cause interpretation and implementation problems that need to be addressed; and
- insufficient understanding of the application and implementation of the law, and differing interpretations of its scope and application.

Analysis of the Communicable Diseases Act 2015, carried out through public consultations with stakeholders, showed that this Act specifically lacks the necessary power to manage public health emergency situations effectively. An Amendment of the Act was approved by the Council of Ministers on 21 September 2021. Provisions include new systems and mechanisms for prevention and control of communicable diseases in public health emergency situations, establishment of new definitions, and new powers for the National Committee.

The Constitution of the Kingdom of Thailand B.E. 2560 (2017) clearly specifies that "men and women shall enjoy equal rights" and related legislation has been issued in accordance with national development plans at all levels. The Gender Equality Act 2015 was enacted in 2015 and established the Committee to Promote Gender Equality (CPGE) to enact the Act's legal policies and mechanisms to advance gender equality. Thailand links its gender equity approach to Sustainable Development Goal 5, which focuses on achieving gender equality and enhancing the roles of all women and girls. Thailand's 2019 gender inequality index score was 0.359, an improvement from 0.419 in 2016, reflecting improvements in gender equality in Thai society.

Indicators and scores

P1.1. The State has assessed, adjusted and aligned its legal instruments in all relevant sectors to enable compliance with the IHR – Score 5

Strengths

- Thailand's laws recognize and implement a multisectoral approach.
- Thailand has legal provisions for evaluation of laws at least every five years during the period of their enforcement, led by high-level committees.
 - » The Communicable Diseases Act establishes the National Communicable Disease Committee chaired by the Minister for Health. It also establishes Provincial Communicable Disease Committees and a Bangkok Communicable Disease Committee.
 - » The Emergency Declaration on Public Administration in Emergency Situations establishes a multisectoral Public Administration in Emergency Situations Committee, with the Deputy Prime Minister assigned by the Prime Minister as chair.¹
- National and subnational committees pursue a coherent, linked approach. The support of the Department of Disease Control is important for implementation.
- There is some flexibility in powers to create further subordinate legislation to address areas of need as health risks and national emergencies are managed.
- Thailand has conducted a post-COVID review to address weaknesses and gaps identified during the COVID-19 experience.

Challenges

- Alignment across laws and sectors is always a challenge. Thailand's report entitled *Summary of lessons learned from the execution of legal measures for management of COVID-19 after the post-pandemic period* noted this as a gap that needed addressing.

¹ Emergency Decree on Public Administration in Emergency Situation, B.E. 2548 (2005), Section 6.

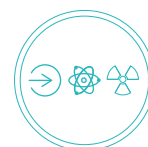
- The Emergency Decree is not designed to address security issues arising from the pandemic.
- Some terminology around human-caused risks such as terrorism, demonstrations etc. can cause interpretation and implementation problems that need to be addressed.
- There is insufficient understanding of the application and implementation of the law, and there are differing interpretations of its scope and application.



P.1.2. Gender equity and equality in health emergencies – Score 4

Strengths

- The Thai Constitution (2017) provides equal rights to men and women.
- A Women's Development Strategy (2017–2021) has been developed in accordance with constitutional requirements.
- The Action Plan on Women's Development Phase 1 (2020–2022) has been developed by the Ministry of Social Development and Human Security and distributed to all relevant sectors on 21 February 2022.
- A universal health coverage (UHC) scheme is provided to all and includes prevention, detection and control of disease, immunization, laboratory diagnosis, treatment and home isolation services.
- The National Health Security Office (NHSO) funds preventive and screening services for all Thai citizens, regardless of gender.
- Village health volunteers, 80% of whom are women, hold crucial roles and responsibilities for promoting health literacy on the ground and educating villagers about effective measures to protect themselves from disease. Female volunteers have proven to be very adaptable to local contexts and successful in encouraging higher levels of public compliance with disease control measures. Their efforts are widely regarded as a key factor in helping minimize disease transmission within local communities and vulnerable populations (e.g. migrants). With some patients unable or unwilling to visit health facilities for routine care for chronic medical conditions, village health volunteers have been an essential link to secondary care providers, identifying and referring patients as needed.



Challenges

- There is a need to collect more and better disaggregated data.
- There is a need for more publicly available risk communication information in migrant languages, and information on cultural sensitivities.
- A survey of migrants' online access to information suggested that male migrants were significantly more likely to access to COVID-19 information online than were female migrants.

Recommendations for priority actions

- Align all legislation, across different relevant sectors and levels of government, that enables Thailand to detect, assess, notify, report and respond to public health risks (including multi-hazard risks) and public health emergencies.
- Develop data collection guidelines on aggregation of data by gender (including data on the gender-sensitivity of relevant programmes) to support the design of policy and financing mechanisms that promote gender equity and equality.
- Map existing relevant authorities and responsibilities to detect, assess, notify, report and respond to public health risks and emergencies, and develop manuals and guidelines that support understanding and alignment of legislative powers and responsibilities across different sectors and levels of government.

P2. Financing

Introduction

The implementation of the IHR, including development of the core capacities, requires adequate financing. State Parties should ensure sufficient allocation of funds for IHR implementation.

Target

States Parties ensure provision of adequate funding for IHR implementation through the national budget or other mechanisms. The country has access to financial resources for the routine implementation of IHR capacities.

Financial resources that can be accessed on time and distributed for readiness and response to public health emergencies are available.

Level of capabilities

Thailand's strong economic development over the past two decades, coupled with the government's commitment to people's happiness and well-being, has created broad support for investing in health. Thailand achieved UHC in 2002, at which point the whole population was covered by three social health insurance schemes.² Using evidence-based decision-making, Thailand has also fine-tuned its health financing and payment mechanisms to maximize the efficiency of the health system. Population health outcomes have steadily improved and are comparable to those of major developed nations. Meanwhile, total health expenditure is kept under 4% of gross domestic product (GDP) and roughly 9–10% of the total annual government budget. Health financing is mainly supported by general tax, which is stable, predictable and equitable. Out-of-pocket payments for health services have fallen continuously for some time, and made up 8.67% of total health expenditure in 2019.³ Thai people enjoy accessible and affordable health care.

The government funds population health services and IHR-related activities through an annual budget for the MOPH and other relevant ministries. Several acts and development strategies provide the legal and administrative basis for adequate financing – including the National Disease Control Act B.E. 2558 (2015), the 20-year National Strategy (2018–2037), the National Social and Economic Development Plan and the National Disaster Risk Management Plan (2015). In emergency situations, the MOPH and other public entities can access the government's Central Fund in accordance with the National Budgetary Procedures Act B.E.2561 (2018). During COVID-19 the government raised additional emergency response funds by issuing bonds and taking external loans.

The government has set up clear mechanisms for budget development, budget requests and approvals, budget execution, financial management and auditing. Budgets are developed annually following the Budgetary Procedures Act, but planning for activities usually takes a 2–3 year forward view. The National IHR Committee, comprising all relevant ministries including the Budget Bureau, oversees the collaborative budget process and ensures the alignment of the budget with national priorities.

In line with the scope of the IHR (2005), in 2022 the Budget Bureau approved a budget of 3457.4 million Thai Baht for major IHR activities, including: One Health operations; developing an emergency management system; disaster preparedness; solving problems of pollution and harmful chemicals; developing

2 These are: 1) civil servants' health insurance; 2) social security insurance for formal sector employees; and 3) a Universal Coverage Scheme (UCS) that covers everybody else.

3 World Bank Data. <https://data.worldbank.org/indicator/SH.XPD.OOPC.CH.ZS?locations=TH> Accessed 2 November 2022.

IHR infrastructure; hospital infection surveillance, prevention and control; developing laws related to prevention and control of disease; trend monitoring and knowledge dissemination on emerging and re-emerging diseases.

Budgeting for activities and the allocation and distribution of resources during an emergency response is done with consideration for vulnerable populations and high-risk groups. For example, during COVID-19, higher priority for necessary health services such as vaccination was given to the older population (i.e. those over 60 years of age) with underlying health conditions, the homeless and foreigners.

Budget execution is satisfactory, with few cases of underspending and no cases of overspending. Budget formulations and structures support flexible spending and make budgets responsive to sectoral needs. During public health emergencies, real-time monitoring of situations and resource needs is done by the national Emergency Operations Centre (EOC), which is linked to provincial and local levels, and internal and external financial audits are carried out to ensure financial integrity and accountability.

There are a few weaknesses in the budget system for IHR activities. First, not all sectors have received all the necessary funding. The lack of a joint budget presents a challenge to conducting multisectoral joint activities, which is particularly important for activities relating to One Health and zoonosis (including wildlife). Second, not all IHR-related activities are labelled as such in budget requests from relevant sectors, making it difficult to estimate the total annual expenditure related to IHR. Third, during emergency situations, even with streamlined approval processes, disbursement of funds takes time, and the same is true with requests to re-allocate funds. Fourth, pay for grassroots public health staff remains low compared with the private sector, leading to high turnover rates, lost human resource capacity and repeated needs for training.

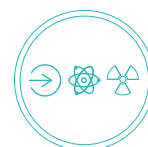
COVID-19 raised the bar for emergency preparedness and emergency response. Thailand will benefit from a thorough review of this experience from a financial perspective. Through the additional resources that were made available to address COVID-19, capacities in some technical areas, such as laboratories and human resources, are significantly enhanced; but maintaining this level of capacity may require additional resources after COVID-19. At the same time, there remain financing gaps in some IHR core capacity areas, and particularly a lack of resources and incentives to promote cross-sectoral collaboration.

Indicators and scores

P2.1. Financing for IHR implementation – Score 4

Strengths

- Implementation is facilitated by robust budgeting methods based on activity planning.
- Mechanisms are in place for budget transparency and accountability.
- Supplementary funds from development partners help to strengthen IHR capacities in several technical areas in addition to the regular annual budget.
- The long-term National Strategy and the medium-term National Economic and Social Development Plan provide a uniform framework for budgeting for all sectors.
- The Office of the Auditor General of Thailand conducts regular inspections of the performance and efficiency of activities to strengthen IHR core capacities and public health emergency preparedness.



Challenges

- The current system does not allow the labelling of budgets for IHR-related activities. Many departments in different ministries perform work that is relevant under the scope of the IHR, but budgets for this work may not be captured and monitored under existing frameworks.
- There is a lack of sufficient joint budgets for intersectoral communication, coordination and joint activities between relevant departments.
- Financing gaps exist for emerging areas that are essential to IHR functions, such as establishment of One Health laboratories, mental health, migrant health and digital health.
- The temporary economic downturn due to COVID-19 could have an impact on the financial resources available to public health. Maintaining strong political support for public health is critical.

P2.2. Financial resources for public health emergency response – Score 4

Strengths

- The Government Central Fund provides contingency financial resources for emergency response.
- Flexibility in budgets and budget management rules (e.g. procurement rules) is allowed during emergencies.
- The government can tap into external loans⁴ and issue government bonds to meet its resource needs.
- The establishment of the Centre for COVID-19 Situation Administration (CCSA) has facilitated budgeting for and procurement of essential medical goods for pandemic prevention and control.

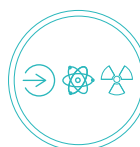
Challenges

- Although mechanisms are in place, the request processes from both the Central Fund and external loans have been more time-consuming than hoped, because of the detailed documentation requirements and approval processes.
- Resources from the Central Fund and external loans are less flexible and can be used only for planned activities. When activities need to be adjusted to the changing pandemic situation, requests to reallocate budgets to other activities also take weeks to be approved.
- Disbursements from the emergency fund have been delayed in a few cases, highlighting challenges in executing existing procedures in an emergency.

⁴ For example, ADB provided a US\$ 1.5 billion loan for the comprehensive response to COVID-19 in Thailand.

Recommendations for priority actions

- Document the experience of COVID-19 with an after-action review (AAR) focusing on the financial aspects of the emergency response and identifying possible areas for efficiency gain. The AAR report will provide a reference for future public health emergency response actions and should incorporate the following actions:
 - » the Budget Bureau and the Office of the Economic and Social Development Council to review the budgeting procedures for emergency response;
 - » the Comptroller General's Department to review financial flexibility in emergency response and develop guidelines for faster access to emergency funds;
 - » the Ministry of Public Health to review use of emergency funds and the cost-effectiveness of emergency interventions (e.g. lockdown and quarantine rules, community risk communication campaigns, etc.); and
 - » relevant departments (e.g. the Auditor General) to review financial integrity and accountability during emergency response.
- Ensure that IHR-relevant activities in all relevant sectors have separate, appropriately labelled budget lines, to enable better IHR coordination and monitoring.
- Update investment plans to incorporate emerging needs, including by:
 - » conducting multisectoral stakeholder consultations that determine the desired level of IHR capacities to be maintained post-COVID and result in a concrete multisectoral financing and action plan commensurate to those capacity levels;
 - » piloting a joint budget for cross-sectoral activities in One Health, zoonosis, climate change-induced public health events, migrant health, etc.; and
 - » filling financing gaps for identified IHR technical areas and emerging issues, including One Health laboratories; field epidemiology training; incentives for local staff (e.g. infection control nurses) and health volunteers; mental health care; health literacy; and digital health.



P3. IHR coordination, National IHR Focal Point functions and advocacy

Introduction

The effective implementation of the IHR requires multisectoral/multidisciplinary approaches through national partnerships for efficient alert and response systems. Coordination of nationwide resources, including the designation of a national IHR focal point (NFP), and adequate resources for IHR implementation and communication, is a key requisite for a functioning IHR mechanism at country level.

Target

Multisectoral/multidisciplinary approaches through national partnerships allow efficient alert and response systems for effective implementation of the IHR. To coordinate nationwide resources, including sustainable functioning of a National IHR Focal Point, a national centre for IHR communications – which is a key obligation of the IHR – is always accessible. States Parties provide WHO with contact details of National IHR Focal Points, continuously update and annually confirm them. There is timely and accurate reporting of notifiable diseases, including the reporting of any events of potential public health significance, according to WHO requirements and consistent relay of information to FAO and OIE. Planning and capacity development are undertaken and supported through advocacy measures to ensure high-level support for implementation of the IHR.

Level of capabilities

Since the implementation of the IHR (2005) through a Cabinet Resolution in June 2007, Thailand has continued to demonstrate developed capabilities in IHR Coordination and to fulfil its National IHR Focal Point (IHR NFP) functions. Thailand has developed a 20-year National Strategic Plan for Public Health (2017–2036) and a 20-year National Plan for Disease and Health Hazards Prevention and Control (2017–2036).

The designated IHR Focal Point in Thailand is the Department of Disease Control in the Ministry of Public Health. Overall governance, implementation and coordination of the IHR is through a National IHR Committee which includes representation from 18 ministries and is supported by eight subnational IHR committees and four additional permanent national committees.

Accessibility to the National Focal Point is assured 24 hours a day through five permanent officers, who are trained and supported with adequate resources to be able to connect operationally with WHO and with relevant Thai ministries using all hazards and One Health approaches.

National and regional collaboration has been enhanced through identifying the lessons and best practices of the COVID-19 pandemic.

Indicators and scores

P3.1. National IHR Focal Point functions – Score 4

Strengths

- The IHR coordination mechanism is embedded in legislation (a 2007 Cabinet resolution) that gives the MOPH the mandate to coordinate IHR implementation across sectors.
- The IHR NFP is a centre with sufficient resources and annual budgets, as well as access to relevant surveillance and response information and decision-making processes.
- The National IHR Committee has functioned well during actual public health events, including the COVID-19 and monkeypox outbreaks, and has reviewed, evaluated and updated its work based on the findings of several assessments, including intra-action reviews (IARs) and the Universal Health and Preparedness Review (UHPR).
- Thailand performs notification to WHO and other states well, and was the first country to report COVID-19 outside China.
- A national monkeypox situation report has been produced.
- Thailand engages with the IHR monitoring and evaluation (M&E) framework, including State Party Annual Reporting (SPAR), JEEs (Thailand is the first country in the world to perform its second JEE), simulation exercises, IARs, AARs and the development of a national action plan for health security (NAPHS).
- Thailand shows good intersectoral coordination at subnational and local levels.

Challenges

- There is a need to strengthen IHR capacity-building procedures for new staff performing key functions of the IHR NFP.
- Thailand would benefit from strengthening electronic information systems serving the IHR NFP.
- SOPs for the IHR NFP should be revised and updated.
- Key functions of the IHR NFP in event communications, public health emergency preparedness and response, and IHR M&E should be sustained.
- Sustaining a high level of IHR NFP competencies in public health intelligence has been challenging due to the length of time needed to build relevant expertise.

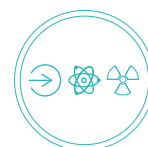
P3.2. Multisectoral coordination mechanisms – Score 5

Strengths

- Thailand takes a whole-of-government approach to IHR coordination, involving different ministries through national and subnational committees and relevant legislation.
- The IHR NFP has been regularly updating its multisectoral coordination procedures.
- Thailand has a robust framework for multisectoral, whole-of-government cooperation for public health emergencies and emerging diseases (such as the COVID-19 pandemic), based on the Communicable Diseases Act B.E. 2558.

Challenges

- Coordination mechanisms across each technical area need to be enhanced to address cross-cutting issues.
- Thailand needs to ensure and strengthen high-level support for multisectoral coordination obligations across all relevant government sectors, and increase engagement with the private sector.



P3.3. Strategic planning for IHR, preparedness or health security – Score 5

- The Communicable Diseases Act, B.E. 2558 (2015), gives the National Communicable Disease Committee the power and duty to approve an action plan for surveillance, prevention and control of communicable diseases or epidemics.
- The advocacy strategy for IHR is implemented in the National Plan for Disease and Health Hazards Prevention and Control over a period of 20 years (2017–2036).

Challenges

- There is a need to enhance the plans, measures and SOPs for coordinating responses to public health emergencies during mass gatherings.
- There is a need to enhance links and collaboration between the public health and security sectors for effective disease prevention and control.
- There is a need to sustain and advance IHR implementation for health security by further enhancing and testing existing mechanisms for IHR coordination, communication and advocacy.

Recommendations for priority actions

- Review and update governance and institutional structures as appropriate to enhance IHR coordination, IHR NFP functions and advocacy.
- Develop and implement strategic human resources approaches to strengthen and maintain business continuity for IHR technical capacity, key functions of the IHR NFP, and the capacity and capability of all sectors relevant to core IHR capacities.
- Continue to strengthen and maintain multisectoral coordination mechanisms through “evergreen” guidelines, procedures and SOPs.
- Update plans, measures and SOPs to enhance coordinated preparedness and response for public health emergencies related to mass gatherings.

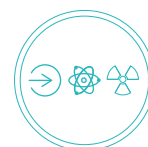
P4. Antimicrobial resistance (AMR)



Introduction

Bacteria and other microbes evolve in response to their environment and inevitably develop mechanisms to resist being killed by antimicrobial agents. For many decades, the problem was manageable as the growth of resistance was slow and the pharmaceutical industry continued to create new antibiotics.

Over the past decade, however, this problem has become a crisis. Antimicrobial resistance (AMR) is evolving at an alarming rate and is outpacing the development of new countermeasures capable of thwarting infections in humans. This situation threatens patient care, economic growth, public health, agriculture, economic security and national security.



Target

A functional system in place for the national response to combat AMR with a One Health approach, including:

- multisectoral work spanning human, animal, crops, food safety and environmental aspects (this comprises developing and implementing a national action plan to combat AMR, consistent with the Global Action Plan on AMR, or GAP-AMR);
- surveillance capacity for AMR and antimicrobial use at the national level, following and using internationally agreed systems such as the WHO Global Antimicrobial Resistance Surveillance System (GLASS) and the OIE global database on use of antimicrobial agents in animals;
- prevention of AMR in health-care facilities, food production and the community, through infection prevention and control measures;
- ensuring appropriate use of antimicrobials, including assuring quality of available medicines, conservation of existing treatments and access to appropriate antimicrobials when needed, while reducing inappropriate use.

Level of capabilities

The Thai multisectoral national strategic plan on AMR (NSP-AMR) has identified funding sources, is being implemented, and has a monitoring framework in place. The plan is updated and evaluated regularly and runs to the end of 2022. At the time of the JEE, Thailand was finalizing development of a second NSP-AMR to cover the period 2023–2027.

The human health sector has a standardized national AMR surveillance system called NARST (National Antimicrobial Resistance Surveillance Centre, Thailand), which has been designated as the National Reference Laboratory (NRL) for AMR. The system collects data on common pathogens in patients through an established network of surveillance sites.

National guidelines have been established for an integrated AMR surveillance network under the One Health approach. All human health facilities have access to multidrug-resistant organism (MDRO) phenotype confirmation and notify to the national level in a timely manner when priority MDROs are detected. Responses are tracked and confirmed for MDRO genotypes at subnational and national levels.

Guidelines and practices to enable appropriate use of antimicrobials are implemented in human health-care facilities nationwide. Functioning AMR stewardship programmes exist in all major health-care facilities (n = 126) through the establishment of Integrated AMR Management (IAM) in hospitals. IAM is a systems-based approach that requires organizational leadership with a strong governance mechanism in a hospital to ensure collaborative action for AMR surveillance, infection prevention and control (IPC) and antimicrobial stewardship.

Surveillance and monitoring of antibiotic consumption in human health is being done, based on the AWaRe classification of antibiotics.

The national regulatory framework for antimicrobial products and/or antimicrobial pesticides incorporates elements included in the related international standards on responsible and prudent use of antimicrobials (e.g. the WOAH *Terrestrial and Aquatic Codes* and the *Codex Alimentarius*) according to animal species, plant type/species and/or production sector.

Indicators and scores

P4.1. Effective multisectoral coordination on AMR and the national action plan – Score 5

Strengths

- Thailand shows high-level government commitment and governance to address AMR and promote policy advocacy.
- National governance mechanisms and multisectoral collaboration for implementation of the NSP-AMR are established under the One Health approach.
- Monitoring and evaluation systems are in place to monitor progress, challenges and outcomes of NSP-AMR implementation.
- The WHO Country Cooperation Strategy on AMR programme (CCS-AMR programme) was a technical arm for NSP-AMR implementation.
- AMR has been included in the WHO CCS for public health emergencies (CCS-PHE) programme 2022–2026, ensuring continued support for implementation of the NSP-AMR.

Challenges

- Thailand will continue working to maintain the importance of AMR in high-level policy agendas.
- Funding for AMR is available but has fluctuated year on year, especially after the CCS-AMR programme ended.

P4.2. AMR surveillance – Score 4

Strengths

- Thailand has established a national integrated AMR surveillance network under the One Health approach. The process was led by the MOPH, the Ministry of Agriculture and Cooperatives and the Ministry of Natural Resources and the Environment.
- Thailand has a WHO Collaborating Centre for AMR Surveillance and Training, a WHO Collaborating Centre for AMR Prevention and Containment and a FAO Reference Centre for AMR.
- Thailand has strengthened its network of microbiology laboratories in the human, animal (livestock and aquaculture), food and environmental sectors.
- Thailand has implemented AMR surveillance of extended spectrum β -lactamase *Escherichia coli* under WHO's Tricycle project to build national, integrated, multisectoral surveillance systems for AMR resistance using extended β -lactamase producing *E. coli* as a simple indicator in the human, food (animal) and environmental sectors.
- Thailand is implementing the WHO Global Antimicrobial Resistance Surveillance System (GLASS) in 20 hospitals as sentinel sites for each health region.
- A national epidemiological surveillance and response system for AMR resistance is in place that includes antimicrobial resistance case reports for five important emerging antimicrobial-resistant pathogens.
- A laboratory-based AMR surveillance system has been created as a prototype of a single-portal hospital AMR database.

- Thailand has worked to advance the national AMR surveillance centre system by illustrating national and local patterns and trends of AMR antibiograms across 12 health regions and among hospitals to allow for local comparisons.
- A national surveillance programme has been established for AMR in food-producing animals (such as broiler chickens and pigs).

Challenges

- AMR databases are fragmented within and across sectors.
- There is a need to create mutual understanding of surveillance data on AMR and antimicrobial residues across multiple sectors, to facilitate data-sharing and to create integrated surveillance of AMR under the One Health approach.

P4.3. Prevention of MDRO transmission in health-care facilities – Score 4

Strengths

- Thailand implemented its first National Master Plan on Healthcare-Associated Infection Prevention and Control from 2019 to 2021. The second national master plan (covering 2023 to 2027) is already available.
- The National Infection Control Committee enables the development of guidelines, provision of human resources, implementation of policy and monitoring of health care-associated infections (HCAI).
- Guidelines are in place to enable infection control nurses to perform surveillance and implement appropriate measures to reduce HCAI and control multidrug-resistant organisms.
- Thailand makes continuous efforts to improve IPC practices, policies and training.
- Collaboration between academia and the MOPH has resulted in the establishment of the National Infection Control Committee.
- The national AMR surveillance system, the National Infection Control Committee, universities and health-care agencies work together to raise AMR awareness among high-level administrators, MOPH staff, other academics and the public.
- Thailand delivers training programmes and academic conferences on IPC.

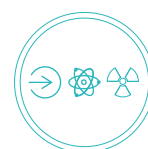
Challenges

- There is a need to enhance the quality of laboratory microbiology through regular improvements and quality assurance.
- There is a need for national IPC data centres to support hospitals in submitting HCAI and MDRO surveillance data for benchmarking, and in implementing up-to-date policies (see Section R4 on Infection Prevention and Control).
- There are budget shortages both for IPC activities in hospitals and for research in the field.
- Infection control nurses face uncertain career paths and there are few incentives for other professionals in the field.

P4.4 Optimal use of antimicrobial medicines in human health – Score 4

Strengths

- Thailand has achieved success in reducing antimicrobial consumption (especially of antibacterial agents, which was reduced by 24% at the national level, achieving the national goal).
- Thailand has achieved success in maintaining a decreasing trend of unnecessary antibiotic use in ambulatory care/outpatient department settings and primary care units (i.e. for urinary tract infections, acute diarrhoea and simple wounds), with measurable outcomes.
- Thailand has initiated and implemented a systems-based approach (i.e. the use of IAM) to address the complexity of AMR in acute care/inpatient department settings.



- Thailand has exercised and strengthened regulations to address AMR (e.g. through the withdrawal of inappropriate antibiotics and reclassification of antibiotics as prescription drugs).
- Thailand Surveillance of Antimicrobial Consumption (Thailand-SAC) has been developed as the first national system for monitoring antibiotic consumption in both human and animal sectors.

Challenges

- Implementation of the IAM framework in hospitals was delayed by the COVID-19 pandemic.
- The complexity of national data and the fragmentation of databases creates difficulties for the analysis of AMR and antimicrobial use in hospitals.
- More human resources are required to address AMR problems in hospitals.
- The reclassification of antibiotics as prescription drugs affects a wide range of stakeholders and therefore meets social resistance.

P4.5. Optimal use of antimicrobial medicines in animal health and agriculture – Score 4

Strengths

In the livestock sector:

- Thailand prohibited the use of antimicrobials as a growth promoter in poultry in 2006, and overall in 2015.
- Regulation of medicated feed has been strengthened under the Animal Feed Quality Control Act 2015, requiring veterinarians to oversee the production of medicated feed.
- Meat-processing systems have been improved under the Control of Animal Slaughter and Distribution of Meat Act 2016.
- Several antimicrobial stewardship projects for agriculture and animals have been established – e.g. partnering with farms and retailers on initiatives such as Raised Without Antibiotics in swine farms to provide choices among meat products available to consumers.
- The 2021 goals have been met, including a 30% reduction in antimicrobial use in animals.
- Thailand is a big production base for meat products, especially chicken, and domestic food industries work hard to comply with international standards and guidelines such as those of the FAO, WOAHA and the Codex Alimentarius Commission, as well as the policies of potential partners such as the European Union. This compliance creates an opportunity for improving the safety of meat production both for export and for domestic consumption.
- Multisectoral coordination frameworks have been expanded to engage the environment, aquaculture, and plant health sectors. Veterinarians are now posted at the Thai Food and Drug Administration (FDA) and the Department of Fisheries.
- Law enforcement has been strengthened to increase effective management of antimicrobial medicine in animal health under the Drug Act B.E. 2510 and the Animal Feed Quality Control Act B.E. 2558.
- A digital system has been established to monitor antimicrobial consumption through medicated feed at feed mills and has been in operation since 2019. Monitoring of antimicrobial consumption through medicated feed at farm mixers has been done since 2020, with digital tools in development for this purpose at the time of the JEE. The use of antimicrobials in production animals is reported annually to WOAHA.
- The Veterinary Council and animal associations have launched good practice guidelines for veterinary medicinal products for companion and livestock animals.
- Thailand has invested in research to find innovations and alternatives to replace or minimize the use of antibiotics in agriculture, such as herbs and pre-/probiotics to improve animal health.
- A residue monitoring programme is in operation for livestock products and in farms to ensure food safety.

- The Thai FDA and the Department of Livestock Development (DLD) conduct post-marketing surveillance of veterinary medicinal products to assure product quality .

In the aquaculture sector:

- Education and training are provided on the appropriate use of aquaculture drugs and chemicals, including antibiotics.
- A series of training courses have been held for aquaculture farmers and regional staff of the Department of Fisheries to strengthen capacity on AMR containment and relevant regulations.
- Thailand is conducting investigations into the amount of antibiotics used in aquaculture.

In the companion animal sector:

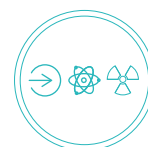
- A guideline for antimicrobial use for companion animals is being developed by Thailand's Veterinary Dean Network, the Veterinary Council and the University Network for the One Health Approach.
- Thailand is conducting investigations into the types and amounts of antibiotics used in companion animals.

In crop production:

- A situation analysis and studies are being conducted on the effectiveness and impact of antimicrobial use against citrus-greening disease. Investigation is ongoing into antimicrobial residues in citrus fruits.
- Implementation of the Good Agriculture Practice is being promoted in plantations to reduce inappropriate use of antimicrobials in food crops.

Challenges

- Initial and continuous education on AMR is required for professionals across the different sectors.
- Policy and organizational leadership are needed to encourage agencies to expand their roles to address AMR. Awareness of AMR is relatively new in the non-human sector, and especially in the aquaculture, crop production and environmental sectors.
- More communication and public relations are needed about the prudent use of antimicrobial medicines in the agricultural sector, mainly because some citrus farmers are facing difficulties with citrus-greening disease and have decided to use antibiotics to resolve their problems.



Recommendations for priority actions

- Maintain continuous, high-level, multisectoral government commitment and leadership at national, regional and provincial levels, to ensure concerted actions including adequate and sustainable allocation of resources to the implementation of the NSP-AMR 2023–2027.
- Revise the relevant One Health M&E platforms (or develop new ones where needed) to generate essential evidence to guide strategic decisions and support effective implementation of the NSP-AMR 2023–2027.
- Standardize AMR/HAI essential datasets and data collection frameworks within and across hospitals and laboratories and ensure they are interconnected through a national health information system.
- Strengthen leadership and expand integrated AMR management in hospitals, including by training personnel and ensuring the availability of sufficient (human) resources for IPC, hospital epidemiology, laboratory diagnostics, AMR and HAI surveillance and antimicrobial stewardship.
- Enhance public awareness of the threat of AMR and appropriate use of antimicrobials across all sectors through collaboration with a wider range of stakeholders, including the education system, the media, health volunteers, civil society organizations and the private sector (including food producers).

P5. Zoonotic disease

Introduction

Zoonotic diseases are communicable diseases that can spread between animals and humans. These diseases are caused by viruses, bacteria, parasites and fungi carried by animals, insects or inanimate vectors that aid in its transmission. Approximately 75% of recently emerging infectious diseases affecting humans are of animal origin; and approximately 60% of all human pathogens are zoonotic.

Target

Functional multisectoral, multidisciplinary mechanisms, policies, systems and practices are in place to minimize the transmission of zoonotic diseases from animals to human populations.

Level of capabilities

Thailand has a long history of implementing the One Health approach. Mechanisms exist to facilitate multisectoral coordination and several One Health activities are regularly conducted, including regarding zoonotic diseases. The lessons of past outbreaks (e.g. avian influenza, severe acute respiratory syndrome [SARS] and others) are applied progressively to strengthen the entire system. Thailand has several national plans and legislative instruments for control of zoonotic or emerging infectious diseases (EIDs), and all necessary mechanisms are in place for multisectoral collaboration in that regard.

A Memorandum of Understanding (MOU) for One Health-related work, signed by seven ministries and the Thai Red Cross Society, provides the basis for multisectoral collaboration for the management of zoonotic diseases. A One Health Steering Committee holds regular formal meetings and exchanges information as needed. At technical level, the MOPH Department of Disease Control (hereafter DDC) has established Coordinating Units for One Health (CUOH) (one at national level and more at regional level), and it is planned to establish a similar unit in the MOAC Department of Livestock Development (DLD), following the roadmap developed during the IHR/PVS National Bridging Workshop. The Department of National Parks, Wildlife and Plant Conservation in the Ministry of Natural Resources and Environment (hereafter the DNP) plans to establish its own unit soon. This is expected to help coordination and exchange of information at the technical level, which is currently challenging.

In May 2022 Thailand conducted a National One Health zoonotic disease prioritization workshop involving the human health, animal health, environment and academic sectors, which identified the following top five zoonotic diseases for multisectoral One Health collaborations: zoonotic avian influenza, coronavirus diseases (Covid-19, SARS, MERS, etc.), Nipah virus, rabies and Ebola. Thailand now plans to conduct a similar exercise at subnational level.

In March 2021 Thailand conducted a Tripartite Joint Risk Assessment (JRA) on avian influenza. Further diseases will be covered in the future. More generally, Thailand has a national mechanism to conduct JRAs for zoonotic diseases implemented under National Communicable Disease Committee.

Thailand conducted a PVS evaluation mission in 2012 and a PVS gap analysis mission in 2014. A PVS laboratory mission is in the pipeline for 2023. A PVS self-evaluation is also being considered – and indeed the JEE has recommended that this be done, either as a PVS self-evaluation as planned or as a PVS follow-up (possibly completed by specific content on rabies or African swine fever).

In July 2022 Thailand became the first country ever to conduct its second IHR/PVS National Bridging Workshop.

All this good work depends on continued access to sufficient budgets for the DLD and the DNP to conduct surveillance and response activities.

Indicators and scores

P5.1. Surveillance of zoonotic diseases – 4

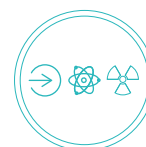
Multisectoral surveillance systems for priority emerging and endemic zoonotic diseases are in place at national level in Thailand, and formal coordination mechanisms between the animal health, public health and environment sectors are established at intermediate levels, allowing for surveillance of the whole territory. For rabies, coordinated surveillance of priority and emerging zoonotic diseases between the animal health, public health and environmental sectors is regularly tested, assessed, reviewed and improved, which would correspond to a score of 5; however, this stage has not yet been reached for other diseases in the three sectors. Recent efforts in this regard have been noted and the priority actions in this report below should help Thailand reach a score of 5 in the future.

Strengths

- Several related organizations have established committees working for multisectoral coordination (e.g. the One Health Steering Committee, the National Communicable Disease Committee and the Committee of Emerging Infectious Diseases).
- The DLD oversees animal disease surveillance, with different disease-specific systems in place.
- Human cases of zoonotic diseases are monitored by two national surveillance systems.
- Synergies have been developed among One Health event-based surveillance systems.
- Information is formally shared during One Health Steering Committee meetings.
- Public health laboratories and animal health laboratories have processes for sharing samples – although in practice this is limited to environmental samples. To manage human samples, animal health laboratories would have to be appropriately accredited.
- Designated situation awareness teams receive, verify and validate any public health threats daily, including threats of zoonoses. SOPs are in place for notifying relevant sectors in cases of zoonotic events.
- The network of health and livestock village volunteers is a strong asset for reaching communities.
- In the past two years Thailand has conducted a National One Health zoonotic disease prioritization workshop, a JRA and a second IHR/PVS National Bridging Workshop.

Challenges

- Thailand would benefit from strengthening intersectoral collaboration, including systematic and real-time information-sharing between sectors at all levels – including between different elements of the health and non-health sectors.
- Capacity-building is needed on specific topics, including a surveillance system for new pathogens, disease management under the One Health approach, collection of samples in wildlife, wildlife reporting, and databases.
- Linkages between human and animal health sectors can be challenging, especially for vector-borne diseases.
- Capacity and availability of zoonotic disease surveillance resources is limited in the animal and wildlife sectors.



- While multisectoral and integrated surveillance is in place for rabies and avian influenza, the roadmap of the 2022 National Bridging Workshop includes the development of “an integrated and harmonized surveillance framework/protocol for zoonotic diseases of pandemic potential (e.g. coronaviruses) at the human-animal-environment interface, taking the One Health approach”.

P5.2. Responding to zoonotic diseases – Score 4

Strengths

- Mechanisms are in place to activate interagency response teams and establish a joint investigation team in the event of a suspected zoonotic outbreak. In the two years preceding the JEE joint investigation teams were deployed to investigate outbreaks of rabies and COVID (in the early stage of the pandemic).
- Thailand has preparedness plans for handling zoonotic, emerging and re-emerging diseases (including the National Emerging Infectious Disease Plan 2016–2021, which was being updated for the next five years at the time of the JEE). The DDC has also been tasked with developing these plans progressively at provincial level, focusing on novel influenza viruses.
- Thailand has conducted recent full-scale simulation exercises for COVID-19 in many provinces, including IARs and AARs at national level and in Phuket. More generally, Thailand holds an annual table-top exercise on avian influenza at district and provincial levels, which includes participation from the animal health and human health sectors. A provincial rabies drill exercise was organized in 2022.
- Thailand has set a target for rabies elimination.

Challenges

- Disease response could be more effective and quicker if intersectoral information-sharing was strengthened and made more systematic. Each sector has its own siloed data that could be integrated with that of other sectors.
- In the absence of a data collection platform, private animal clinics report animal diseases to the DLD only once a year. The development of such a platform would improve the timeliness and comprehensiveness of disease reporting.
- The livestock/health volunteer mechanism is an asset but should be further strengthened.
- Joint outbreak investigation between relevant sectors in response to zoonoses and EIDs should be supported and encouraged. This should not only be limited to zoonotic diseases but should also include natural disasters (e.g. floods).
- The turnover rate of staff responsible for coordination is challenging and has considerable impact.
- Focal points for improved coordination should be nominated in each sector.
- The absence of a joint budget represents a challenge to conducting joint activities. Access to sufficient resources (including financial, infrastructure, equipment and manpower resources) during emergencies can be challenging. Considering the fact that tackling zoonotic diseases at their source (animals) is often a critical success factors in controlling zoonoses, the animal and wildlife sectors should also have rapid access to an emergency fund and resources that would allow the immediate implementation of control measures.

P5.3. Sanitary animal production practices – Score 5

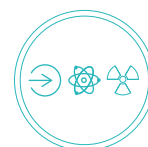
Strengths

- FAO Good Agricultural Practices (GAP) for major food-producing animals are monitored and evaluated for agricultural production along the value chains in accordance with national standards.
- Regulations and standards are developed and implemented in collaboration with relevant stakeholders including food business operators, academic institutes, nongovernmental organizations and relevant competent agencies in the food chain.

- Thailand follows sanitary and phytosanitary (SPS) measures to prevent import and export of zoonotic animal diseases through trade in animals and livestock products. Some DLD procedures have even been circulated among World Trade Organization members.
- Thailand has legislation and human resources (in the DLD) to ensure animal welfare.
- Regulations are in place regarding marketing and markets of live animals and associated measures to reduce the risk of exposure to zoonotic pathogens.
- Wild boars are farmed in Thailand. The DLD is in charge of ensuring their health, good farming management and traceability.
- The Rapid Alert System for Food and Feed (RASFF) is used for food-producing animals in farm production management (both terrestrial and aquatic animals).

Challenges

- Systemic collaboration between relevant sectors and designated authorities could be strengthened.
- There is a need to build relevant officers' capacities to conduct investigations, to increase their understanding of sanitary animal production in the supply chain and to improve traceability (including for emerging hazards).
- The development of an efficient national sanitary animal production monitoring plan is needed to identify and respond to gaps.
- The risk of zoonotic spill-over from animals to farmers and/or rangers should be considered more seriously as an occupational health risk.
- There is evidence of an illegal wildlife trade for pets or food in Thailand. The value chain for wild and exotic animals should be regularly analysed to manage the risk of introducing exotic pathogens via legal or illegal introduction of wild or exotic animals, and to prevent spill-over to animals or humans in Thailand.



Recommendations for priority actions

- Review and revise the One Health governance system at central and subnational levels by:
 - » strengthening and formalizing multisectoral coordination at national level by establishing One Health Coordination Units in DDC, DLD and DNP (with appropriate human and financial resources in each sector) and facilitating routine coordination of One Health activities within and between sectors;
 - » expanding the composition of the One Health Steering Committee to include other relevant sectors and specifying the roles and responsibilities of the Steering Committee and One Health Coordination Units;
 - » creating subnational One Health units; and
 - » strengthening the provincial Natural Resources and Environmental Offices so they can act as provincial wildlife focal points for One Health.
- Coordinate and sustain community-level One Health training and communication to increase community engagement for disease surveillance, control and prevention, and expand the existing responsibilities of public health and livestock volunteers to make them community One Health volunteers.
- Strengthen surveillance in wildlife by building sustainable capacity for early detection, sample collection and reporting, improving laboratory diagnosis, and developing a web-based system to collect, store and share surveillance data.
- Operationalize the sharing of expertise and human resources between sectors in times of need (e.g. for laboratory work, epidemiology, risk assessment etc.).

P6. Food safety

Introduction

Foodborne and waterborne diarrhoeal diseases are leading causes of illness and death, particularly in less developed countries. The rapid globalization of food production and trade has increased the potential likelihood of international incidents involving contaminated food. The identification of the source of an outbreak and its containment is critical for control. Risk management capacity with regard to control throughout the food chain continuum must be developed. If, based on a risk assessment, epidemiological analysis identifies food as the source of an event, suitable risk management options that ensure the prevention of human cases (or further cases) need to be put in place.

Target

A functional system is in place for the surveillance and response capacity of States Parties for foodborne disease and food contamination risks or events, with effective communication and collaboration among the sectors responsible for food safety.

Level of capabilities

Thailand places a high priority on food safety and consumer protection, not only for public health protection but also to safeguard the national reputation as a major food producer and a leading holiday destination for overseas visitors.

In addition, as an exporter of various food products to global markets, Thailand complies with the high food safety standards that importing countries require.

Responsibility for food safety in Thailand is shared between two main authorities: the Ministry of Agriculture and Cooperatives and the MOPH. The former oversees food safety at farms producing for domestic and export markets, and controls the import of plants, animals, meat, tuna, shrimp, animal feed, agrochemicals and agro-hazardous substances. The latter is responsible for the safety and quality of home-grown and imported food for sale in Thailand; for labelling, advertising and packaging; and for inspection and monitoring at borders and in the domestic market.

Indicators and scores

P6.1. Surveillance of foodborne diseases and contamination – Score 4

Strengths

- Thailand has certified laboratory capacity, including a mobile food surveillance system, that can be deployed to locations as needed to investigate hazards in foods.
- New legislation on import and export control promises greater oversight of the safety of exported food and food for domestic consumption.
- Thailand has published guidelines for surveillance and rapid response to food safety events and for risk analysis, based on *Codex Alimentarius* guidelines.

Challenges

- Greater focus and prioritization of risk-based inspection and surveillance, as opposed to reliance on detecting hazards in products, might allow the identification of practices that could put products at risk. This would permit earlier, more effective implementation of disease prevention strategies.

- Increasing the integration of surveillance activities and analysis across sectors (e.g. for fruit and vegetables, fisheries, livestock and poultry) and disciplines (e.g. agrifood systems, human health disease reporting and environmental monitoring) could improve intersectoral understanding of food safety threats and how to control them.
- Enhancing One Health coordination and information exchange between diverse stakeholders, including those within, between and outside the relevant ministries and private-sector partners, builds on the strengths of individual actors involved in maintaining a safe food supply and could lead to more rapid and innovative solutions to ongoing and emerging food safety challenges.

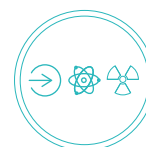
P6.2. Response and management of food safety emergencies – Score 4

Strengths

- Clear guidelines are available on rapid multidisciplinary emergency response to food safety events, and training has been provided.
- Thailand is an active participant in the INFOSAN network and *Codex Alimentarius*.
- The national rapid alert system and food traceability network will provide valuable data to improve identification of risk factors and rapid response to risks.
- Reportable diseases are clearly defined.

Challenges

- Regular simulation and table-top exercises and response reviews would familiarize all stakeholders with emergency response protocols and identify potential strengths, limitations and areas of improvement in the current plan.
- Having strategies and guidance resources available to address communication with stakeholders, partners and international organizations would permit smoother information flow in times of crisis.



Recommendations for priority actions

- Increase the use of risk analysis principles, as outlined by the *Codex Alimentarius* texts, to assess, manage and communicate food safety risk across the entire food value chain, from production to consumption.
- In collaboration and coordination with other food chain sampling programmes (e.g. for AMR and zoonoses), develop a routine surveillance system for prioritized pathogens and food contaminants in order to develop risk assessment models and improve understanding of mitigation possibilities.
- Formalize pathways for exchanging information with key stakeholders, including public and private partners, the public, and international organizations, to improve risk communication and emergency response.
- Update the emergency response plan regularly with new risk analysis information. Test it with table-top and simulation exercises, and perform AARs following any food safety emergency.

P7. Biosafety and biosecurity

Introduction

It is vital to work with pathogens in the laboratory to ensure that the global community possesses a robust set of tools – such as drugs, diagnostics and vaccines – to counter the ever-evolving threat of infectious diseases.

Research with infectious agents is critical for the development and availability of public health and medical tools that are needed to detect, diagnose, recognize and respond to outbreaks of infectious diseases of both natural and deliberate origin. At the same time, the expansion of infrastructure and resources dedicated to work with infectious agents has raised concerns regarding the need to ensure proper biosafety and biosecurity to protect researchers and the community. Biosecurity is important in order to secure infectious agents against those who would deliberately misuse them to harm people, animals, plants or the environment.

Target

A whole-of-government multisectoral national biosafety and biosecurity system with high-consequence biological agents is identified, held, secured and monitored in a minimal number of facilities according to best practices. Biological risk management training and educational outreach are conducted to promote a shared culture of responsibility, reduce dual-use risks, mitigate biological proliferation and deliberate use threats, and ensure safe transfer of biological agents. Country-specific biosafety and biosecurity legislation, laboratory licensing and pathogen control measures are in place, as appropriate.

Level of capabilities

Thailand has prioritized the implementation of biosafety and biosecurity for all medical and public health laboratories, animal health laboratories and environmental laboratory networks, and has developed several legal acts in support of this effort. Thailand also contributes significantly to the implementation of regional biosafety and biosecurity.

The Pathogen and Animal Toxin Act, B.E. 2558 (2015) covers control of pathogens and animal toxins and establishment of a Pathogens and Animal Toxins Committee; the production, import, export, sale, transit and/or possession of pathogens and animal toxins; interventions in unsafe and dangerous situations, emergencies or situations of necessity; termination of production, import, export, sale, transit or possession of pathogens and animal toxins; suspension and revocation of certificates of notification and licence; designation of competent officials; appeals; civil liabilities and penalty provisions. Under the communicable disease control policy, a series of auxiliary acts are reviewed every five years, or on request from the MOPH.

The Bureau of Laboratory Quality Standards (BLQS) in the MOPH Department of Medical Science (DMSc) is designated to monitor and update records and inventories of pathogens and toxins. As per the Pathogen and Animal Toxins Act Online (PAT ACT online) the BLQS maintains an online registration system, in English and Thai, for entities and facilities working with certain pathogens and toxins in Thailand.

The Biosafety & Biosecurity Network of Thailand (BSNT) is a non-profit organization established and active since 2009 under the auspices of the Virology Association of Thailand and in partnership with the Asia Pacific Biosafety Association (APBA).

Thai biosafety professionals have been recognized nationally, regionally and globally and have provided support to biosafety and biosecurity programme in different countries.

Thailand has a system to develop and maintain knowledge and skill to sustain biosafety and biosecurity capability. A Thai version of a Biorisk Management (BRM) toolkit – modified from the WHO BRM-ATP training course and CWA 15793 – was developed in 2014 by the DMSc to train laboratory personnel in hospitals and institutes throughout the country. Thailand also has a biosafety and biosecurity certified training course conducted by DMSc-certified agencies (at the time of the JEE 19, DMSc-certified agencies provided biosafety and biosecurity training courses and 10 agencies provided BSL-3 practice courses). Under the Pathogens and Animal Toxins Act, all relevant operators and operational personnel must receive certified biosafety and biosecurity training courses within 180 days of receiving their certificate of notification or their licence and must be retrained at least once every three years.

Indicators and scores

P7.1. Whole-of-government biosafety and biosecurity system in place for all sectors (including human, animal and agriculture facilities) – Score 4

Strengths

- The Pathogen and Animal Toxin Act (first published in 1982 and updated in 2015) and other relevant legislation have been implemented in human and animal health laboratories throughout the country.
- The DMSc has been designated as responsible for biosafety and biosecurity.
- The inventory of the country's pathogen repository is monitored and the PAT ACT online programme provides an online registration system, in English and Thai, for entities and facilities working with certain pathogens and toxins in Thailand.
- Public health laboratories compile monthly reports and submit them to the DMSc once a year, and are required to renew their licences for handling certain pathogens and toxins every year.
- Links are in place between the DMSc and the Department of Customs to minimize biorisk in imports and exports.
- Imports and exports are regulated through an electronic permit system.

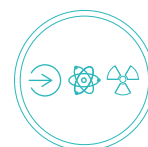
Challenges

- Relevant auxiliary acts were amended very quickly during the COVID-19 pandemic, without sufficient advocacy. More advocacy on the changes would enable better enforcement.
- Stronger implementation – including communication, collaboration and coordination – is needed for the amended acts.
- Thailand would benefit from harmonizing the National Biosafety and Biosecurity Curriculum.

P7.2. Biosafety and biosecurity training and practices in all relevant sectors (including human, animal and agriculture) – Score 4

Strengths

- Training courses for biosafety and biosecurity are in place and those courses must be provided by DMSc- certified agencies.
- Thailand has a training curriculum and an accessible online training platform for biosafety and biosecurity.
- Relevant operators and operational personnel must receive biosafety and biosecurity training courses from DMSc-certified agencies or organizations within 180 days of receiving their certificate of notification or their licence, and must be retrained at least every three years.



- A Thai language biorisk management (BRM) toolkit was made available in 2014.
- Routine training in biorisk management is available throughout the country.

Challenges

- Biorisk management training should be extended to private laboratories and the animal health sector.
- Thailand would benefit from a sensitization programme to increase awareness and use of the *Laboratory biosafety manual* (4th edition) throughout the country.

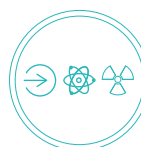
Recommendations for priority actions

- Develop a unified national biosafety and biosecurity manual.
- Review and update the law to provide biosafety and biosecurity policy oversight, and implement guidelines for Biosafety Level 3 (BSL-3) certification and maintenance across all sectors.
- Set up an information system supporting specimen referrals and couriers for infectious substances.
- Establish national guidelines and a curriculum on specimen referral, and implement a training-of-trainers programme for the guidelines.

P8. Immunization

Introduction

Immunizations are estimated to prevent more than 2 million deaths a year globally. Immunization is one of the most successful global health interventions and cost-effective ways to save lives and prevent disease. Measles immunization is emphasized because it is widely recognized as a proxy indicator for overall immunization against vaccine-preventable diseases. Countries will also identify and target immunization to populations at risk of other epidemic-prone vaccine-preventable diseases of national importance (e.g. cholera, Japanese encephalitis, meningococcal disease, typhoid, yellow fever). Diseases that are transferable from cattle to humans, such as anthrax and rabies, are also included.



Target

A national vaccine delivery system – with nationwide reach, effective distribution, easy access for marginalized populations, adequate cold chain and ongoing quality control – is able to respond to new disease threats.

Level of capabilities

The Thailand National Immunization Programme was launched in 1977. The national Advisory Committee on Immunization Practices (ACIP) works closely with the MOPH to provide recommendations on vaccine protocols, and the routine national immunization schedule under Thailand's Universal Health Coverage scheme comprises 11 vaccines covering 13 antigens. This includes the human papillomavirus (HPV) vaccine, which was added in 2017 following Thailand's first JEE.

Overall, the strengths of the immunization programme identified in the first JEE have been maintained; but the COVID-19 pandemic has had a significant impact on routine immunization services, for several reasons. These include the effects of diverting human resources to prioritize COVID-19 vaccination, restriction measures, and increases in parental concerns around vaccination. This has led to declines in vaccine coverage and increases in the immunity gap among target populations (e.g. measles, mumps and rubella/MMR coverage for children aged 12 months has decreased to below 90%). It will be a priority for the MOPH to increase vaccine coverage in the post COVID-19 pandemic phase, with an initial focus on oral polio vaccine (OPV) and MMR.

The pandemic has had more positive effects, including advancement of Thailand's efforts to become a vaccine self-reliant country (e.g. distribution of over 120 million doses of COVID-19 vaccines), with significant capacity building having taken place on national vaccine research and development (including for mRNA and DNA vaccines).

Indicators and scores

P8.1. Vaccine coverage (measles) as part of national programme – Score 3

Strengths

- The Thailand National Immunization Programme is aligned with the WHO Global Vaccine Action Plan.
- Target rates for coverage for all vaccines are above 90%. MMR vaccine coverage among students is above 95%.

- The transition of MMR2 from 2 years 6 months to 1 year 6 months has been in place since January 2021.
- The MOPH has developed a strengthening plan to maintain and accelerate vaccine coverage rates after the COVID-19 pandemic (entitled the *Strengthening plan for national immunization program (NIP) in preparation for COVID-19 endemic phase*).
- The MOPH has issued a directive to all provinces to accelerate vaccine coverage, especially for those who have missed vaccinations.
- The Department of Disease Control has conducted field visits to accelerate immunization follow-up and to share best practices.

Challenges

- In 2021, the COVID-19 pandemic and vaccination campaign negatively affected routine immunization services. MMR1 coverage was 86.7% and MMR2 coverage was 85.1%. In response, immunization officers were assigned to COVID-19 vaccination missions as a top priority.
- Strengthening routine immunization in the post-pandemic phase should now be a top priority. Providing vaccinations to target populations who were lost to follow-up during the pandemic should be a focus.
- One long-standing challenge includes vaccine hesitancy among people in the deep south provinces. Factors contributing to hesitancy include attitudes, beliefs, local cultures and socioeconomic status.
- Implementation of communication strategies to raise awareness of vaccination should be a priority, especially among hesitant groups and vulnerable populations who are not currently being reached.

P8.2. National vaccine access and delivery – Score 5

Strengths

- Thailand has health facilities across the country that can provide vaccination at all sub-administration levels.
- The government procures routine vaccines for the entire target population, and vaccination services can be accessed free of charge.
- Cold-chain storage is in place in all public and private hospitals across the country.
- A vendor-managed inventory (VMI) system has been implemented to manage central and local vaccine stockpiles.
- A vaccine logistics system with cold chain transportation supports vaccine distribution to all provinces.

Challenges

- There has been a high turnover of immunization staff, and training for new incoming staff across the country should be considered. A rapid needs assessment on the factors contributing to high turnover may help to inform and improve policies and practices having an impact on this workforce.
- Maintaining the cold-chain system infrastructure with experienced staff should be a priority.

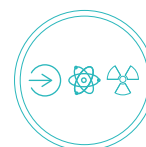
P8.3. Mass vaccination for epidemics of VPDs – Score 5

Strengths

- OPV campaigns have been conducted annually in low coverage areas, including in four deep south provinces and four provinces along the Thai-Myanmar border.
- An MR/MMR catch-up campaign was conducted in 2019 to provide vaccines to children aged 1–12 years with incomplete MMR histories.
- An MR campaign for adult risk groups has been conducted since 2020. Target populations include military conscripts, prisoners, health-care workers, students, migrants etc.
- Although the COVID-19 pandemic and enforcement of restriction measures were in place during 2020–2022, OPV and MR campaigns were still conducted during the pandemic.
- Mass vaccination for COVID-19 has been implemented since 28 February 2021 in the largest vaccination campaign in history.

Challenges

- Strengthening OPV and MR campaigns should be a top priority in the post-pandemic phase.
- Integration and collaboration among all health and non-health agencies, including those in the private sector, will be an important mechanism to drive immunization campaigns.
- Appropriate strategies – including risk communication, community engagement and social mobilization – should be promoted to increase uptake of vaccines among hard-to-reach and hesitant groups.
- Intensive searches to identify the zero-dose population should be undertaken with the goal of encouraging them, and their caregivers, to get vaccinated.



Recommendations for priority actions

- Accelerate immunization coverage to offset the decline in vaccination rates due to the COVID-19 pandemic, including by:
 - » monitoring and following up immunization in all provinces;
 - » conducting OPV and MR campaigns;
 - » microplanning to support supplemental immunization activities (SIA); and
 - » expanding the identification and documentation of nonvaccinated and undervaccinated populations, particularly among vulnerable, hard-to-reach and hesitant groups.
- Implement a multisectoral strategy among health and non-health partners, including in the private sector, to identify and address hesitancy and other access and demand issues in the deep-south provinces. Consider local, people-centred approaches to identify barriers and develop and tailor innovative solutions.
- Improve immunization data and data systems, including by:
 - » digitalizing the individual vaccination record system;
 - » improving denominator data among migrants and in border areas; and
 - » integrating behavioural and social drivers of vaccination (BeSD) tools into national surveys and subnational assessments to improve understanding of access and demand issues.
- Strengthen and maintain immunization capacity, including by:
 - » maintaining MR stockpiles for outbreaks;
 - » ensuring there are sufficient expert immunization staff at all levels and providing training to fill any gaps; and
 - » conducting rapid assessments to understand contributors to high staff turnover.

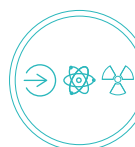
Detect



D1. National laboratory system

Introduction

Public health laboratories provide essential services that include disease and outbreak detection, emergency response, environmental monitoring and disease surveillance. State and local public health laboratories can serve as a focal point for a national system through their core functions for human, veterinary and food safety including: disease prevention, control and surveillance; integrated data management; reference and specialized testing; laboratory oversight; emergency response; public health research; training and education; and partnerships and communication.



Target

Surveillance with a national laboratory system, including all relevant sectors, particularly human and animal health, and effective modern point-of-care and laboratory-based diagnostics.

Level of capabilities

Thailand has established an extensive human and animal health laboratory system with geographical coverage across all provinces. The DMSc, which houses the national reference laboratory within the National Institute of Health, is responsible for coordinating a four-tiered laboratory network of diagnostic laboratories, public health laboratories, public health reference laboratories and national laboratories. The referral network is contained within a referral hospital cascade with a seamless health services network of 901 MOPH hospitals, 120 non-MOPH hospitals, 411 private hospitals, 822 medical technologist clinics and 17 university hospitals. Thailand has 14 regional Medical Sciences Centres, subnational laboratories located across the country with the capacity to perform diagnostic tests covering a range of emerging and re-emerging diseases, and a sample referral mechanism (to NIH) for confirmatory testing.

Thailand has nine veterinary diagnostic laboratories under the DLD, including the National Institute of Animal Health (NIAH) in Bangkok and eight Regional Research and Development Centres (RVRDC). In addition, the Regional Reference Laboratory for Foot and Mouth Disease in Southeast Asia and the Veterinary Biologics Assay and Research Centre (VBAC) are also in the NIAH network.

There are 19 diagnostic laboratories in Thailand under the Department of Fisheries in the Ministry of Agriculture and Cooperatives (MOAC), including 14 laboratories in the Coastal Aquaculture Research and Development Centre (under the Coastal Aquaculture Research and Development Division); two laboratories in the Marine Fisheries research and Development Centre (under the Marine Fisheries Research and Development Division); two laboratories for aquatic animal health research; and one laboratory under the Aquatic Animal Genetics Research and Development Division.

The human and animal health laboratory system is also part of a strong international network. Several national reference laboratories are also WHO regional reference laboratories (for polio, influenza, measles and rubella) and/or WHO Collaborating Centres (for AMR surveillance and training and strengthening quality systems in health laboratories). Thailand also has WOAHA regional reference laboratories for foot and mouth disease and brucellosis.

Several national acts and policies govern the human and animal health laboratory sectors, including the Pathogens and Animal Toxins Act, the Sanatorium Act, the National Health Security Act and the Communicable Diseases Act. A National Policy on Health Laboratories guides the overall strengthening of laboratory and diagnostic systems in Thailand.

Overall, the capacities identified in the previous JEE have been maintained and in some instances improved by implementing the lessons of the COVID-19 pandemic response.

Indicators and scores

D1.1. Specimen referral and transport system – Score 4

Strengths

- In most parts of the country, Thailand has the capacity to refer specimens from districts to reference laboratories and national laboratories within 24 hours.
- National laboratories have the capacity to refer specimens to international laboratory networks and routinely share samples as part of network activities.
- Reference laboratories participate in and conduct activities as part of international disease networks (e.g. proficiency-testing and participation in training courses and meetings).
- Thailand conducted a webinar series for the EID Network (January–December 2021) on the topic of “Biological substances packaging and transportation”.
- Thailand has implemented an accreditation system for COVID-19 testing facilities.

Challenges

- During the pandemic the skilled health-care workforce was limited at all levels for the human and animal sectors.
- The use of standardized packaging and temperature control while transporting samples from the field to the animal laboratory network could be strengthened.

D1.2. Laboratory quality system – Score 4

Strengths

- A quality system has been implemented nationwide across the health system with a mechanism for licensing laboratories in emergencies/public health crises.
- The MOPH standards and laboratory accreditations are quality standards customized for the Thai Health System. ISO 15189 and 17025 are international standards.
 - » 100% of clinical laboratories and DLD laboratories are accredited/certified by relevant quality standards.
 - » National and subnational medical and testing laboratories are accredited by ISO 15189 and 17025.
 - » 91% of national and subnational DLD laboratories (i.e. 10 out of 11 laboratories) are accredited by ISO 17025.
- The Bureau of Laboratory Quality Standards (BLQS) has been designated as the national accreditation body.
- National laboratories participate in international and national quality assurance schemes.
- The Thailand Institute of Scientific and Technological Research (TISTR) is designated for laboratory certification by ISO 9001 standards.
- The DLD has the mandate to license private laboratories on a voluntary basis (under the NIAH for Salmonella testing and the BQCLP for food safety).

Challenges

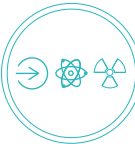
- A transparent mechanism is needed for licensing both private and public laboratories.
- Thailand should expand the implementation of the Sanatoriums Act, B.E. 2541 (1998) to public laboratories.
- Providing proficiency panels would improve the laboratory performance of the veterinary network.



D1.3. Laboratory testing capacity modalities – Score 4

Strengths

- The national laboratory system can perform tests for priority diseases and unknown and high-consequence pathogens using various testing capabilities, including molecular and serology testing and whole genome sequencing.
- Core tests within the animal health laboratory network have been aligned with WOHAI standards.
- National laboratory algorithms for priority diseases (such as COVID-19, TB and HIV) are available and aligned with international standards.
- There is policy support for personnel health records at ministerial level (e.g. through the Mor-Prom application).
- Thailand has expanded its testing capacity for COVID-19 by establishing a nationwide laboratory network, including MOPH and private laboratories, that can confirm test results within 24 hours. Samples are sent to the national reference laboratory for identification of strains by genomic sequencing, and results are submitted to GISAID.
- The COVID-19 Network Investigations Alliance (CONI) has been running COVID-19 genomic surveillance since March 2020. The network is institutionally based at Mahidol University, with contributing members from other institutes, including Oxford University and the US Army Medical Directorate's Armed Forces Research Institute of Medical Sciences (AFRIMS).
- The DLD and the Department of Disease Control have organized training for human and animal health staff on sample collection for COVID-19 testing in animals.



Challenges

- There is a need to link electronic laboratory data by API (application programming interface) to the MOPH data centre to cover personnel health records.
- There is a need to improve information sharing between human and animal health laboratory networks.
- Testing capacity for priority and notifiable diseases should be decentralized to the lowest levels of the health-care system.
- There is a need for a coherent policy covering In-vitro diagnostics (IVD) evaluation, including legislation, competence of evaluators and post-marketing evaluation.
- There is a need for more and better communication and joint activities, such as joint training of human and animal health networks.

D1.4. Effective national diagnostic network – Score 5

Strengths

- Effective diagnostic networks are leveraged in emergency responses to provide testing, surge capacity and sharing of resources.
- Multiple platforms are used for laboratory-based detection, including advanced technology such as whole genome sequencing, next-generation sequencing (NGS) and matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS). Point-of-care testing is used where appropriate, including rapid tests for leptospirosis and malaria.
- Mobile animal health and human health laboratories are available.

- 13 high containment laboratories in both the human health and animal health networks are in the process of requesting a biosafety level 3 (BSL-3) audit.
- Thailand has a Regional Public Health Laboratory Network (RPHLN) and a veterinary laboratory network.
- Thailand plays important roles in regional laboratory networks – e.g. by hosting a technical webinar series.
- Joint biosafety and biosecurity training is done between human and animal laboratory networks, from BSL-1 to BSL-3.
- Thailand conducted a joint simulation exercise for “disease x” in December 2021 and strengthened national capacity for next generation sequencing. The country was able to detect and identify SARS-CoV2 within three days.

Challenges

- There is a need to enhance communication, coordination and collaboration in both animal and human health through the RPHLN.

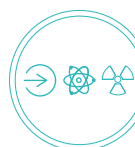
Recommendations for priority actions

- Develop an integrated, costed One Health national laboratory strategic plan for 2023–2026, with annual operational plans that address the following recommendations:
 - » Develop and implement interconnected laboratory information that link laboratory, epidemiological and clinical data across the human, animal and environment sectors.
 - » Develop and oversee an appropriate laboratory licensing mechanism for public- and private-sector laboratories to ensure optimum quality of laboratory services.
 - » Strengthen the skilled workforce through training and academic programmes and clear retention strategies (e.g. GLLP, molecular testing and BRM training).
 - » Establish protocols and coordination mechanisms for the IVD development life cycle, including development, production, validation, evaluation and implementation of post-marketing surveillance of In-vitro diagnostics (IVD) during public health emergencies.
 - » Decentralize testing capacity for priority and notifiable diseases to the lowest levels of the health system through improved training and procurement and strengthening of networks and infrastructure.
- Establish a regional training hub and community of practice to reinforce the role of NIH/DMSC in strengthening epidemiology, detection capacity, biosafety and laboratory systems in human and animal health sites across the region.
- Improve the laboratory performance of the veterinary network in Thailand by performing proficiency testing for animal diseases diagnosis in compliance with ISO 17043.
- Update animal health laboratory guidelines for a standardized referral and transportation system at national level.

D2. Surveillance

Introduction

The purpose of real-time surveillance is to advance the safety, security and resilience of the nation by leading an integrated surveillance effort that facilitates early warning and situational awareness of all IHR hazard-related events.



Target

Strengthened early warning surveillance systems are able to detect events of significance for public health and health security; improved communication and collaboration across sectors and between national, intermediate and primary public health response levels of authority regarding surveillance of events of public health significance; and improved national and intermediate level capacity to analyse data. This could include epidemiological, clinical, laboratory, environmental testing, product safety and quality, and bioinformatics data; and advancement in fulfilling the core capacity requirements for surveillance in accordance with the IHR.

Level of capabilities

Thailand has a long history of collecting and reporting data that goes back to the reporting of plague in 1913. Since then, the country has established: a national disease surveillance system (1968); HIV/AIDS surveillance (1985); migrant health surveillance (1996); event-based surveillance (2005); surveillance for influenza-like illness (2009); and laboratory surveillance (2014). Thailand also monitors for key priority diseases such as influenza, measles, COVID-19, malaria, tuberculosis and monkeypox.

The Communicable Diseases Act (2015) codifies policies and guidelines for the surveillance, prevention and control of communicable diseases and epidemics that pose a threat to public health. This Act has served as an important tool to strengthen Thailand's surveillance and response activities throughout the country.

Thailand's indicator-based surveillance system includes reporting from three levels of facilities: health promotion hospitals at local level, community hospitals, and regional/general hospitals. Event-based surveillance is done through a multisectoral system that includes over 1 000 000 public health volunteers and over 80 000 livestock volunteers. Suspected cases are investigated by one of 2700 trained multidisciplinary Communicable Disease Control Units. The country also utilizes laboratory-based surveillance for key areas such as AMR.

Digital tools exist to facilitate event-based reporting through monitoring of outbreak news from multiple sources, including social media and web-based reporting. The data are analysed by situational awareness teams and, if verified, significant events are reported to the Director General and other relevant national and subnational stakeholders — thus fulfilling the Director Critical Information Requirement Criteria of reporting within 30 minutes for important diseases (i.e. dangerous infectious diseases) and by the end of the day for general diseases that meet the criteria.

Thailand produces weekly and annual surveillance reports and makes them publicly available through open-source websites in Thai and English. Additionally, Thailand shares data with neighbouring countries on high priority disease experiences – for instance, by holding a Zoom call on monkeypox cases with the Association of Southeast Asian Nations (ASEAN) Emergency Operations Centre (EOC) Network.

Health care is delivered through a variety of different facilities, such as those managed by the MOPH, the Ministry of Education (e.g. university hospitals), the Ministry of Defence (e.g. military hospitals) and the private sector. Throughout the pandemic, data collection on COVID-19 cases from these various health-care facilities was relatively strong. To achieve the highest JEE scores, Thailand needs to capitalize on the progress achieved during the pandemic and develop policies and/or laws to ensure continued strong reporting from these institutions.

Additionally, while Thailand has been a regional and global leader in One Health, continued attention to assuring data integration between animal, wildlife, environmental and human health is vital to ensuring that effective early warning systems will detect a public health threat from a spill-over of an animal disease into humans.

Indicators and scores

D2.1. Early warning surveillance function – Score 4

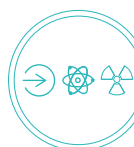
Strengths

- Event-based surveillance exists and functions at all levels of the health care system in Thailand, from national to subnational. Events under surveillance include all hazards.
- A large network of village health volunteers involves community members in the surveillance system in order to detect unusual events.
- Notifiable priority diseases are listed under the Communicable Diseases Act 2015.
- Thailand has well-established and strong networks of indicator-based surveillance. The reporting system for communicable diseases is in transition towards the use of more real-time surveillance data.
- Integrated surveillance and laboratory data are available on important diseases such as COVID-19, measles, TB and malaria.
- There is integration of data from the MOPH and the Ministry of Agriculture and Cooperatives.
- Surveillance evaluations are conducted regularly for certain disease programmes, such as acute flaccid paralysis (AFP) and measles. Moreover, surveillance evaluations are carried out annually for selected diseases.
- The event-based surveillance website and database are routinely used at national, regional and provincial levels.
- Trained staff regularly conduct event monitoring and risk assessment, and the results are presented weekly to policy-makers. Events include data from various sources other than public health networks (e.g. news, social media, etc.).
- In case of an event involving multisectoral stakeholders (e.g. zoonotic diseases), the other relevant agencies (e.g. DLD, DNP etc.) are notified.
- There are links between point-of-entry surveillance and national event-based surveillance, which are connected with situation awareness teams and joint investigation teams on early detection.

Challenges

- Additional technology, such as GPS and dashboards, can enhance the timeliness and completeness of event-based surveillance reporting.
- Staff responsible for disease surveillance should ensure that data from point-of-care laboratory tests are reported to the system.
- Multidisciplinary teams should collaborate to strengthen surveillance systems to include mortality surveillance.
- The data-sharing process within multidisciplinary teams can be strengthened by developing and maintaining strong networks.

- There is a need to develop automatic linkages between laboratory data and epidemiology surveillance data for communicable diseases.
- Frontline staff have limited capacity for surveillance.
- Frontline health-care workers' understanding of public health disease surveillance and their role in detecting and reporting cases can be strengthened.
- The administrative burden of official paper-based documents may prevent timely communication between relevant organizations.
- Health promotion hospitals (at the subdistrict level of public health) are under the leadership of local authorities in several provinces and not of the MOPH, which may pose challenges for coordination.



D2.2. Event verification and investigation – Score 5

Strengths

- There are well-trained and dedicated staff at all levels in the surveillance system (for indicator- and event-based surveillance), including those involved in investigations.
- The Communicable Diseases Act of 2015 gives teams a legal basis to perform investigation and control measures. Surveillance and investigation teams are available 24 hours a day, every day, at all levels.
- The workforce is supported and trained for event verification and investigation by the field epidemiology training programme (FETP) for human health, and by the field epidemiology training programme for veterinarians (FETPV) for animal health. This is supported by regional and national networks.
- The Division of Epidemiology and regional health offices have regular programmes that train local teams in outbreak investigation skills.
- National level risk assessment is performed regularly. Training for risk assessment is conducted at regional and primary levels.

Challenges

- Thailand could consider making greater use of the Communicable Diseases Act 2015, Chapter 7, Section 50, which highlights liabilities for noncompliance with reporting.
- Risk assessments should be evaluated, reviewed and adopted by experts and policy-makers. The reports of these assessments should be distributed and communicated to the public and stakeholders for risk mitigation and management.
- Ministry leadership should encourage more risk assessment practices at subnational level.
- Financial and human resources need to be made available for 24-hour surveillance and outbreak response every day of the year.
- In several provinces, health promotion hospitals are under the leadership of local authorities and not the MOPH, which may pose coordination challenges.
- Coordination between different ministries can be further enhanced.

D2.3. Analysis and information sharing – Score 5

Strengths

- Thailand has strong capacity for data analysis with both basic and advanced epidemiological methods.
- Regular monitoring of important diseases (e.g. influenza and COVID-19) and data analysis are shared with relevant stakeholders.

- The MOPH publishes weekly and annual surveillance reports that provide policy guidance (e.g. a weekly epidemiological surveillance report; an outbreak, surveillance and investigation report journal; and an annual surveillance epidemiological report).
- Public health staff receive training in data analysis.
- Thailand has access to a regional data-sharing mechanism through the ASEAN+3 Field Epidemiology Training Network.

Challenges

- Thailand could publish the epidemiological findings of disease surveillance internationally on a regular basis.
- There is a need to enhance collaboration with universities and private-sector partners.
- Mortality data should be integrated to assess signals for early detection of abnormal health events.
- There is a need to increase the number of staff trained in data management and analysis, including those with the ability to speak multiple languages.
- Gaps in the availability and acceptance of technology for timely collection of crucial health systems information (e.g. emergency department visits, acute care/critical care bed occupancy rate etc.) need to be addressed. These data will help determine the stress of disease outbreaks on hospital systems.

Recommendations for priority actions

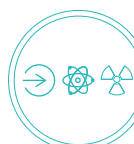
- Invest in data modernization, including in the use of big data infrastructure and application of appropriate technologies for data integration, analytics, predictive modelling and risk analysis.
- Increase the use and uptake of digital technology to enhance event-based and indicator-based disease surveillance, improving reporting by making systems more user-friendly.
- Conduct policy and funding advocacy for increased disease reporting from public and private health-care facilities and the animal health sector, as well as integration of data (e.g. epidemiological and laboratory data etc.), and support for outbreak investigation.
- Increase human resources to strengthen surveillance at subnational, national, regional and global levels, including by:
 - » expanding the number of district-level livestock personnel and tasking them to strengthen surveillance and coordination with subdistrict-level health promotion hospital staff; and
 - » engaging in multisectoral One Health fellowships and exchange programmes that enhance mechanisms to share surveillance information regionally and globally.

D3. Human resources

Introduction

In order to develop a sustainable public health system over time by developing and maintaining a highly qualified public health workforce with appropriate technical training, scientific skills and subject-matter expertise. Human resources include nurses and midwives, physicians, public health and environmental specialists, social scientists, communication, occupational health, laboratory scientists/technicians, biostatisticians, information technology (IT) specialists, biomedical technicians and a corresponding workforce in the animal sector (veterinarians, animal health professionals, para-veterinarians, epidemiologists, IT specialists etc.).-

The recommended density of doctors, nurses and midwives per 1000 population for operational routine services is 4.45 plus 30% surge capacity. The optimal target for surveillance is one trained (field) epidemiologist (or equivalent) per 200 000 populations who can systematically cooperate to meet relevant IHR and PVS core competencies. One trained epidemiologist is needed per rapid response team.



Target

States Parties with skilled and competent health personnel for sustainable and functional public health surveillance and response at all levels of the health system and the effective implementation of the IHR (2005).

Level of capabilities

Thailand has developed a comprehensive 20-year National Strategic Plan for Public Health 2017–2036 that includes four core strategies: “Promotion, prevention and protection excellence”; “Service excellence”; “People excellence”; and “Governance excellence”. The strategy comprises 15 workplans and 45 projects with corresponding goals, key performance indicators, implementation guidelines and an M&E mechanism. The strategy is also aligned with the 12th National Economic and Social Development Plan (2017–2021), the Thailand 4.0 Agenda and the United Nations Sustainable Development Goals (SDGs). The Strategy for Excellence under the plan covers planning for manpower, developing and producing manpower, developing management mechanisms for manpower and managing network partners of manpower for health. In the animal sector, the workforce strategy of the Strategic Plan of the Department of Livestock Development 2018–2022 covers strengthening of personnel in the livestock, animal health and animal production sectors.

For response and epidemiological investigations, the Communicable Disease Control Act 2015 facilitates the establishment of multisectoral task forces. The Act provides clear guidance on the creation of working groups, particularly at POEs, in accordance with the IHR (2005). At national level, the multisectoral team is chaired by the Prime Minister, and is composed of members from 10 related ministries, the Royal Thai Police, the Bangkok Metropolitan Administration, the Medical Council, the Thailand Nursing and Midwifery Council, the Medical Technology Council and the Private Hospitals Association. The multisectoral approach facilitates the mobilization of relevant resources when needed.

The Communicable Disease Control Act 2015 provides guidance in establishing mechanisms for Thailand to address events that can become threats to public health. At the MOPH level, training programmes exist and are mandatory for all staff. Through existing private partnerships and hospital associations’ membership in National Communicable Disease Committees, private hospitals are readily mobilized to

provide health services to the wider public. Thailand is also a pioneer in mobilizing village health volunteers (currently numbering over 1 million) to provide routine primary care services in communities and to exercise basic public health functions. These volunteers played critical roles in disease prevention activities and containment throughout the country during the COVID-19 pandemic. As recently noted in *National Geographic*, a long history of volunteerism in Thai society helps explain why so many people chose to volunteer to fight COVID-19 rather than wait for help. The Thai government also engaged police officers, military personnel, small-scale entrepreneurs and others in various roles to help respond to the pandemic.

Thailand has implemented a mechanism to engage with the private sector to increase surge capacity. The NHSO, which is the main public authority responsible for managing the national insurance scheme, has collaborated with the private sector to expand services under the Universal Coverage Scheme (UCS). Several private hospitals participate in the UCS, providing health services and emergency care to the scheme's beneficiaries. These services include vaccination, disease screening and emergency care, and are also extended to non-Thai residents.

Thailand has been running a Field Epidemiology Training Programme (FETP) that caters to Thai health professionals and others from neighbouring countries. Since 1980 the programme has produced 40 cohorts of FETP graduates, 80% of whom were Thai nationals.⁵ The FETP has five tiers of training, categorized by training duration and competencies addressed, and has been diversified to include several training pathways, including the FETP noncommunicable disease pathway and the FETP emerging infectious diseases pathway – and, of course, the FETP for veterinarians (FETP-V).

Continuing professional education programmes in Thailand are organized by professional councils (e.g. the Medical Council and the Veterinary Council). The Division of Epidemiology provides intermediate-level and advanced-level field epidemiology training with budgets supported by the Thai government. Aside from the MOPH, in-service training (e.g. in field veterinary epidemiology) is supported by international partner organizations.

Thailand has experienced a demographic transition brought about by longer life expectancy and low fertility. This has caused a shift in the burden of disease, with noncommunicable diseases causing 75% of all deaths (compared to 12.5% for communicable diseases) in 2009. Future work to improve human resource capabilities to prepare for, prevent, detect and respond to public health threats needs to consider the shifts in Thailand's health trends.

Indicators and scores

D3.1. Multisectoral workforce strategy – Score 4

Strengths

- The MOPH monitors health professionals through the MOPH GIS dashboard at: <http://gishealth.moph.go.th/healthmap/index.php>.
- Thailand has a strong FETP that provides training curricula for health workers across different layers of the health system. The FETP provides a steady source of field epidemiologists for Thailand, with at least 80% of its graduates being Thai nationals.
- The FETP-V is a training programme developed for veterinarians to facilitate outbreak response and surveillance of potentially dangerous zoonotic pathogens through a One Health approach.
- Under the Communicable Diseases Act 2015, Thailand has well-established multisectoral surveillance and rapid response teams, currently called Communicable Disease Control Units (CDCU), that are available at all levels of the health system.
- The Department of Disease Control, MOPH has developed a National Operation Plan for

⁵ Thailand Field Epidemiology Training Program. See: <https://www.tephinet.org/training-programs/thailand-field-epidemiology-training-program>, accessed 3 November 2022.

Developing and Building Capacity in Field Epidemiology to Strengthen National Security in Health in Thailand 2023–2032. The plan is now under consideration by the Cabinet.

Challenges

- While training programmes on preventive medicine exist, with the shift in Thailand's demographic composition and disease burden, a more robust programme focusing on noncommunicable diseases should be developed.
- Non-medical health professionals such as veterinarians and public health technicians have tended to face unclear career paths and limited incentives, a problem that became more pronounced during the pandemic. This needs to be addressed.
- Transfer of primary care service delivery and functions (including basic preventive services) from MOPH health facilities run by local government units has been a challenge, especially in areas where local government has limited capacity and resources.
- A high turnover rate, increased workload and limited staff numbers are key concerns that may hamper recruitment and expansion in field epidemiology.

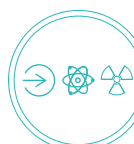
D3.2. Human resources for the implementation of IHR – Score 4

Strengths

- Volunteer health workers played a crucial role in COVID-19 outbreak investigation and containment.
- Field epidemiology is introduced to various health and medical professionals – including health staff working at POEs and other non-health staff – through a short training course that covers the following modules: overview of communicable diseases 2015; managing public health events of international concern; basic detection for disease and health hazards; and risk assessment and risk communication at POEs.
- Preventive medicine residency programmes, including in travel medicine and traffic medicine, also incorporate part of the curriculum on outbreak investigation, surveillance study and placement at POEs.
- Specialty training in many medical fields is now attempting to engage with the FETP to streamline and incorporate the concept of field epidemiology in their curricula.
- The concept of a multisectoral communicable disease control unit has been applied to other hazards and at POEs.

Challenges

- The training of the health workforce in all fields needs more focus on developing the competencies necessary to support IHR implementation.
- There is a need to enhance further the understanding of state-of-the-art methodologies in novel scientific areas, such as data science and forecasting, that may be essential for future disease prevention functions.
- Unclear career paths, low pay and limited incentives are some of the factors undermining health worker retention.
- There is a need to train the health workforce on key issues related to disease prevention functions and responsibilities, including a basic understanding of public health law (particularly those laws and regulations relevant to IHR).



D3.3. Workforce training – Score 4

Strengths

- Thailand is a lead country for the GHSA 'Action Package' on Workforce Development, and it currently hosts the secretariat for the ASEAN+3 Field Epidemiology Training Network.
- Effort is being made to promote field epidemiology training by providing relevant accreditation (i.e. diplomas and degrees) to medical doctors and veterinarians, with additional financial remuneration for medical doctors.
- Some training programmes have developed strong national networks that offer financing support and mentorship (e.g. the network of field epidemiologists).

Challenges

- Mentorships are often limited to a few training programmes due to a limited supply of mentors, which can be related to the lack of an effective mechanism for mentor recruitment.
- There is limited staff retention due to unclear career pathways, lack of accreditation and limited compensation, especially for intermediate-level FETP.
- The veterinary profession, working in both the livestock and wildlife sectors, already has a training programme delivered by the Thai Board of Veterinary Public Health, but there is no incentive for compensation and career advancement.
- Sustainability of funding is an important consideration for planning and expanding future programmes. For instance, the competent authority – the Department of Livestock Development – should have a direct budget to support professional training to help counter public health issues and to serve the department's core work.
- Mechanisms to raise funding from new sources (e.g. from local government units and private sources) should be explored.

D3.4. Workforce surge during a public event – Score 5

Strengths

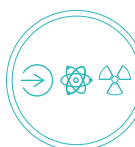
- Key training for the health workforce (e.g. on EOC and incident command systems) is now mandatory for health staff in some divisions in order to ensure a steady stream of appropriately trained staff throughout the pandemic period.
- In emergency situations, the Department of Disease Control provides regular training according to need.
- Training on COVID-19 is provided for Village Health Volunteers.
- Emergency response plans and SOPs for surge staff are available across sectors.
- The MOPH has shown that it is able to recruit, deploy teams, and engage local administrative organizations rapidly during large COVID-19 outbreaks.

Challenges

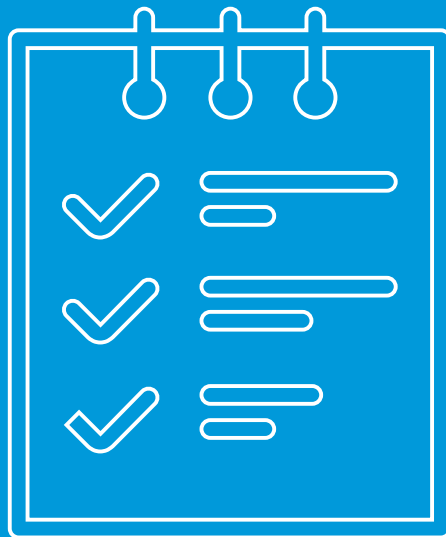
- Despite ongoing training for the health workforce to support the COVID-19 response, there remains a constant lack of trained staff.
- Many critical tasks are underpaid, and no risk compensation is provided unless a disease is officially declared a "dangerous communicable disease".
- There is no reward mechanism for participation in the EOC.
- There is an observation that the underperforming members of the health workforce are often "let go" to support EOC functions.
- There is often a mismatch between the skills and competencies of staff members and the tasks assigned to them.

Recommendations for priority actions

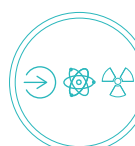
- Re-assess and update human resources policies to take account of the lessons of the COVID-19 pandemic. The review should include hiring, onboarding, work processes, compensation, leave, training, continuing education, promotion, work environments, retention, termination, implementation of an occupational health policy, and other key functions. It should cut across the health workforce in different technical areas including One Health, IPC, field epidemiology, surveillance, laboratories, AMR, port health and health service provision.
- Diversify financing and ensure appropriate pay across the human, animal, wildlife and environmental health workforces.
- Increase and retain sufficient numbers of competent human, animal, wildlife and environmental health staff through strategies including expansion of clear career opportunities and continuing professional development, improved incentivization, and provision of mental health and psychosocial support systems and services.
- Maximize the existing health workforce platform and establish key performance indicators for multisectoral workforce development across the human, animal, wildlife and environmental health sectors.



Respond



R1. Health emergency management



Introduction

This capacity focuses on the management of health emergency and systems for enabling countries to be prepared and operationally ready to respond to any public health event, including emergencies, in line with the all-hazard requirement of IHR. Risk-based plans for emergency preparedness, readiness and response, robust emergency management structures and mobilization of resources during an emergency are critical for a timely response to public health emergencies.

Target

1) Existence of national strategic multi-hazard emergency assessments (risk profiles) and resource-mapping. 2) Existence of emergency readiness assessment. 3) Development of national health EOC81 plans and procedures. 4) Establishment of an emergency response coordination mechanism or incident management system. 5) Evidence of at least one response to a public health emergency within the previous year that demonstrates that the country sent or received medical countermeasures and personnel according to written national or international protocols. 6) Existence of an emergency logistics and supply chain management system/mechanism. 7) Existence of policies and procedures for research, development and innovation for emergency preparedness and response.

Level of capabilities

Thailand has a range of well-developed plans that address health emergency management. An all-hazards National Action Plan for Health Security (NAPHS) 2018–2022 was developed using input from the 2017 JEE report, the State Party Self-Assessment Annual Report (SPAR), the EID National Action Plan and other sources. An Action Plan on Preparedness, Prevention and Response to Emerging Communicable Diseases 2023–2027 is under development.

The Department of Disease Control (DDC) assesses and maps health risks across all levels annually, and shares findings with other government ministries. Primary infectious risks include zoonotic avian influenza, coronaviruses (COVID-19, SARS, MERS etc.), Nipah virus, rabies, Ebola and dengue virus. Non-infectious threats include flooding, radiation and chemical events.

Most relevant expert resources are based in the MOPH, though radiation experts are available in the Office of Atoms for Peace and experts on chemical hazards can be found in the Pollution Control Department and the Department of Industrial Works.

Signals of potential health threats are generated through indicator-based and/or event-based surveillance networks. Risk assessments are systematically conducted by situation awareness teams, and surveillance and rapid response teams are deployed as necessary to investigate and, where appropriate, initiate control measures.

A detailed EOC network strategy has been developed between the MOPH and the Ministry of the Interior. PHEOCs have been operational across central, intermediate and local levels throughout much of the COVID-19 pandemic. EOCs operate according to an IMS structure and relevant SOPs; and

training has been developed and implemented, with more resources and training for national EOCs and less for local EOCs.

The MOPH has policies in place to mobilize health surge capacity across provinces and regions. The Government Pharmaceutical Organization is central in the production and/or procurement of medical countermeasures – including medications, personal protective equipment (PPE), and vaccines – as well as stockpiling and distribution. Procurement can be slow due to administrative procedures, potentially limiting the speed of emergency response operations. Stockpiles are prepared at all levels and are mainly focused on infectious diseases and food safety. Offices that have direct responsibility for chemical and radiation events maintain their respective national stockpiles.

A national higher education, science, research and innovation policy council has been developed to guide a national science, research and innovation plan. The Office of Thailand Science, Research and Innovation (TSRI) is the lead agency for research related to responses to health emergencies, and a memorandum of agreement between TSRI and the DDC commits to an annual budget for research support. At present, however, slow bioethical approval processes can delay research during public health emergencies. Some research and dissemination of findings on priority emergency preparedness and response areas, including operational research related to health emergency management, has been conducted.

Indicators and scores

R1.1. Emergency risk and readiness assessment – Score 4

Strengths

- An all-hazards plan, based on a disaster management approach, is in place at national and regional levels.
- Guidelines have been developed for risk assessment of public health hazards, and annual risk assessments are conducted by all affiliated sectors.
- Multi-stakeholder public health emergency drills are conducted annually.
- After-action reviews are conducted after major public health emergencies (i.e. MERS, Zika virus, COVID-19), and their findings have been used to revise guidelines and operations.
- A national multi-stakeholder COVID-19 exercise was conducted in 2022.

Challenges

- Additional resources are required to strengthen EOCs, situation awareness teams and rapid risk assessment capacity at provincial level.
- Transfer of public health emergency management knowledge to new staff could be strengthened.

R1.2. Public health emergency operations centre – Score 4

Strengths

- National PHEOCs with designated physical space, back-up power, and IT infrastructure have been established within the Department of Disease Control, as well as within the Division of Public Health Emergency Management (DPHEM) in the Office of the Permanent Secretary.
- PHEOC policies and procedures are in place, with approved SOPs and operational guidelines.
- Staff and back-up staff have been identified and trained to conduct core IMS functions against public health emergency management competencies.
- Mechanisms and SOPs have been developed for coordinating with other government and nongovernmental stakeholders, including public health science partners.
- An operating budget exists for core staffing, daily operations and maintenance of PHEOCs.

- Emergency operations centres have been established at intermediate and local levels, with training of intermediate EOC staff through exercises.
- The ICS/IMS has been reviewed and exercised using real-world events, including in exercises combining staff of central and peripheral levels.

Challenges

- Identification of relevant subject-matter experts can be challenging.
- PHEOC staff at MOPH/DDC levels require ongoing training; just-in-time training curricula for surge staff need to be developed.
- EOC information management systems lack interoperability across national EOCs and have limited data analytics and data visualization.
- Sustainability of funding for health emergency management operations following the COVID-19 pandemic needs to be addressed.
- In situations of disease outbreaks that might impact tourism, the declaration of a “disaster-affected area” can be a sensitive issue.
- Only a limited number of permanent PHEOC staff are available.

R1.3. Management of health emergency response – Score 4

Strengths

- An IMS has been integrated into the national PHEOC and is additionally applied across intermediate and provincial EOCs.
- The IMS has been reviewed and exercised using simulation exercises and intra-action or after-action reviews for real world emergencies, at least annually.
- Improvements based on lessons from reviews and exercises, including a COVID-19 IAR (intra-action review) in 2020, have been implemented.
- There are relevant incident management SOPS for health emergencies.

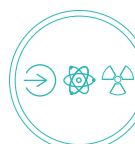
Challenges

- Response planning for “disease x” should be revised.
- Finance, legislation and procurement are slow and can limit rapid public health response.
- There is a need for stronger high-level policy and leadership support.
- Additional disease- and emergency-specific SOPs are required.

R1.4. Activation and coordination of health personnel in a public health emergency – Score 4

Strengths

- Joint ASEAN emergency medical team (EMT) agreements and SOPs have been developed.
- Thailand has an EMT certified by WHO for international deployment.
- Protocols are established for requesting surge staff/EMTs through the IMS structure.
- Standards have been defined for health personnel who will be sent or received during a public health emergency (including international health personnel).
- A programme for training national EMTs has been developed and is ongoing.
- A civilian/military coordination mechanism exists for EMTs and deployment.
- Multiple national EMTs exist to respond to public health emergencies, including in the Department of Medical Services, the Department of Mental Health, the DDC and the military.
- In 2019, Thailand hosted the Global EMT Meeting.



Challenges

- There is currently no national plan that outlines the system for pre-deployment, deployment, and post-deployment of national and international surge teams.
- SOPs are lacking for standardized pre-deployment orientation and post-deployment evaluation.
- There have been only limited surge plan exercises for sending and receiving health personnel (both national and international) during a public health emergency.
- There is no formal EMT coordination.
- There is a need for a digital platform for public health and medical operations for tracking teams and for logistics and operational tracking.
- Thailand has no standardized and authorized public health and medical unique identifier or record.
- Different organizations have different EMT policies and protocols.

R1.5. Emergency logistic and supply chain management – Score 4

Strengths

- Guidelines for medical countermeasures logistics and supply chain management, including sending and receiving supplies during public health emergencies, are established through the Government Pharmaceutical Office and other entities.
- Emergency logistics can support health emergencies at all levels, and substantial experience has been developed during the COVID-19 pandemic.
- Thailand is party to an ASEAN countermeasures-sharing initiative.
- Guidelines are in place on medical supply and resources management in public health emergencies.
- Medical countermeasures are stockpiled at all levels for infectious, zoonotic and food safety hazards, and there are further national level stockpiles for other (e.g. chemical and radiological) hazards.

Challenges

- Emergency logistics infrastructure to support primary public health levels is limited.
- Formal exercising of emergency logistics plans is required.
- There are limited standing agreements with manufacturers and/or distributors to procure the supplies necessary for operational response during a public health emergency.
- Public health response operations can be delayed due to slow procurement during public health emergencies.

R1.6. Research, development, and innovation – Score 4

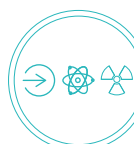
Strengths

- The TSRI is the lead agency for research, including research on health emergencies.
- A memorandum of agreement between the TSRI and the DDC commits to an annual research budget.
- An institutional review board conducts bioethical reviews of research proposals.
- A recent research publication shared findings from COVID-19 vaccination efficacy in Thailand.⁶

6 Suphanchaimat R, Nittayasoot N, Jiraphongsa C, Thammawijaya P, Bumrungwong P, Tulyathan A et al. Real-world effectiveness of mix-and-match vaccine regimens against SARS-CoV-2 Delta variant in Thailand: a nationwide test-negative matched case-control study. *Vaccines (Basel)*. 2022;10(7):1080. doi:10.3390/vaccines10071080.

Challenges

- Relevant research has been conducted and disseminated, including research focused on strengthening health emergency management.
- Slow bioethical approval processes can delay research during public health emergencies.



Recommendations for priority actions

- Develop an advocacy plan with embedded M&E to ensure sustainable post-pandemic funding for EOCs, emergency preparedness and risk management.
- Ensure capacity for rapid response operations during public health emergencies by implementing policies and legislative mechanisms for expedited identification and release of funds, streamlined administrative procurement and recruitment of surge staff.
- Enhance preparedness for CBRNE events within the existing health emergency management system, through formal engagement of relevant subject-matter experts and institutions and mapping of stockpiles of medical countermeasures.
- Establish and ensure sustainability of advanced PHEOC data analytics through an integrated data management platform that spans the EOC network and combines automated data analyses, geospatial mapping, data visualization and automated stakeholder reporting.
- Formalize the public health emergency research framework (including financing and implementation mechanisms), prioritize operational research on health emergency risk management and related fields, and evaluate and document strategies for expedited bioethical institutional review board (IRB) approval during public health emergencies.

R2. Linking public health and security authorities

Introduction

Public health emergencies pose special challenges for law enforcement, whether the threat is manmade or naturally occurring. In a public health emergency, law enforcement will need to coordinate its response quickly with public health and medical officials.

Target

The country conducts a rapid, multisectoral response to any event of suspected or confirmed deliberate origin, including the capacity to link public health and law enforcement, and to provide timely international assistance.

Level of capabilities

- Prior to the COVID-19 pandemic, coordination, communication and collaboration between public health and security authorities in Thailand was primarily implemented on an ad hoc basis through national committees, subcommittees and working groups under existing legislation, including the Public Disaster Prevention and Mitigation Act 2007 and the Communicable Diseases Act 2015.
- These arrangements were then formalized for COVID-19 response activities through the Centre for COVID-19 Situation Administration. Now, following the COVID-19 pandemic, codification of these arrangements is required – particularly for the exchange of classified information with potential health security implications.
- At POEs, cooperation between public health and security authorities is facilitated through the POE committee, which is composed of representatives of public health, the security authorities and the private sector. Points of Entry Committees were established in accordance with the Communicable Diseases Act 2015, and SOPs are in place for managing emergency events. Legislation exists under the Communicable Diseases Act 2015 that allows the government to detain or quarantine persons who present a public health risk.

The Foreign Affairs Division under the office of the Consul General is the head of the Nation Central Bureau Bangkok and is responsible for liaison with INTERPOL.

Indicators and scores

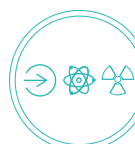
R2.1. Public health and security authorities (e.g. law enforcement, border control, customs) linked during a suspect or confirmed biological, chemical or radiological event – Score 4

Strengths

- Systems were put in place for formal coordination, communication and collaboration between public health and security authorities during the COVID-19 pandemic through the Centre for COVID-19 Situation Administration.
- Multiple joint exercises and operations have been carried out across multiple security authorities, including using scenarios on smuggling weapons of mass destruction (in 2022).
- Collaboration between public health and security authorities at POEs is facilitated through a POE committee.
- SOPs are in place for managing emergencies at POEs, including for cooperation between public health and security authorities.

Challenges

- Existing mechanisms for cooperation and sharing of data between public health and security authority entities need to be extended and formalized.
- Sustainable cooperation needs to be established between sectors.
- Thailand would benefit from regular joint training and exercises on information-sharing and related legal considerations for the public health and security sectors.



Recommendations for priority actions

- Formalize a mechanism for cooperation and information-sharing between public health and security authorities. Ensure that the security sector has legal authority to share classified intelligence with potential public health implications with designated public health representatives.
- Conduct regular joint public health/security authority training/orientation/discussion sessions, with appropriate senior government participation, in order to increase mutual understanding of respective roles and responsibilities during an emergency event, including through exercises based on real-world scenarios (e.g. intentional release of biological or nuclear materials).

R3. Health services provision

Introduction

Resilient national health systems are essential for countries to prevent, detect, respond to and recover from public health events, while ensuring the maintenance of health systems functions, including the continued delivery of essential health services at all levels. Particularly in emergencies, provision of health services for both event-related case management and routine health services are equally as important. Moreover, ensuring minimal disruption in health service utilization before, during and beyond an emergency and across the varied contexts within a country is a critical aspect of a resilient health system.

Target

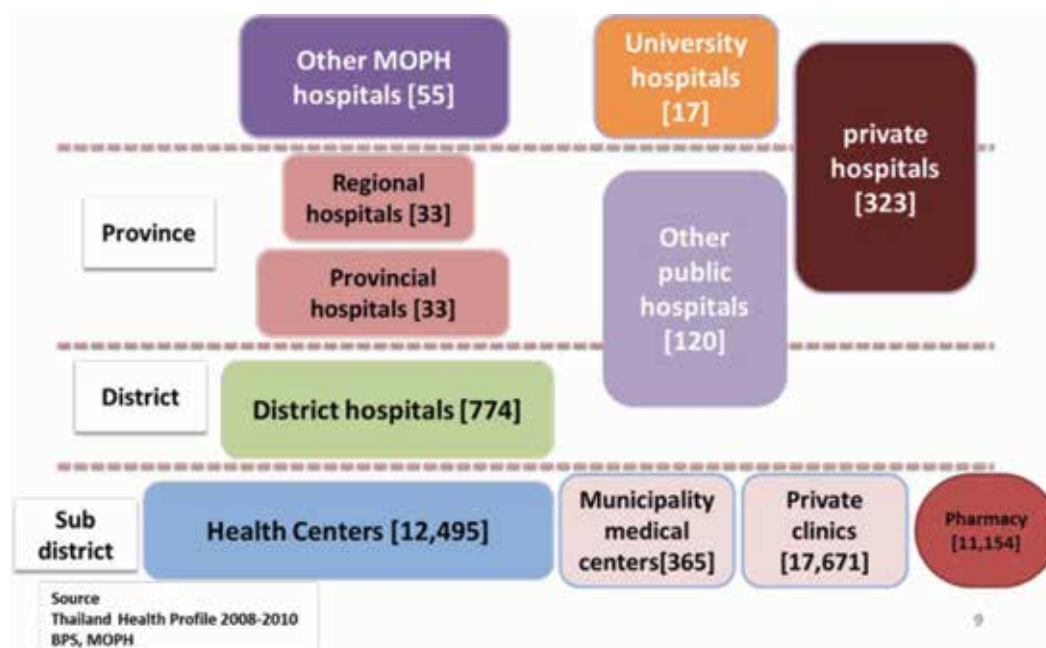
1) Evidence of demonstrated application of case management procedures for events caused by IHR-relevant hazards. 2) Optimal utilization of health services, including during emergencies. 3) Ensuring continuity of essential health services in emergencies.

Level of capabilities

Thailand has demonstrated its resilience and ability to manage essential health services (EHS) during the COVID-19 pandemic, including the provision of essential services to refugees and migrant populations. Health-related emergency preparedness, response plans and policies are in place at service platforms from tertiary to primary levels. Various private-sector entities, including private health-care facilities, industries and entities in the voluntary sector, have been mobilized in COVID-19 responses and services. Together, all this comprises a global example of the application of whole-of-society and sector-wide approaches to a complex and protracted pandemic (Figure 1).

For the national emergency medical services (EMS) system, health facility assessments are done in two categories: standard assessments and quality assessments. To reduce service disruption during the COVID-19 response, EHS and telemedicine were prioritized; these approaches can be sustained in the long term as good practices to tackle future emergencies and cost-effective methods of increasing service coverage.

Figure 1. Thailand health profile for provision of health services



Indicators and scores

R3.1. Case management – Score 5

Strengths

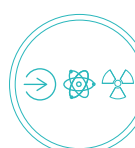
- Well-established mechanisms and platforms are in place for developing, updating and monitoring the implementation of case management guidelines.
- Strong support for high-quality, equitable service provision from high-level officers at the Ministry of Public Health was evident during the COVID-19 pandemic.
- Thailand has shown strong collaboration between all concerned stakeholders, including the MOPH, professional associations, academic experts and scientific groups.
- Thailand has well-coordinated monitoring with relevant pre-hospital agencies for timely case management and updating/improving treatment protocols.

Best practices

- During the first and second waves of COVID-19, treatment protocols and knowledge of EID response were scattered and disorganized, so the MOPH organized a platform/dialogue where experts and concerned agencies could share information and knowledge to develop and update the national Clinical Practice Guideline (CPG) for COVID-19.
- Whenever cases, deaths or cluster spreading were reported, a multidisciplinary team (including a surveillance team) visited the site to investigate, and reports were brought for expert consideration for potential CPG revision.

Challenges

- As in other countries, Thailand experienced shortages of PPE during the early stages of the COVID-19 pandemic. These shortages put medical personnel and other front-line workers at risk while providing care for COVID-19 patients. This experience showed the need for effective planning and management of stock and supply chains.
- Robust management and coordination are needed, along with integration of evidence-based medicine and expert opinion in order to produce timely guidelines for the provision of emergency-specific health services.



R3.2. Utilization of EHS – Score 4

Strengths

- A responsible body is in place to coordinate operations and activate and run EOCs during emergencies.
- A system has been established to assess, track and monitor public trust in the health system and services delivery.
- A routine health management information system is established and monitors service utilization.
- An established national facility/provider accreditation system is in place to ensure high quality services and public trust for continued service utilization during normal times (i.e. outside emergency periods).
- Actions of the health and non-health sectors are coordinated at community level.
- Increased access to digital health care and an improved telemedicine platform mean that patients with mild symptoms can be monitored at home and in community centres, reducing the need for hospitalizations and improving IPC management.

Best practices

- Thailand has a “strike team” (rapid response team) to investigate and assess damage to health-care facilities, to help ensure that affected hospitals resume their services fully or partially within 24 hours.
- Thailand’s Health Data Centre (HDC) is a central system for data and information from hospitals at subdistrict, district, provincial and national level.
- The Healthcare Accreditation Institute is a public organization responsible for quality improvement and accreditation of health-care organizations in Thailand.
- The Nimibutr sport stadium was transformed into a COVID-19 field hospital and used as a pre-admission COVID-19 triage centre to accommodate patients with mild symptoms.

Challenges

- The use of IT/digital technology is limited in rural areas.
- There is a need to increase the digital literacy of communities so that they are better able to use technology to access medical care.
- Some vulnerable groups in rural areas do not have access to the health services and resources required to support a population’s diverse health needs.

R3.3. Continuity of EHS – Score 4

Strengths

- The health sector plan and national emergency preparedness and response plans have explicit consideration for the continuity of EHS.

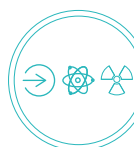
Best practices

- Thailand has developed business continuity plans that provide guidance to hospitals on how to prioritize essential services on the basis of risks and patients’ needs.
- Vulnerable groups (e.g. persons with disabilities or terminal illnesses) are prioritized for services such as vaccination. Non-Thai persons can access medical care, including COVID-19 vaccination.

Challenges

- There is a need to sustain and extend health literacy and health services among undocumented migrants and maintain essential medical services at subnational levels.
- There is a need to address burnout and provide mental health support to medical personnel and frontline workers. This initiative could form part of human resources management and capacity-building support.

- Strengthen the Division of Health Economics and Health Security's authentication and funding reimbursement systems for undocumented migrants and workers suffering adverse effects from COVID-19 vaccination and long COVID-19 symptoms, and other issues that affect their livelihoods.



Recommendations for priority actions

- Strengthen capacities for emergency preparedness and service continuity, including by ensuring that the health workforce is strong enough for primary care facilities to maintain EHS and meet the health needs of the population during disruptive public health events.
- Review and strengthen logistical capacities for essential medical supplies (including storage, cold chain and transportation) with a focus on subnational health facilities, and develop local production capacity.
- Conduct a needs assessment for the provision of EHS in disruptive emergencies, with particular focus on the risk to, and vulnerability of, older and marginalized populations.
- Ensure that the upcoming revision of the Communicable Diseases Act (or its equivalent) requires that service continuity planning and the necessary multisectoral participation are in place at all levels of health services provision, from tertiary to secondary to primary care facilities.
- Sustain public–private collaboration and coordination during emergencies through the public health EOC, and through other intersectoral mechanisms at other times.

R4. Infection prevention and control

Introduction

Strong and effective programmes of infection prevention and control (IPC) enable the safety of health care, the delivery of essential services and the prevention and control of HCAs. It is critical to ensure initially that at least the minimum requirements for IPC are in place at both national and facility levels, and to progress gradually to the full achievement of all requirements of WHO's IPC core components recommendations.

Target

1) A national IPC programme strategy has been developed and disseminated. 2) The national IPC programme plans, with monitoring and reporting of HCAs, are implemented. 3) National standards and resources for safe health facilities are established.

Level of capabilities

HCAs are significantly compounded by the emergence of AMR, which is increasingly prevalent, increasingly difficult to manage, and associated with high mortality. The prevalence of HCAI and AMR continues to be a significant public health challenge in Thailand: a 2021 study in 1023 hospitals estimated there were 268 628 HCAI episodes that year, accounting for nearly 4% of all hospitalizations. Of those, 87 751 hospitalizations were associated with infection by AMR pathogens, resulting in a total hospital stay of 3.25 million days and 38 481 deaths. Infection prevention and control (IPC) is highly cost-effective and a clear “best buy” for public health, as an approach to reducing infections and AMR in health care, improving health, and protecting health care workers.

Since Thailand's first JEE in 2017 and a subsequent in-depth IPC assessment in 2018, the country has made great strides in advancing its IPC programmes, both nationally and at facility level. Most notably, a national surveillance system for HCAs was initiated in 2016 and the scope of surveillance was expanded to include AMR pathogens in 2018. Additionally, since January 2020 it has become obligatory to monitor and report all HCAs to government officials within seven days. The results of routine surveillance are monitored every month by IPC focal point personnel, and data are shared nationally every six months.

Surveillance cultures for asymptomatic colonization with MDROs are not addressed in national policy and not currently recommended in Thailand's clinical practice guideline.

The IPC programme is currently operated by the National Infection Control Committee (NICC) with support from an IPC secretariat provided by the Bamrasnaradura Infectious Diseases Institute (BIDI). The IPC secretariat comprises trained nurses, public health officers and doctors, whose jobs are divided between national and facility roles (including clinical practice). A second national master plan for HCAI prevention and control 2023–2027 has been developed.

IPC is one of the essential components of the hospital standards of the Healthcare Accreditation Institute. Local and national data from IPC and AMR surveillance programmes are used to develop IPC plans nationally and locally. Hand hygiene compliance is measured by the Healthcare Accreditation Institute, although the use and integration of IPC process indicators are underutilized.

Most health-care facilities in Thailand provide local/individual training, but there is no standardized national curriculum for IPC.

All health-care facilities in Thailand have safe water as part of the health-care facility standards supervised and regularly monitored by the MOPH. Design and construction standards related to IPC best practices have been established and are managed by the Department of Health Services.

Indicators and scores

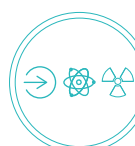
R4.1. IPC programmes – Score 4

Strengths

- Thailand has a second national master plan for HCAI prevention and control covering the period 2023–2027. The plan is operated by the NICC and updated and reviewed every five years.
- Since January 2020 HCAs have been declared by the MOPH as a “communicable disease requiring surveillance” and must therefore be reported to the DDC within seven days.
- There are IPC programme managers in all health regions, under the Office of Disease Prevention and Control.
- HCAI/AMR rates are regularly monitored and evaluated to develop and inform the national IPC plan.
- The NICC oversees an annual assessment in over 600 hospitals across 12 health regional areas each year.
- All health-care facilities have local IPC plans and functioning IPC teams, including link nurses at ward level.
- There is regular collaboration between academics and the MOPH to deliver training programmes, guidelines, research and academic conferences.
- IPC is an essential component in the hospital standards of the Healthcare Accreditation Institute.
- The NICC authorizes BIDI and other organizations to develop official, evidence-based and up-to-date IPC guidelines, which can apply to all health-care facilities and are updated on a regular basis.
- Thailand has strong national networks of IPC professionals and links to academic institutes that support education and training for various groups of health-care workers.

Challenges

- There is a need to build awareness on the part of facility management and administrators about the importance and cost-effectiveness of IPC, building a case for investment in reducing HCAI and – ultimately – AMR.
- Thailand’s national programme consists only of a committee with support from an IPC secretariat that has divided functions. Promotion of the IPC secretariat, and establishment of dedicated personnel and budgetary support for execution of a national IPC programme, would greatly improve this situation.
- Many health-care professionals have insufficient knowledge of good IPC practices.
- Budgets are tight for IPC activities in hospitals, and for research in the field.
- Career paths for infection control nurses are uncertain, and there are few incentives for other professionals in the field.



- The IPC programme does not actively address adaptation of guidelines and standardization of effective preventive practices (SOPs) and/or their implementation to reflect local conditions.
- The national IPC programme does not provide guidance and recommendations for in-service IPC training at facility level (e.g. by establishing the frequency, necessary expertise, requirements for new employee orientation, and/or monitoring and evaluation approaches).
- Hand hygiene compliance monitoring and other IPC process indicators are underused in the evaluation of and updating of IPC plans.

R4.2. HCAI surveillance – Score 4

Strengths

- A national surveillance system for HCAs has been established and is supported by the government and national authorities.
- The national HCAI surveillance programme provides data feedback that informs regular reviews and updates of plans.
- The HCAI surveillance programme links to the national AMR programme and its output is published in the NICC annual report.
- There are national definitions and standards for HCAs and the methods used to conduct and analyse HCAI surveillance.
- IPC focal points monitor surveillance data monthly and perform random quality control and evaluations each year.
- Every six months, all surveillance data are shared with health-care facilities and the NICC committee.
- Fifty sentinel hospitals have been selected for surveillance to ensure the integrity and representativeness of data from the 12 health regions.
- A point prevalence survey on HCAI is conducted every three years.
- AMR phenotypes and genotypes can be detected and identified at the National Antimicrobial Resistance Surveillance Centre, Thailand (NARST) and subnational reference laboratories in four regions.
- Hospital clinical microbiology laboratories are available countrywide to identify pathogens and susceptibility.

Challenges

- Enrolment of health-care facilities in the HCAI reporting programme is decreasing, and there is a need to improve timeliness of reporting and real-time data analysis and feedback.
- There is an urgent need to perform a situation analysis and rapidly scale up outbreak readiness and response through IPC practices.
- Technical support is required on data management in the HCAI surveillance system, including the use of data visualization and other IT solutions.

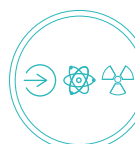
R4.3. Safe environment in health facilities – Score 4

Strengths

- All health-care facilities have safe water and waste management and designated isolation areas, in accordance with national standards.
- All health-care facilities have sterilization services operated by the Central Supply Sterile Department (CSSD).
- The MOPH Department of Health assesses the status of water, sanitation and hygiene (WASH) services on a regular basis (e.g. safe water provision is monitored every three months).
- The Government Pharmaceutical Organization (GPO) has plans for local manufacturing of PPE to support distribution of IPC materials.
- Thailand has a continuous training programme on the principles of safe environments, which include WASH, patient isolation and sterilization.
- The Design and Construction Division of the MOPH Department of Health Service Support defines standards, guidelines and procedures for safe environments for all health-care facilities.
- Thailand has implemented effective triage and isolation systems for patients.
- Effective strategies have been implemented for the containment and management of MDROs.
- The National Referral Centre for isolation of EIDs at BIDI includes two newly-designed wards functioning as airborne infection isolation rooms (AIIR).

Challenges

- There is a need to standardize the quality of isolation areas and AIIRs.
- There have been national shortages of PPE, particularly during the COVID-19 pandemic.



Recommendations for priority actions

- Promote the IPC secretariat by dedicating full-time staff to support the NICC in executing the designated functions and objectives of a national IPC programme, including by:
 - » clearly defining roles and responsibilities for national-level implementation;
 - » granting authority to make decisions influencing implementation; and
 - » providing a dedicated, protected budget for planned activities outlined in the National Plan for HAI Prevention and Control 2023–2027.
- Support IPC staffing at facility level by enhancing the IPC career pathway, increasing incentives and compensation, and providing higher staffing levels – particularly for infection control nurses – at a ratio of at least 1 nurse per 150 beds.
- Increase the number of hospitals participating in the HAI/AMR surveillance programme, leveraging digital technology and innovation to ensure the quality, accuracy, completeness and timeliness of real-time data analysis and feedback.
- Strengthen the national IPC M&E framework by using IPC process indicators aligned with AMR initiatives (e.g. integrated assessment models/iAMs), using the Healthcare Accreditation group to provide tailored IPC interventions, and providing training to increase adherence to IPC practices.

R5. Risk communication and community engagement

Introduction

Risk communication should be a multilevel and multifaceted process which aims to help stakeholders define risks, identify hazards, assess vulnerabilities and promote community resilience, thereby promoting the capacity to cope with an unfolding public health emergency. An essential part of risk communication is the dissemination of information to the public about health risks and events, such as disease outbreaks. For any communication about risk caused by a specific event to be effective, the social, religious, cultural, political and economic elements associated with the event should be taken into account – including the voice of the affected population.

Target

States Parties use multilevel, multisectoral and multifaceted risk communication and community engagement (RCCE) capacity for public health emergencies. Real-time exchange of information, advice and opinions takes place during unusual and unexpected events and emergencies so that informed decisions can be made to mitigate the effects of threats and to take protective and preventive action. This includes a mix of communication and engagement strategies, such as media and social media communications, mass awareness campaigns, health promotion, social mobilization, stakeholder engagement, community engagement and infodemic management.

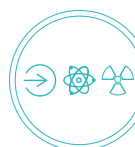
Level of capabilities

Thailand has continuously implemented various risk communication and community engagement (RCCE) strategies to provide the public with correct, accurate and timely information. This communication aims to help people understand what they can do to protect themselves and avoid panic during health emergencies and disasters. Strategies for active engagement of communities are geared towards transparency and building trust.

Thailand shows many best practices, such as the development of policy and interventions for risk communication to prepare all agencies and the public to respond to public health emergencies and disasters. Central to this is the Policy on Communication; the Fifth National Communication Plan of the Public Relations Department (PRD) in the Office of the Prime Minister; and the MOPH Strategic Communication Plan that enables and propels the implementation of its strategies and interventions. Linked to these are the establishment of infrastructures and agencies for risk communications such as the CCSA, the Anti-Fake News Centre (AFNC) and the public relations centres of relevant agencies across the country, all of which together have enabled systematic implementation of the strategic communication plan using integrated risk communication and public relations mechanisms at all levels, enabling information to reach target audiences rapidly.

Thailand uses inclusive, appropriate and relevant tactics, types of media and communication channels at all levels to meet the needs of target populations. These include the mainstream media, online social media platforms and hotlines (e.g. Hotline 1422), which together provide platforms for social listening, response and communication, with good target group coverage in Thai, English and the languages of neighbouring countries. The social listening process continues to enhance the quality of Thailand's media monitoring and the review of and response to the COVID-19 infodemic.

Building multi-stakeholder, multisectoral collaboration that involves both the public and private sectors, including civil society, has paved the way to sustaining many of Thailand's RCCE gains and achievements so far. These efforts are highlighted in the active engagement and coordination of different government entities – such as the MOPH, the PRD, the Department of Disaster Prevention and Mitigation, the Ministry of Interior, the Ministry of Foreign Affairs and others – in RCCE. Complementary to this work are the efforts of the private sector (such as those of the Thai Public Broadcasting Service [PBS] Emergency Coordination Centre for COVID-19, the National Telecom [NT] Public Company Limited and various mobile networks) and civil society groups (e.g. PedThai Fight Hazards, Raks Thai Foundation, World Vision Foundation of Thailand, Up for Thai, Doctor A to Z, Let's Be Hero and others).



Indicators and scores

R5.1. RCCE systems for emergencies – Score 5

Strengths

- There is a national policy on communication, supported by the PRD's Fifth National Communication Plan and the MOPH Strategic communication Plan.
- The CCSA demonstrates systematic and regular coordination, both formal and informal, between the public sector, the private sector, and domestic and international networks.
- MOPH EOCs operate at all levels, as do situation awareness teams, the Information Operations Centre of the Department of Public Relations, the CCSA, and public relations centres of relevant agencies across the country.
- The strategic communication plan is systematically implemented using integrated risk communication and public relations mechanisms that reach target audiences rapidly and effectively at all levels.
- Thailand demonstrates effective coordination between relevant agencies, including with the Ministry of Digital Economy and Society (MDES) on monitoring fake news and misinformation, the PRD on CCSA press conferences, and the Ministry of Foreign Affairs on communication with embassies and foreign mass media networks.
- An agency has been established that is responsible for domestic and international exchange of information on risk communication during public health emergencies.

Challenges

- Thailand currently has an insufficient number of spokespersons and risk communication experts who understand the contexts of the different communities, cultures, societies and local languages.
- There is a need for a permanent infrastructure for risk communication in public health agencies, at least up to the level of the provincial health offices.

R5.2. Risk communication – Score 5

Strengths

- Thailand listens to public concerns and monitors risk perception, including through polls, surveys and artificial intelligence (AI)-supported responses to social listening.
- Thailand’s response to the infodemic has included establishment of the AFNC.
- Risk communication is done through a variety of media and channels, both offline (e.g. television, radio and newspapers) and online (e.g. Line, Twitter, Facebook and TikTok). Key messages are delivered by media and channels targeted at specific groups.
- Two-way discussion channels have been established with stakeholders and influencers, allowing the distribution of key messages in different languages through various channels.
- Formal and informal communication channels are in place that systematically reach target populations (such as migrant workers, vulnerable populations, visually impaired persons etc.) with the right information in a timely manner.
- The “THAILAND ZOCIAL AWARDS” have been established to reward and incentivize the public sector and state enterprises for effective social media communication.
- Capacity-building is conducted for national, regional and local risk communication personnel, and there is a capacity-building media and risk communication curriculum for staff, volunteers and influencers.
- There was regional and international involvement in the development and implementation of the National Risk Communication Strategy.
- Thailand offers a training programme on Infodemic Management in Public Health, certified by the US CDC and the Mekong Basin Disease Surveillance Foundation (MBDS).

Challenges

- There is a need for more risk communication training for spokespersons of relevant agencies.
- There is a need for more risk communication training for volunteers and personnel working in information service centres (such as migrant volunteers), including in different languages.

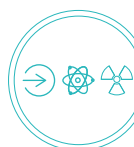
R5.3. Community engagement – Score 4

Strengths

- Thailand has over 1 million village health volunteers who work closely on RCCE with personnel from all departments of the MOPH.
- There is regular exchange of risk communication information with community leaders, religious leaders and volunteers. Thailand enjoys good cooperation on active risk communication from the public sector, the private sector, community and religious leaders and volunteers.
- A mobile telephone application, the SMART Village Health Volunteer Application “SMART VHV”, is available for village health volunteers. Constructed specially for this purpose, the application helps volunteers to prevent and control diseases in communities and makes them an efficient component of the real-time surveillance system, facilitating the sending of information to local hospitals. It also systematically collects information on the performance of each village health volunteer, incentivizing them by allowing them to redeem benefits. At the time of the JEE, about 600 000 volunteers were registered to use this application.
- Thailand has both a curriculum and an operations manual for risk communication.
- The national risk communication policy advocates encouraging migrant workers to be a part of the health service system.
- Thailand offers migrant-friendly services and works with migrant health volunteers.

Challenges

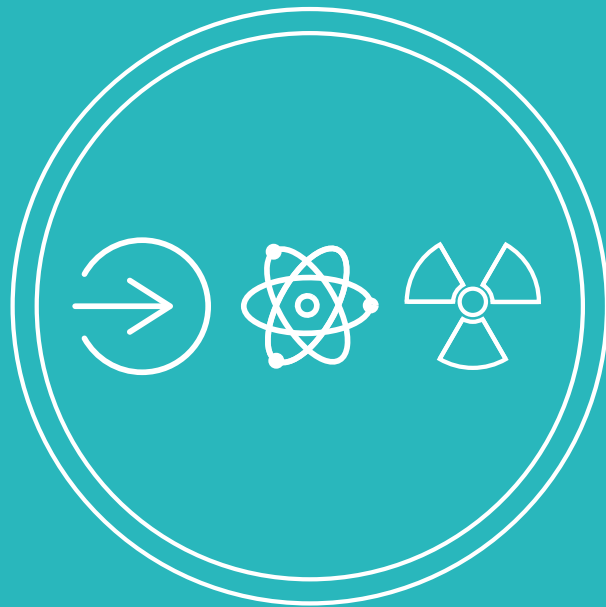
- There is a need for stronger community engagement across the country, especially for vulnerable populations, minority groups and rural remote communities in border areas.
- A formal MOU is needed to address risk communication on diseases and health hazards in normal and emergency situations, and should include concerned agencies such as the Ministry of the Interior, the Ministry of Defence and the Border Patrol Police.
- Thailand would benefit from regular, nationwide training-of-trainers sessions on risk communication for volunteers.
- Thailand would benefit from development of self-learning packages for local officers.



Recommendations for priority actions

- Establish a public health risk communication unit within each provincial public health office and/or enhance existing provincial public relations mechanisms for risk communication.
- Institutionalize a people-centred approach that co-designs solutions for public health challenges hand-in-hand with communities.
- Institutionalize a standardized Master Training Programme on risk communication for marginalized groups, including migrant workers and people living in border areas.

IHR-related hazards and points of entry and border health



PoE: Points of entry and border health



Introduction

All core capacities and potential hazards apply to “points of entry” (POEs) and thus enable the effective application of health measures to prevent the international spread of diseases. States Parties are required to maintain core capacities at designated international airports and ports (and, where justified for public health reasons, a State Party may designate ground crossings), which will implement specific public health measures that are required to manage a variety of public health risks.

Target

States Parties designate and maintain core capacities at international airports and ports (and, where justified for public health reasons, at ground crossings) *in order to implement specific public health measures that are required to manage a variety of public health risks.*

Level of capabilities

Thailand is bordered to the west and north-west by Myanmar, to the south-west by the Andaman Sea, to the east and north-east by Laos, to the south-east by Cambodia, and to the south by the Gulf of Thailand and Malaysia.

Thailand has a total of 69 POEs, of which 18 are designated points of entry under the IHR (2005). This means that the core capacities required by the designation are in place at those POEs in accordance with the provisions of Annex 1 of the IHR. These 18 designated POEs comprise four airports, five ports, and nine ground crossings.

Public health staff members at POEs in Thailand are called “Officers in Charge at International Communicable Disease Control Checkpoints”. They work under the authority of the Department of Disease Control at the MOPH and play the role of the “competent authority” in line with IHR requirements.

The management of public health events and the provision of regular health services at POEs, including a standardized referral system, are underpinned by a comprehensive legal framework. In addition, formalized coordination mechanisms are in place with other relevant stakeholders at POEs at both national and regional levels.

Thailand has a further 20 “authorized” ports which may issue ship sanitation certificates in accordance with the provisions of IHR Article 20.

Thailand has also signed several memoranda of understanding with neighbouring countries to ensure cross-border health cooperation in line with the provisions of IHR Article 21.

Thailand has also enrolled in the International Civil Aviation Organization (ICAO) Public Health Corridor programme to develop a COVID-19 aviation risk assessment framework and implement a multilayer risk management strategy.

Indicators and scores

POE1. Core capacity requirements at all times for POE – Score 4

Strengths

- Multilateral agreements are in place with adjacent countries concerning cross-border health cooperation at ground crossings.
- Regular continued education and on-the-job training sessions are provided for public health staff at POEs.
- Coordination mechanisms between public health services and relevant stakeholders at POEs have been established at national and regional levels.
- Two referral systems are in place at POEs – one for medical emergencies and one for communicable diseases.
- There is good coordination and collaboration between airport public health services and the emergency medical services under the national airport operator, Airports of Thailand (AOT).

Challenges

- Besides the national standards applicable at community level, there is a need to develop tailored guidelines, adapted to specific POEs, for routine activities including food and potable water safety, waste management and vector control.
- Further to the existing indicator-based surveillance system, an event-based surveillance strategy is needed to feed into the national surveillance system.
- There is a need for adapted guidelines, SOPs and training for public health staff at ground crossings.
- Implementation of contactless technology at POEs would enhance hygiene.

POE2. Public health response at POE – Score 4

Strengths

- Public health contingency emergency plans are integrated into POE emergency plans.
- Real-time polymerase chain reaction (RT-PCR) laboratory capacity has been established to detect COVID-19 and monkeypox cases at Bangkok Suvarnabhumi airport.
- Regular simulation exercises are organized in coordination with the airport and port operators.
- A routine health screening system targets travellers coming from yellow fever endemic countries.
- Thailand has good experience with well-trained personnel performing entry screening protocols, including temperature measurement, submission of health forms, physical inspections, crowd management, onsite testing and checking of vaccination credentials.

Challenges

- Thailand needs to develop more robust capacities to respond to accidental or deliberate chemical and radionuclear events in the framework of an all-hazards approach.
- Thailand should consider establishing arrangements with local veterinary facilities to isolate and treat affected imported animals and provide other relevant support that might be required.
- There is a need to raise awareness among airline companies about proper use of the Aircraft General Declaration and the importance of following WHO guidelines on aircraft disinsection and disinfection.

POE3. Risk-based approach to international travel-related measures – Score 3

Strengths

- The POE subcommittee under the Permanent Secretary of the Ministry of Transport is established as the national multisectoral body responsible for developing and implementing a strategy for international travel-related measures. This activity is carried out in coordination with, and based on recommendations from:
 - » the National IHR Committee; and
 - » the legal decisions of the National Disease Committee (in line with the Prime Minister's emergency decrees).

Challenges

- Thailand should consider avoiding blanket travel restrictions, and instead consider adopting approaches that are commensurate with specific risks in line with: a) WHO's *Technical guidelines for implementing a risk-based approach to international travel*, and b) Articles 2 and 43 of the IHR (2005).



Recommendations for priority actions

- Develop guidelines and SOPs and provide training to staff at ground crossings, in accordance with the IHR (2005) Annex 1B.
- Complement the existing indicator-based surveillance system at POEs by adopting an event-based surveillance strategy that feeds into the national surveillance system.
- Develop a set of guidelines, tailored specifically to POEs, for routine activities – including maintenance of food hygiene and potable water, waste management and vector control.

CE. Chemical events

Introduction

Timely detection of, and effective response to, potential chemical risks and/or events require collaboration with other sectors responsible for chemical safety, industries, transportation and safe disposal. States Parties need to have surveillance and response capacity to manage chemical risk or events and effective communication and collaboration between the sectors responsible for chemical safety.

Target

States Parties would have surveillance and capacity for managing chemical risks or events, with effective communication and collaboration between the sectors responsible for chemical safety, including health, occupational health, emergencies, environment, transportation and safe disposal, agriculture/veterinary and industries.

Level of capabilities

Thailand is party to international agreements – including the Rotterdam, Stockholm, Basel and Minamata Conventions – and has designated focal points/authorities to coordinate with the relevant agencies, both domestically and internationally, to implement the provisions of those Conventions. Thailand has also enacted domestic regulations to regulate and manage chemicals in various aspects throughout their lifecycles and to protect health and the environment under the scope of the National Strategic Plan on Chemical Management.

The National Coordinating Committee on Chemical Safety is an interministerial body responsible for developing the National Plan for Chemical Management by coordinating policy and plans through all required agencies. Responsibilities related to chemicals and chemical events are delegated to the various relevant ministries, and there are several established processes and/or networks designed to ensure interagency and stakeholder engagement and coordination, and to maintain the efficient flow of information at national and regional levels. Several interagency committees have been established by Acts to regulate and manage chemicals.

Both routine and incident response surveillance for chemicals and chemical events are managed by individual agencies appropriate to the nature of the event or concern. There is no single, centralized data system or publishing mechanism that provides a source of information on chemical-related incidents. Surveillance includes systems for chemicals and chemical events in areas that include toxicovigilance, environmental health, occupational health and food and consumer products. Chemical facilities, chemical registration and the environment are also subject to regulations and inspections to ensure compliance. Regular reports are published.

Thailand has suitable analytical capacity for chemicals, with agencies operating in a collaborative network and performing relevant related roles (e.g. taking environmental samples). Service agreements are in place with commercial laboratories. Laboratories operate to recognized procedures and international (e.g. ISO) standards. Thailand is extending and strengthening its surveillance resilience and capacity.

The National Disaster Risk Management Plan 2021–2027 (NDRMP) defines a comprehensive incident management strategy, with stakeholders having well-defined roles in the national response plan. Response plans have been reviewed and tested regularly through table-top and live simulation multi-stakeholder exercises. Thailand is broadening its experience by learning from real and exercise scenarios that involve more diverse situations in a deliberate effort to develop greater experience and resilience.

Mechanisms for funding to support emergency response activities are established within the NDRMP.

The NDRMP assigns to the MOPH the responsibility to coordinate interagency efforts in support of chemical emergency management operations, including by developing an operational plan for public health and medical services support. Guidelines have been developed for response, medical management, operations and surveillance. While a coordinated multiagency response plan is in place, preparedness and response capacity is reportedly limited for some sectors and for primary health care level providers and/or certain geographical areas.

Thailand has poison centres that operate 24 hours a day providing diagnostic and clinical management advice to health-care professionals as well as surveillance functions and other services. The Ramathibodi Poison Centre is a WHO Collaborating Centre for the Prevention and Control of Poisoning and acts as a coordinator for the Initiative for Coordinated Antidotes Procurement (the iCAP initiative) in the South-East Asia Region. Several chemical information databases are in place and can be used to support chemical emergency response teams and other responders.

Thailand has developed a Chemicals Action Plan and has made progress to address the priority actions identified in this area by Thailand's first JEE in 2017.⁷ Thailand is engaged in multiple regional and international chemical/toxicological networks and programmes, including the International Programme on Chemical Safety (IPCS), and is a partner of the ASEAN-Japan Chemical Safety Database.

Thailand is working to meet Sustainable Development Goals 3.9 and 12.4 and the objectives of the Strategic Approach to International Chemicals Management. The National Committee on Strategic Approach to Chemical Management is chaired by the Prime Minister or Deputy Prime Minister, and comprises members from government departments, independent scientific institutions, organizations related to public welfare, the environment and health, industry groups and independent experts.

Indicators and scores

CE1. Mechanisms established and functioning for detecting and responding to chemical events or emergencies – Score 4

Strengths

- Routine and incident response surveillance for chemicals in various sources and chemical events is undertaken and managed by designated individual agencies. Each relevant agency has a dedicated emergency response team.
- Laboratory capacity is available for systematic analysis according to recognized procedures and international standards. Thailand has shown the desire to build capacity and increase resilience in these areas.
- Guidance, advice, SOPs and training are provided for preparedness and response activities including surveillance, risk assessment, chemical incident response and clinical management.
- Poison centres are in place that operate 24/7 providing national diagnostic and clinical management advice, supporting preparedness planning, and supporting the wider regional distribution of antidotes in South-East Asia.
- Thailand has a multiagency engagement and response approach to chemical incidents.

Challenges

- Thailand has limited resources and capacity at primary health care level for responding to chemical emergencies.
- There is a need to increase capacity for laboratory and analytical facilities in order to support surveillance and assessment, and to build sustainable resilience to cover all risk areas.

⁷ See: Joint external evaluation of IHR core capacities of the Kingdom of Thailand. Mission report: June 26–30, 2017 (<https://www.who.int/publications/i/item/WHO-WHE-CPI-REP-2017.38>, accessed 8 June 2023).



CE2. Enabling environment in place for management of chemical events – Score 5

Strengths

- The NDRMP provides a comprehensive multiagency and multisectoral incident management strategy that considers the range of functions required. Emergency plans are in place at national, local and facility levels.
- Thailand has an interministerial body responsible for developing the National Plan for Chemical Management and for coordinating policies and plans through all required agencies.
- Relevant international conventions have been ratified.
- Thailand has enacted the National Strategic Plan on Chemical Management and a range of legal Acts regulating and managing chemicals and the chemicals industry in various aspects throughout the lifecycle of the products to protect health and the environment.
- A multi-stakeholder response plan has been tested through real events and simulation exercises and has been reviewed.
- The Incident Command System (ICS) is activated for emergency responses at all levels.

Challenges

- There is a need to ensure that regular exercises continue to be undertaken to maintain familiarity with the emergency response plan and to test it. These exercises should involve all relevant stakeholders and should lead to revision of the plan where appropriate.

Recommendations for priority actions

- Ensure sufficient preparedness, resources and capacity to deal with chemical events in different sectors by conducting risk-based/gap analyses to inform needs – including at national, intermediate and primary health levels and at POEs – and then to meet those needs.

RE. Radiation emergencies



Introduction

To counter radiological and nuclear emergencies, timely detection and an effective response towards potential radiological and nuclear hazards/events/emergencies are required in collaboration with sectors responsible for radiation emergency management.



Target

States Parties should have surveillance and response capacity for radiological emergencies and nuclear accidents. This requires effective coordination among all sectors involved in radiation emergencies preparedness and response.



Level of capabilities

Thailand first established a national nuclear agency in the late 1950s, and passed the Atomic Energy for Peace Act in 1961. The country has a solid legal basis for regulating peaceful use of nuclear technology.

There is no nuclear power station currently operating commercial electricity provision in Thailand, but the country is considered one of the top five “emerging nuclear energy” states in South-East Asia according to the 2018 *Pre-feasibility study on the establishment of nuclear power plants in ASEAN*. This study was published by the ASEAN Centre for Energy (ACE), supported by the government of Canada under the Nuclear and Radiological Programme Administrative Support (NPRAS) initiative in order to establish the status of civilian nuclear power development in the region. The plan to build a nuclear power plant for electricity generation has been on and off the national Power Development Plan (PDP) since 2007.

At present, the Office of Atoms for Peace (OAP) under the supervision of the Ministry of Higher Education, Science, Research and Innovation (MHESI) is the government agency with primary responsibility for regulating the uses of radiation and nuclear technology, including generating legal tools (i.e. acts, laws, decrees, and guidance) to regulate the use of radiation sources in Thailand.

The Nuclear Energy for Peace Act B.E.2559 was issued in 2016 and updated in 2019. This Act is the basis for deriving further regulatory ministerial laws for relevant agencies and sectors, decrees and regulations. Chapter X of the Act, entitled *Nuclear and radiological emergency*, specifies the key provisions for emergency response responsibilities. However, the planned ministerial law on radiological and nuclear emergency preparedness and response has not yet been finalized.

In 2014 the OAP, in its function as a national competent authority, developed a National Nuclear and Radiological Emergency Plan (NNREP),⁸ a supporting plan under the National Disaster and Relief Protection Plan. The NNREP describes the respective roles of all stakeholders involved in responses to radiation emergencies, and the framework for coordination between them.

The areas and sectors using radiation sources in Thailand include medicine, industry, agriculture and research. The OAP has conducted a risk mapping exercise to identify principal potential radionuclear hazards and categorize them according to the IAEA’s international safety standards,⁹ as follows:



⁸ https://www.oap.go.th/images/documents/resources/media-library/publications/EMERGENCY_PLAN.pdf

⁹ IAEA GSR Part 7: Preparedness and Response for a Nuclear or Radiological Emergency. Vienna: International Atomic Energy Agency; 2015 (<https://www.iaea.org/publications/10905/preparedness-and-response-for-a-nuclear-or-radiological-emergency>, accessed 9 June 2023).

- Category II: nuclear vessels travelling to Thai territory;
- Category III: industrial irradiation facilities and some hospitals;
- Category IV: activities and acts that could give rise to a nuclear or radiological emergency;
- Category V: areas within emergency planning zones; and areas within emergency planning distances of a category I or II facility located in a neighbouring country.

Identification of the primary risks provides the basis for developing emergency response plans and relevant preparedness activities. For the time being Thailand is not planning to build a nuclear power plant, but there is a research nuclear reactor in Bangkok that is used for a range of purposes, including production of radioisotopes for nuclear medicine and research, industrial uses and training.

Thailand is a member state of the International Atomic Energy Agency (IAEA) and a signatory to many treaties and conventions in the IAEA Safety, Security and Safeguards pillar. In relation to nuclear and radiological emergency situations, since 1989 Thailand has ratified the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency.

The latter Convention was applied to request IAEA's assistance in response to a severe radiological accident in Samut Prakan province in 2000, where 17 persons suffered from overexposure to radiation, 10 patients were treated for radiation injuries and three people died. The lessons of this experience contributed to the revision and strengthening of national preparedness plans for radiation emergencies.

Emergency OAP response teams are reported to have been provided with the required equipment, training and guidelines for responding to emergencies.

Thailand has set up a centralized system for routine monitoring of radioactivity levels and an early warning system with full nationwide geographical coverage. Gate gamma-monitoring systems are in place at selected designated POEs.

Formal arrangements are in place for licensing activities involving the use of radioactive sources, inventory of sources, and occupational safety for licensed users. An online training system is available for all licensees, and training is conducted regularly.

Thailand is involved in international cooperation programmes with the IAEA¹⁰ and the European Commission (EC), with the goal of becoming a regional leader in South-East Asia and providing support to neighbouring countries in future.

Establishing functional coordination mechanisms with the health sector is an ongoing process. Informal contacts between the OAP and the Ministry of Health exist, but these should be formalized and maintained regularly. In addition, the health sector's capacities for handling persons with radiation injuries or internal contamination with radionuclides appear not to be fully in place (e.g. case management protocols were not demonstrated, and the stockpile of agents required for treatment of such injuries – aside from potassium iodide tablets – is not yet established).

¹⁰ National report of Thailand Convention on Nuclear Safety. Bangkok: Office of Atoms for Peace; 2019 (https://www.iaea.org/sites/default/files/national_report_of_thailand_for_the_8th_review_meeting.pdf, accessed 9 June 2023).

Indicators and scores

RE1. Mechanisms established and functioning for detecting and responding to radiological and nuclear emergencies – Score 4

Strengths

- A radiological surveillance system with routine environmental monitoring is in place throughout Thailand.
- The OAP cooperates with the Customs Department which has set up radiation portal monitors at selected POEs and systematically provides information to the OAP.
- A 24/7 notification mechanism is in place for licensed users of radioactive sources.
- Coordination and cooperation practices are in place (e.g. frequent practical exercises).
- Thailand has ratified two international conventions on early notification and assistance in case of a nuclear emergency, and has established strong cooperation within the international community concerning radiation emergencies (e.g. with the IAEA, the EC and others).
- The NNREP is in place and coordination with other response organizations is established and regularly exercised.

Challenges

- Ministerial law and regulations are needed to support the NRREP which will have to be updated and aligned with the law and with IAEA standards.
- Thailand is yet to set up a functional link between the IHR National Focal Point and the national competent authority (OAP), and to delineate firmly their respective roles and responsibilities, including regarding cooperation in times of preparedness and response, joint capacity-building (training, exercises, information-sharing) and establishing clear protocols and SOPs.
- Human resources capabilities need to be strengthened further through regular training and education, including for the frontline officer pool which requires additional equipment to detect and respond to emergencies.
- Clinical management protocols should be made available for diagnosis and management of radiation injuries.
- Provisions are needed for rapid access to the specific pharmaceuticals stockpile.
- Individual dose-assessment capacity (including biodosimetry laboratories and bioassays for internal contamination monitoring) requires further development.

RE2. Enabling environment in place for management of radiological and nuclear emergencies – Score 4

Strengths

- A National Emergency Response Plan was established in 2014.
- The National Environmental Laboratory system was set up to monitor and measure levels of radiation to support the radiation emergency response. Data are shared with the international community of competent authorities related to radiation emergencies.
- Thailand has established national operational intervention levels for each emergency protective action (e.g. sheltering, distribution of potassium iodide tablets, evacuation, action on consumption of food and drinking water etc.) based on international safety standards for radiation emergencies.
- Emergency exercises are organized regularly.
- Cooperation is established between relevant stakeholders.



- Information-sharing among the international community in the South-East Asian region is established and includes cooperation with ASEAN and ASEANTOM (the dedicated cooperation framework for ASEAN nuclear regulatory bodies or relevant authorities).
- Thailand is a leader within ASEAN on radiation monitoring and the development of measurement systems for monitoring stations.
- Staff have knowledge and expertise in emergency management during nuclear and radiation accidents.
- Manuals are available for first responders (e.g. the police and medical teams) in case of nuclear and radiation emergencies.
- A 24/7 hotline is available for radiation emergencies (hotline: 1296).
- A manual for the public to use when finding orphan sources or in any radiation emergency situation is available via the OAP website.

Challenges

- Monitoring databases at radiation portal monitors, POEs and monitoring stations throughout the country need to be unified.
- OAP staff need access to continuous professional improvement and increased competencies for radiation emergency response.
- Training for health-care workers and emergency medical services should be conducted regularly, as should exercises that involve the public health sector.
- National regulations and standards are required for environmental monitoring support in case of radiation emergencies.
- Thailand needs improved financing to support core capabilities in this area.

Recommendations for priority actions

- Finalize and enact laws to implement the Nuclear Energy for Peace Act (2019) across various sectors.
- Formalize SOPs for notifying and liaising with the IHR National Focal Point in case of a radiological or nuclear emergency.
- Provide more training for frontline officers and first responders, with the focus on table-top and field training exercises and cross-sectoral cooperation between relevant emergency agencies.
- Ensure that clinical case management protocols for radiation emergencies are in place and personnel in dedicated hospitals are trained in their use. Establish arrangements and SOPs for access to pharmaceutical supplies (stockpiles) required to treat radiation injuries.
- Establish concrete arrangements to ensure that financial support, supplies and equipment are made available, including from the private sector.

Annex: JEE background

Mission place and dates

Bangkok, Thailand, 31 October–4 November 2022

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Objective

To assess Thailand's capacities and capabilities relevant to the 19 technical areas of the JEE tool for providing baseline data to support Thailand's efforts to reform and improve its public health security.

The JEE process

The JEE process is a peer-to-peer review. The entire external evaluation – including discussions around the priority actions, strengths, areas that need strengthening, best practices, challenges and scores – is collaborative, with JEE team members and host country experts seeking full agreement on all aspects of the final report findings and recommendations.

Should there be significant and irreconcilable disagreement between the external team members and the host country experts, or among the external experts, or among the host country experts, the JEE team lead will decide the outcome; this will be noted in the final report along with the justification for each party's position.

Limitations and assumptions

The evaluation was limited to one week, which limited the amount and depth of information that could be managed.

It is assumed that the results of this evaluation will be publicly available.

The evaluation is not just an audit. Information provided by Thailand will not be independently verified but will be discussed and the evaluation rating mutually agreed by the host country and the evaluation team. This is a peer-to-peer review.

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- Mr Withak Withaksabut Chonburi Provincial Public Health Office
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- Ms Kusuma Swangpun Phuket Provincial Public Health Office
- Dr Parichat Yingransan Tak Provincial Public Health Office
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- Mr Kulsumpun Krobanan Department of Medical Sciences
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- Mrs Juthamas Siripanee Department of Medical Sciences
- Mr Aekkawat Unahalekhaka Department of Medical Sciences
- Mr Wiphat Klayuth Department of Medical Sciences
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- Ms Parichat Andon Department of Medical Sciences
- Mrs Laykha Prasatthong Department of Medical Sciences
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• Ms Jirarat Thesasil	Food and Drug Administration
• Ms Yaowares Upamayan	Food and Drug Administration
• Ms Jaiphon Poomkham	Food and Drug Administration
• Ms Nantiya Somjettanakul	Food and Drug Administration
• Mr Rewut Thongwan	Food and Drug Administration
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• Ms Priyanoot Ruanghirunwanich	Department of Health
• Ms Yupin Jopang	Department of Health
• Mr Pinyaphat Julsuk	Department of Health
• Ms Pannikan Wangkum	Department of Health
• Mrs Neeranuch Aphacharat	Department of Health
• Ms Sajman Tranjarun	Department of Health
• Mrs Thanyalak Kaewmuang	Department of Mental Health
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• Mr Worawit Bunyathitthan	National Vaccine Institute
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- Dr Charatdao Boonthi

Non-governmental Organization (NGO)

- Ms Linfa Up-patcha World Vision Foundation of Thailand

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