



MyNLSP 2025-2029

SUPPLEMENTARY EDITION

Implementation of Activities: Monitoring and Evaluation

Prepared by : National Public Health Laboratory, Malaysia

SUPPLEMENTARY EDITION
Implementation of Activities:
Monitoring & Evaluation of MyNLSP
2025-2029

THEMATIC AREA 1: LEADERSHIP & LEGAL CONSIDERATION

THEMATIC AREA 1: Leadership & Legal Consideration

Strategy 1: Fostering multisectoral leadership to ensure availability and accessibility of functional laboratory services

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Strengthen the framework for leadership succession to ensure the operational stability of public health laboratory services in the country.	GLLP 1.Adapt & adopt GLLP curriculum 2.Send candidate for GLLP program as the mentor to initiate laboratory leadership programme Conduct sub activities: (GLLP Awareness and Training of Trainee Program)	1. National Public Health Laboratory (NPHL) 2. Pathology/ Forensic service 3. Transfusion service 4. DVS 5. Private lab (MAPML) 6. University Laboratory 7. Food Safety & Quality Division 8. Agriculture/Fishery 9. MyHAC 10. MyOHUN 11. RPHL 12. NAHRIM	1. Guideline/ SOP 2. Funding for meeting 3. Formation of committee to develop & regulate mentor-mentee programme	1.Development of training sessions based on modules and guidelines from GLLP Competency Framework (Modified). 2.Number of candidate trained/ attended GLLP programme 3. Number of awareness session of GLLP					
	NHLTAC 1. Conduct National Health Laboratory Technical Advisory	1.Secretariat NPHL 2.Members of the NHLTAC	1. Updates from NHLTAC subcommittee members	1.Minutes of the meeting (Yearly)					

	Committee (NHLTAC) Meeting		2. Funding for meeting						
2.Improve the existing legal and regulatory frameworks to enhance the uniformity and quality of services across public health laboratories.	Revise existing legal frameworks on mandatory laboratory licensing for medical laboratories by drawing on the experiences of regional and international networks (stakeholder's engagement, Regulatory Impact Analysis, financial implication and drafting process)	Respective legislative divisions 1. Head of Pathology service 2. Head of Disciplines 3. Head of Professions 4. Another relevant agency	1. Funding for meeting. 2. Formation of committee	1. Minutes of the meetings 2. Revise Act 674 and Act 586. 3. Enforcement of act and Regulations					

THEMATIC AREA 1: Leadership & Legal Consideration

Strategy 5: Strengthening regulations and legislations for smooth operations of laboratory services

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Improve the existing legal and regulatory frameworks to enhance the uniformity and quality of services across public health laboratories.	1.Revise existing legal frameworks on mandatory laboratory licensing for medical laboratories by drawing on the experiences of regional and international networks (stakeholder's engagement, Regulatory Impact Analysis, financial implication and drafting process)	Respective legislative divisions 1. Head of Pathology service 2. Head of Disciplines 3. Head of Professions 4. Another relevant agency	1. Funding for meeting. 2. Formation of committee	1. Minutes of the meetings 2. Revise Act 674 and Act 586. 3. Enforcement of act and Regulations					

THEMATIC AREA 2: HUMAN RESOURCES & CAPACITY BUILDING

THEMATIC AREA 2: Human Resources & Capacity Building

Strategy 1: Fostering multisectoral leadership to ensure availability and accessibility of functional laboratory services

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Strengthen the laboratory HR capacity to keep pace with the rapidly evolving technologies.	1. Develop training operational plan	All relevant agencies	1. Funding 2. Trainers	1. Annual training plan 2. Number of trainings conducted yearly. 3. Number of participants by agencies. 4. 80% of the training plan implemented					
	2. Implement short, targeted training sessions (micro-learning) focusing on specific skills or knowledge areas.	All relevant agencies	1. Funding 2. Trainers	Number of training /programs conducted, 1x/year					
	3. Incorporate training and capacity building in automation	All relevant agencies	1. Funding 2. Trainers	KPIs on automation & AI use were created for each health professional scheme					

	and AI use into the KPIs for various health professional schemes. Utilize training curriculum								
	4. Conduct training on rapidly evolving technologies via virtual or physical platforms.	All relevant agencies	1. Funding 2. Trainers	Number of training sessions per year					

THEMATIC AREA 2: Human Resources & Capacity Building

Strategy 3: Strengthening multi-sector coordination among public health laboratories, ensuring effective routine and pandemic preparedness and responses.

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1. Enhance laboratory workforce surge capacity through multisectoral coordination.	1. Identify gaps in the surge capacity at all public health laboratories. (i.e. during pandemic/outbreak)	All relevant agencies	Experienced Assessment Team	1. Number of laboratories assessed 2. Number of prioritized gap list					
	2. Formalize surge capacity agreements within public health laboratories for shared workforce and resources during surges.	All relevant agencies	Legal professionals	1. Number of formal agreements signed between PPP 2. Number of agencies involved					
	3. Conduct training sessions to equip laboratory staff within public health laboratories with skills for surge situations.	All relevant agencies	1. Trainers and Subject Matter Experts (SMEs) 2. Funding for training logistics Training facilities	1. Number of training sessions conducted 2. Number of staffs trained					

	4. Conduct multisectoral simulation exercises to test the coordinated response during surge situations.	All relevant agencies	1. Trainers and Subject Matter Experts (SMEs) 2. Funding for training logistics Training facilities	1. Number of training sessions conducted 2. Number of staffs trained					
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THEMATIC AREA 2: Human Resources & Capacity Building

Strategy 4: Leveraging national, regional and international partnerships and collaboration

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1. Build HR capacity and competency by securing training opportunities through external partners.	1. Collaborate with external partners to expand quotas and scholarships for further study and training. (i.e. AQI, NLSP, SMEs etc.)	All relevant agencies	Funding for scholarship programs	Numbers of scholarships/ awards					

THEMATIC AREA 3: FINANCIAL IMPLICATIONS

THEMATIC AREA 3: Financial Implications

Strategy 1: Fostering multisectoral leadership to ensure availability and accessibility of functional laboratory services

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1. Leverage strong government commitment and detailed financial planning to create a diversified funding allocation model that can withstand economic fluctuations.	1. Review funding allocation model to adjust for rising healthcare costs and ensure the maintenance of service quality.	All relevant agencies	1. Treasury documents 2. Financial department of the agency	Number of review session					
	2. Provide training on leveraging automated cost analysis tools and price forecasting models to improve budgeting accuracy amid global economic fluctuations.	All relevant agencies	1. Financial and Analytical Software 2. Qualified Personnel (Financial analysts/ healthcare auditors/ quality improvement specialists)	Numbers of training session per year					

THEMATIC AREA 3: Financial Implications

Strategy 2: Ensuring attainability of efficient and excellent laboratory testing services for all public health laboratories

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1. Develop cost-cutting strategies through cost analysis, strategic procurement, cost-effective technologies, and waste management.	1. Conduct cost-benefit studies on the consolidation of public health laboratory services.	All relevant agencies	1. Journals, guidelines 2. Expert in cost benefit study	Cost-benefit study report available					
	2. Identify opportunities for implementing cost-effective technologies across all levels of laboratory activities within public health laboratories.	All relevant agencies	1. Journals, guidelines 2. Technical working groups	Proposal of opportunities identified.					

THEMATIC AREA 3: Financial Implications

Strategy 3: Strengthening multi-sector coordination among public health laboratories ensuring effective routine and pandemic preparedness and responses.

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Enhance existing financial tracking systems to ensure efficient fund usage during economic downturns and unpredictable disease outbreaks.	1. Conduct awareness training on contingency fund usage during surge situations and unpredictable events.	All relevant agencies	1.Treasury document from MOF 2.Journals, guidelines	Numbers of awareness training sessions					
	1. Develop a guideline on robust financial planning to enhance preparedness and resilience for future pandemics and surge situations.	Secretariat for NHLTAC (To invite Financial Division MOH/MOF)	1.Treasury document from MOF 2.Journals, guidelines	Guideline available					

THEMATIC AREA 4: MONITORING & EVALUATION AND QUALITY ASSURANCE PROGRAM

THEMATIC AREA 4: Monitoring & Evaluation and Quality Assurance Program

Strategy 1: Fostering Multisectoral Leadership to ensure availability and accessibility of functional laboratory services.

Strategy 4: Leveraging national, regional and international partnerships and collaboration

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Encourage collaboration between national, regional and international associations, academia, organizations and standards bodies to attain minimal Laboratory Quality Assurance standards	1. Establish Steering Committee and Technical Working Group for capacity building for monitoring and quality assurance.	1. Steering Committee - HOD for each relevant agency (NHLTAC - QA subcommittee) 2. TWG - Multiagency committee team made up of technical personnel appointed by HOD for each relevant agency	1. SOP and Guidelines 2. MOU (if required)	1. Appointment letter & TOR Steering Committee 2. Appointment letter & TOR TWG 3. Minutes of meeting					

across sectors, ministries and departments for continuous monitoring and surveillance through Laboratory QA/QMS/Key Performance Indicators /National Indicator Approach /Quality Indicator programs.	EQA Provider: 2. Establish a National PT/EQA Provider for selected diseases (i.e. Hepatitis B, HIV, Forensic Slide preparation) 3. Increase participation of hospital and primary healthcare clinic (i.e. Hepatitis B & HIV) 4. Develop a national Proficiency Testing (PT) and External Quality Assessment (EQA) provider to support laboratory quality 5. Establish linkages with regionally and internationally recognized pool of trainers for mitigating the high cost for implementation and maintenance of quality services according to national/regional/international practice.	1. IMR/NPHL 2. Participating agencies - Hospital - Health clinic - Other relevant agencies	1. Funding 2. Workforce 3. Training for EQA PT providers 4. Facility, equipment 5. SMEs/experts 6. MOU	1. Appointment letter for EQA PT Providers 2. Establishment of EQA PT Program 3. Trained workforce 4. Training module 5. Minimum EQA cycle per year as required 6. List of certified and recognized trainers 7. TOR Available					
	EQA Participation: 6. Promote participation in Laboratory Quality Assurance (LQA) programs (EQA/ILC) at the national, regional level through these international bodies.	1. IMR/NPHL 2. Participating agencies - Hospital - Health clinic - Other relevant agencies	1. LQA Program Funding 2. SOP	1. Number of LQA Program (EQA/ILC) 2. Number of facilities participating					

	7. Participate in laboratory accreditation								
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THEMATIC AREA 4: Monitoring & Evaluation and Quality Assurance Program

Strategy 2: Ensuring attainability of efficient and excellent laboratory testing services for all public health laboratories

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Establish a registry of laboratories in Malaysia through the usage of available digital tools for monitoring and evaluation for Quality Assurance programs.	1.Develop web-based sharing platform for QAP with linkable to all agency website. 2.Develop a registry for capacity building by creating a survey/e-form for the initiation of the registry of laboratory (service, asset, human resource and facility)	1. NHLTAC - QA subcommittee 2. TWG - Multiagency committee team made up of technical personnel appointed 3. Other relevant agencies	1. Funding for digital tools 2. Power of Provision/Enabler to instruct all labs to register 3. MOU	1. Database on QAP 2. Registry of labs (No. of labs registered) Note: Numerator: Number of accredited laboratories Denominator: Total number of laboratories					

THEMATIC AREA 5: Supply Chain Management

THEMATIC AREA 5: Supply Chain Management

STRATEGY 2: Ensuring attainability of efficient and excellent laboratory testing services for all public health laboratories

STRATEGY 4: Leveraging national, regional and international partnerships and collaboration

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Improve details on laboratory supply chain management by leveraging regional collaboration for better laboratory services, diagnostic access and therapeutics, in order to sustain and diversify the supply chain for managing price inflation and economic irregularities.	Develop and implement an integrated supply chain management <u>electronic database</u> , incorporating digital systems and data analytics for effective stockpile management, real-time inventory visibility, efficient procurement and supply distribution.	1. MOH (Digital Health Division) 2. eNCDC 3. Other relevant agencies	1. Funding for development of system 2. Workforce-trained personnel	Integrated supply chain management electronic database					
2.Enhance inter-agency and inter-ministerial coordination to facilitate effective	1. <u>Establish a primary agency</u> to spearhead inter-agency partnership utilizing established documentation	Lead agency (i.e. MOH, NADMA)	SOP/TOR/Guideline based on real-time directives and protocols	1.Steering Committee 2.TOR Available					

networking in <u>procurement, storage, and distribution processes</u> to ensure safety, compliance, and efficiency.	processes. (i.e. Pandemic/Outbreak) 2. <u>Conduct inter-agency and inter-ministerial coordination</u> to facilitate effective networking in procurement, storage, and distribution processes, ensuring safety, compliance, and efficiency	Lead agency (i.e. MOH, NADMA)	SOP/TOR/Guideline based on real-time directives and protocols	1. Stockpile Data 1. Minutes of meetings 2. Stockpile Data					
	3. Secure additional <u>resources for deployment and distribution</u> by diversifying suppliers through local and international platforms as part of mitigation during any crisis	All relevant agencies	SOP/TOR/Guideline based on real-time directives and protocols	1. Minutes of meetings 2. Linelisting of deployment and distribution of supply					

THEMATIC AREA 6: INFRASTRUCTURE REQUIREMENTS, EQUIPMENT AND MAINTENANCE

THEMATIC AREA 6: Infrastructure Requirements, Equipment and Maintenance

STRATEGY 1: Fostering multisectoral leadership to ensure availability and accessibility of functional laboratory services

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1. Advocate for the development and enforcement of legislation and policies that address laboratory infrastructure needs, considering geographic and logistical challenges to ensure equitable distribution and access.	1. Conduct Interagency meeting for capacity building and workforce to develop a strong policy framework to enhance resilience against natural disasters and aging infrastructure by inter-ministerial coordination, and securing funding for technological upgrades that ensure safe, hygienic infrastructure to manage pandemic and disaster risks. 2. Conduct Epidemiology Training (OH-FETP) for workforce	1. All relevant agencies (event based related) 2. Epidemic Intelligence Program Malaysia (EIP Malaysia)	1. Funding for meeting 2. Establishment of steering committee/working committee	1. Minutes of meetings 2. Linelisting of agencies involved (event based related) 3. Policies framework developed (event based related) 4. Number of trained workforce (OH-FETP)					

		3. Malaysia's One Health University Network (MyOHUN)							
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THEMATIC AREA 6: Infrastructure Requirements, Equipment and Maintenance

STRATEGY 1: Fostering multisectoral leadership to ensure availability and accessibility of functional laboratory services

STRATEGY 2: Ensuring attainability of efficient and excellent laboratory testing services for all public health laboratories

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Address disparities in national laboratory infrastructure by exploring <u>alternative financing mechanisms and public-private partnerships</u> to secure adequate financial support for upgrading aging infrastructure, purchasing and maintenance of equipment to ensure high-quality and reliable services	1.Expand the use of mobile labs to address geographic and logistical challenges, ensuring equitable access to laboratory services across diverse regions. 2. Establish public-private partnerships for financial support and targeted investments for <u>replacing aging equipment and impact of natural disasters.</u>	All relevant agencies	1. MOU between relevant stakeholders 2. SOP/ Guidelines 3. Authorized Personnel 4. Budget/ Equipment/ Facility	1.Number of Functioning Mobile labs with driver 2. Number of trained personnel 3. Map mobile labs / facilities in the country. 4. Linelisting of replaced equipment					

THEMATIC AREA 6: Infrastructure Requirements, Equipment and Maintenance

STRATEGY 5: Strengthening regulations and legislations for smooth operations of laboratory services

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1. Advocate for the development and enforcement of legislation and policies that address laboratory infrastructure needs, considering geographic and logistical challenges to ensure equitable distribution and access.	1. Establish compliance with applicable laws, regulations, and ISO management system standards by addressing infrastructure, equipment, and maintenance requirements. 2. Implementation of Planned Preventive Maintenance (PPM) of equipment in the laboratory	All relevant agencies	1. Trainer 2. Auditor 3. SOP 4. Monitoring Programme 5. Guidelines 6. Authorized Personnel 7. Budget/ Equipment/ Manpower	1. Percentages of accredited laboratory. Note: Numerator: Number of accredited laboratories Denominator: Total number of laboratories 2. Scheduled of PPM implemented based on planned					

THEMATIC AREA 7: ONE HEALTH PLAN & POLICIES

THEMATIC AREA 7: One Health Plan & Policies

Strategy 1: Fostering multisectoral leadership to ensure availability and accessibility of functional laboratory services

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1. Strengthening laboratory skilled workforce and capacity building in multi sectors at all levels through national, regional and international funding, technical assistance, and technological advancements, to minimize the impact of emerging zoonotic infectious diseases and AMR, and climate change	1. Conduct meeting among stakeholders on coordination and communication for comprehensive one health Plan and policies.	1. MyOHUN [coordinator] 2. Relevant Agencies	Funding	1. Minutes of meeting 2. Number of agencies participated					
	2. Conduct inter sectoral laboratory technical meeting for coordination and consideration	1. National antimicrobial resistance committee (NARC) (coordinator) 2. Relevant Agencies	Funding	1. Minutes of meeting 2. Number of agencies participated					

THEMATIC AREA 7: One Health Plan & Policies

Strategy 2: Ensuring attainability of efficient and excellent laboratory testing services for all public health laboratories

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1. Optimizing mechanisms for standardization of laboratory SOPs and guidelines for human and zoonotic disease, food, environment, and surveillance systems.	Review and update policies/guidelines /laboratory SOP by incorporating technological advancements when necessary.	1. MyOHUN [coordinator] 2. Relevant Agencies	1. Funding 2. Human resources (consultants)	One document per year					
2.Fostering and enhancing policy and guidelines to outbreak response and emergencies through national, regional and international collaboration, technical assistance and technological		1. MyOHUN [coordinator] 2. Relevant Agencies	1. Funding 2. Human resources (consultants)	One document per year					

THEMATIC AREA 7: One Health Plan & Policies

Strategy 3: Strengthening multi-sector coordination among public health laboratories ensuring effective routine and pandemic preparedness and responses

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1. Leveraging technological advancements for rapid detection, genomic analysis and data sharing in One Health	Strengthen data sharing (events, surveillance, publications) on the Malaysia One Health AMR (MyOHAR) platform	1. National antimicrobial resistance committee, Medical Program (Infection Control Division), MOH 2. All relevant agencies	Funding	Updated data on annual basis for all sectors (MyOHAR platform)					
2. Strengthening timely systematic monitoring and surveillance system including data sharing among multi-sectors to minimize the impact of emerging zoonotic infectious diseases and AMR, and climate change.	Execute and improve the Integrated One Health AMR surveillance	1. National antimicrobial resistance committee, Medical Program (Infection Control Division), MOH 2. All relevant agencies	Funding	Updated data on annual basis for all sectors (MyOHAR platform)					

THEMATIC AREA 7: One Health Plan & Policies

Strategy 4: Leveraging national, regional and international partnerships and collaboration

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Enhancing collaborative research through national and international partners' funding on One Health integrated surveillance and emerging diseases.	1. Utilize Molecular method development for the detection of emerging, re-emerging and other priority zoonotic pathogens	1. National antimicrobial resistance committee, Medical Program (Infection Control Division), MOH 2. All relevant agencies	1. Financial 2.Human resources (consultants), 3.Asset	1. One Test/Year 2. The number of participating laboratories utilised the new method					
	2. Participate in Whole genome sequencing (WGS) one health surveillance on selected pathogens	1. National antimicrobial resistance committee, Medical Program (Infection Control Division), MOH 2. All relevant agencies	Financial (research grants) which include equipment and bioinformatics facilities	1. One research project 2. Number of participating laboratories for WGS surveillance under One Health.					
2.Fostering resources for One Health Initiatives through international technical assistance and funding bodies.	Engagement with potential funding bodies to secure resources and funding for one health activities	1. National antimicrobial resistance committee, Medical Program (Infection Control Division), MOH 2. All relevant agencies	Financial support	1. One project 2. Number of engagements attended					

THEMATIC AREA 8: AMR AND GENOME SURVEILLANCE & RESEARCH

THEMATIC AREA 8: AMR and Genome Surveillance & Research

Strategy 1: Fostering multisectoral leadership to ensure availability and accessibility of functional laboratory services

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Enhancing coordination and communication among public-private partnerships, while simultaneously investing in laboratory workforce development** through funding, technical support, and technological innovation, will strengthen expertise across all levels. Together, these efforts will drive effective responses to emerging infectious diseases, AMR, and climate change, fostering more resilient health systems.	1.To conduct meeting among stakeholders on coordination and communication for comprehensive AMR and genomic surveillance programs 2. Conduct Top stakeholders multi sectoral table top exercise	1. National antimicrobial resistance committee, Medical Program (Infection Control Division), MOH 2. All relevant agencies	Operational budget	1.One meeting/year 2.Minutes of the meeting 3.Number of table top exercises 4.Number of agencies involved the table top exercises					

THEMATIC AREA 8: AMR and Genome Surveillance & Research

Strategy 2: Ensuring attainability of efficient and excellent laboratory testing services for all public health laboratories

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Strengthening the genomics and bioinformatics workforce through career growth, global partnerships, and modern technology.	Conduct joint training program for genomic testing for rapid detection and response among public and private sectors	1.MOH 2.MOSTI 3.Private Laboratory 4.DVS 5.NAHRIM 6.Other relevant agencies	1.Technical experts, 2. Funding	1.Number of training 2. Number of genomic protocols					

THEMATIC AREA 8: AMR and Genome Surveillance & Research

Strategy 3: Strengthening multi-sector coordination among public health laboratories ensuring effective routine and pandemic preparedness and responses

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Enhancing multisectoral collaboration and communication for AMR and genomic surveillance by securing international funding, expertise support.	1.Develop public-private partnership proposal by organizing AMR and genomic surveillance workshops	1.MOH 2.MOSTI 3.Private Laboratory 4.MOHE 5.NAHRIM 6.Other relevant agencies	1.Technical experts 2.Funding	1.Number of Workshop Conducted 2.Number of approved proposals					
	2.Establish a pathogen genomic surveillance strategy	All relevant agencies	1.Technical expert 2.Funding	Formulation of surveillance strategy					
2.Develop the mapping of genomic facilities and expertise to strengthen the response to climate change-related AMR risks.	Create a database of genomic facilities and expertise	1. Lead – NPHL, MOH 2. Other relevant agencies	1.Technical expert 2.Funding	Creation of an accessible database					

THEMATIC AREA 8: AMR and Genome Surveillance & Research

Strategy 4: Leveraging national, regional and international partnerships and collaboration

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Enhancing national, regional & international partnerships and collaborations on technological advancement of AMR and genomic testing	Joint training among stakeholders on AMR and genomic testing	All relevant agencies	1.Technical expert 2.Funding	Number of Joint-training / year					

THEMATIC AREA 8: AMR and Genome Surveillance & Research

Strategy 5: Strengthening regulations and legislations for smooth operations of laboratory services

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Strengthening the enforcement and monitoring of regulations related to antibiotic usage and AMR control.	To revise policies on the use of antimicrobial agents and strengthen enforcement activities on regular basis	1. National antimicrobial resistance committee, Medical Program (Infection Control Division), MOH 2. All relevant agencies	1.Technical expert 2.Funding	1.Revised policies 2.Number of meetings attended 3.Minutes of meetings					

THEMATIC AREA 9: EMERGENCIES & PANDEMIC PREPAREDNESS

THEMATIC AREA 9: Emergencies & Pandemic Preparedness

Strategy 1 : Fostering multisectoral leadership to ensure availability and accessibility of functional laboratory services

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Strengthening Laboratory Network at national and regional level	Regular inter sectoral laboratory technical meeting for coordination and consideration	All relevant agencies (MOH, MOSTI, MOA (DVS, DOF), NAHRIM)	Operational budget	Meeting reports					
2.Laboratory simulation exercise for all hazards	Top stakeholders table top exercise	All relevant agencies (MOH, MOHE, DVS, Wildlife)	1.Technical experts, 2.Multi sectoral stakeholders, 3.Funding,	Number of exercises conducted					
3.Multi sectoral and multi-agency laboratory leadership training using Laboratory Leadership Curriculum Modules developed	Training workshop i.e. GLLP at national/ministerial/ institutional level	All relevant agencies (MOH, MOHE, DVS, Wildlife, MyHAC)	1.Funding, 2.Technical experts, 3.Multi sectoral representatives, consultant and partners.	1.Workshop conducted 2.Number of officers are trained					

THEMATIC AREA 9: Emergencies & Pandemic Preparedness

Strategy 2: Ensuring attainability of efficient and excellent laboratory testing services for all public health laboratories

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Strengthening timely and quality laboratory detection activities	1.Conduct training for laboratory based- testing molecular protocol for priority pathogens and parameters for food and environment samples	Relevant agencies	Funding for training on capacity building and laboratory supply	Number of training					
	2.Conduct training for development for in-house protocol development for multiplex panel and design and synthesizing primer probe for priority testing's	Relevant agencies	Funding for training on capacity building and laboratory supply	Number of training					
2.Enhancing national essential diagnostic lists at all tiered levels	Review and update National Essential Diagnostic Lists (NEDL) including diagnostics lists for national and global priority diseases and hazards	Relevant agencies (MOH, DVS, MOSTI (Chemistry Dept and Nuclear Dept) DVS)	Operational budget	NEDL reviewed and updated (as needed)					

THEMATIC AREA 9: Emergencies & Pandemic Preparedness

Strategy 3: Strengthening multi-sector coordination among public health laboratories ensuring effective routine and pandemic preparedness and responses

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Strengthening coordination of the National Disaster Management Plan including One Health Approach to minimize disruption in resources and reduce risk of zoonotic disease transmission.	1.Review and update the National Disaster Management Plan) (Interim Guideline for Laboratory Preparedness Plan for Disaster, Outbreak, Crisis and Emergency) 2.Engaging in preparedness for handling national food safety crises through the Food Safety Emergency Response (FSER)	Relevant agencies (MOH, MOHE, DVS, Wildlife, NAHRIM) 1.Food Safety & Quality Division 2.Other relevant agencies	1.Technical experts 2.Consultants, 3. Secretariat, workshop, 4. regional /international partners Inputs from all stakeholders	1.New Interim Guidelines (as needed) 1.FSER Manual 2.Number of Activities 3.List of participants					
2.Enhancing information resources and systems to inform public health actions through partnership and collaboration during an	Enhancement of public health network website i.e. https://myohar.moh.gov.my/	All relevant agencies	Funding for development and maintenance of the network	Number of enhanced public health network website					

emergency situation.									
3.Strengthening inter-agency coordination and engagement to ensure timely responses and surge capacity during pandemics	Strengthen comprehensive laboratory emergency plans for pandemic preparedness.	All relevant agencies	Funding	Availability of guideline for laboratory emergency plan					
4.Enhancing resources mobilization and standardize procedures for emergency preparedness, response and recovery during pandemics and health threats.	Strengthen partnerships between governments, international organizations, the private sector (e.g., pharmaceutical companies, manufacturers of personal protective equipment) to ensure rapid mobilization human, financial and material resources during health emergencies	All relevant agencies	1. Funding 2. Resources availability	SOP/TOR available					

THEMATIC AREA 9: Emergencies & Pandemic Preparedness

Strategy 4: Leveraging national, regional and international partnerships and collaboration

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Strengthening communication and engagement with internal and external partners at an early phase of threat.	Develop communication channels with regional and international partners to strengthen coordination and responsiveness in emergency preparedness efforts i.e. video conferencing, conferences network	All relevant agencies	1. Funding 2.Technical experts	1. Number/type of channel for communication 2. Number of formulated action plans for health emergency (as needed)					

THEMATIC AREA 10: DIAGNOSTICS TESTING AND SAMPLE REFERRAL SYSTEM

Thematic Area 10: Diagnostics Testing and Sample Referral System

Strategy 2: Ensuring attainability of efficient and excellent laboratory testing services for all public health laboratories

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Leveraging advanced diagnostic techniques and skilled laboratory personnel by investing in new technologies and automation.	Provide up-to date laboratory testing services: 1.Procurement in Cutting-Edge Equipment, automated systems and Digital Technologies. This will improve workflow efficiency, increase longer lab operation hours and increase testing capacity without the need for multiple locations. 2. Conduct training on staff professional development 3.Identify the emerging technologies for laboratory testing	All relevant agencies	Secure funding for equipment maintenance.	1. Number of equipment procured 2. Number of training attended/ organized 3.Number of new technologies					

Thematic Area 10: Diagnostics Testing and Sample Referral System

Strategy 3: Strengthening multi-sector coordination among public health laboratories, ensuring effective routine and pandemic preparedness and responses

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Enhancing comprehensive laboratory network, well-defined SOPs and framework for mobilizing mobile/field lab to quickly scale up testing capacities during unpredictable outbreaks or pandemics.	Develop a Comprehensive Emergency Response SOP for Laboratories, Establish a central authority to oversee the entire laboratory network with details on how to activate mobile/field labs, rapid deployment, mobilize personnel, and prioritize testing during outbreaks	All relevant agencies	1.Technical Inputs (local & international experts) from agencies 2.Funding 3.Reference documents.	1.National Emergency Response SOP established					
2.Optimizing the comprehensive laboratory network and established sample referral and transportation systems to mitigate the impact of disruptions in logistics during natural disasters.	1.Develop SOP for sample transportation during Disaster to review existing i.e. Guideline for the safe transport of clinical specimens and infectious substance in Malaysia 2023, Buku garis panduan penghantaran sampel Jabatan Kimia Malaysia 2023 etc.	All relevant agencies	1.Technical Inputs (local & international experts) from agencies 2.Funding 3.Reference documents	Updated Guidelines Disaster (Annex)					

	2. Formulate Partnerships for Resource Sharing with relevant agencies	All relevant agencies	Technical Inputs	Agreement					
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THEMATIC AREA 11: LABORATORY DATA MANAGEMENT SYSTEM

Thematic Area 11: Laboratory Data Management System									
Strategy 2: Ensuring attainability of efficient and excellent laboratory testing services for all public health laboratories									
Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Enhancing seamless data management between the public and private sectors by implementing an integrated LIS in all health facilities, including POCT	Develop integrated LIMS systems and Digital Technologies	All relevant agencies	Funding and expertise	Developed integrated LIMS					

Thematic Area 11: Laboratory Data Management System

Strategy 3: Strengthening multi-sector coordination among public health laboratories ensuring effective routine and pandemic preparedness and responses

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Utilizing the existing comprehensive system and effective interagency data sharing platform to integrate information systems across various tiers, thereby improving data flow and communication.	1.Harmonise MOUs /agreements between agencies. Create common data-sharing agreements that facilitate the exchange of information while ensuring data privacy and security	All relevant agencies	Relevant documents	Establishment of MOU					

Thematic Area 11: Laboratory Data Management System

Strategy 4: Leveraging national, regional and international partnerships and collaboration

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Integrating the established LIMS with open-source bioinformatics workflows and cloud computing to boost data processing, improve data access and enhance collaboration.	1.Upgrade ICT equipment with cost-effective cloud-based solutions.	All relevant agencies	Funding	Number of updated ICT equipment and software					
	2.Conduct training to fully harness the capabilities of existing IT systems.	All relevant agencies	1.Funding 2.Experts	Number of training conducted/attended					
	3.Mitigate the risks for breach of data security and transmission through the capacity building	All relevant agencies	1.Funding 2.Experts	1.Establishment of firewall 2.Adhere to ISMS requirement (ISO 27001)					

THEMATIC AREA 12: BIOSAFETY & BIOSECURITY, WASTE MANAGEMENT

Thematic Area 12: Biosafety & Biosecurity, Waste Management.

Strategy 2: Ensuring attainability of efficient and excellent laboratory testing services for all public health laboratories.

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1. Enhancing biosafety practices, especially for handling unknown or novel pathogens, by addressing the shortage of skilled laboratory personnel	1. Training and Capacity Building	All relevant agencies	1. Technical trainers 2. Funding	Number of trained personnel (Participate in Biosafety and Biorisk Management Training)					
	2. Appointment of Biosafety Committee in relevant agencies 3. Develop Biosafety Manual 4. Conduct Biorisk Management Refresher Course 5. Integrate Biosafety compliance in agency OSH committee	All relevant agencies	1.Guideline 2. Funding 3. Trained personnel	1. Number of agencies with this committee 2. Number of manuals developed 3. Number of training and trained personnel 4. Minute OSH committee meeting (Integration of Biosafety Compliance) 5. Advocate for ISO 35001 compliance					

Thematic Area 12: Biosafety & Biosecurity, Waste Management.

Strategy 4: Leveraging national, regional and international partnerships and collaboration

Sub-Strategy	Activity	Participating Agency	Resources needed	Indicators of Achievement	25	26	27	28	29
1.Utilizing the established Institutional Biosafety and Biosecurity Committees along with international partnerships with reliable equipment suppliers to ensure compliance with protocols and standards	1.Review existing national guidelines for BSL facilities including maintenance and backup plans.	All relevant agencies	Existing guidelines and reference documents Technical Inputs (local & international experts)	1.Updated version of National Guidelines for BSL 2.Compliance to the National Biosafety & Biosecurity Guidelines (i.e. Audit, Monitoring & Evaluation of the compliance)					



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