MAURITIUS: SURGE IN DENGUE CASES INTRA-ACTION REVIEW (IAR)

REPORT

Conference Room, ENT - Hospital, 03 - 05 September 2024

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1. Executive Summary

1.1. Mauritius Dengue Intra-Action Review

The Mauritius Dengue Intra-Action Review was conducted to assess and improve the country's response to a recent surge in dengue cases. The review focuses on sharing experiences, identifying best practices, addressing challenges, and providing recommendations to strengthen public health systems and strategic plans. The review's key outcomes and recommendations are categorized as follows:

1.2. Best Practices

- **Multisectoral Coordination**: Regular cross-departmental meetings, availability of operational plans, and mobilization of staff from other ministries have been effective in the response.
- **Risk Communication and Community Engagement**: Training for community leaders, door-to-door awareness campaigns, and mass media efforts played crucial roles in public education and vector control efforts.
- **Surveillance and Response**: Existing systems for case notification, reporting, and data analysis helped coordinate response efforts between regional and central levels.
- **Vector Control**: Rapid deployment of fogging equipment and enhanced entry screening for incoming passengers have contributed to containing the outbreak.
- **National Laboratory Systems**: Mauritius' laboratory capabilities, including testing capacity and collaboration with international bodies, supported timely diagnosis and outbreak detection.

1.3. Challenges Identified

- **Coordination and Communication**: Delays in multisectoral coordination, limited involvement of the private sector, and lack of interoperable electronic information systems hampered the efficiency of the response.
- **Resource Limitations**: Inadequate resources for vector control, laboratory testing, and patient management, along with delays in procurement, posed significant challenges during the outbreak.

- **Community Resistance**: Public misconceptions about dengue prevention and resistance to behavioural change limited the effectiveness of community outreach programs.
- **Surveillance Gaps**: Insufficient training for rapid response teams, lack of event-based surveillance, and fragmented data management systems hindered effective disease tracking.

1.4. Prioritized Actions

- **Immediate Implementation**:

  i. Prompt multisectoral meetings and improved financial management training.
  ii. Updates to the dengue operational plan and development of SOPs for communication.
  iii. Establishment of the Integrated Vector Management TWG and implementation of the plan
  iv. Strengthening the surveillance system with GIS and enhanced training for rapid response teams.
  v. Recruitment and training of staff to enhance vector control and laboratory services.

- **Mid to Long-Term Implementation**:

  i. Establishment of an Incident Management System (IMS) and One-Health platform for better public health emergency response.
  ii. Continued training on International Health Regulations and implementation of a common data-sharing platform for dengue cases.
  iii. Expanded community engagement, regular national clean-up campaigns, and school-based hygiene programs.
  iv. Recruitment of entomological staff and digital mapping for vector surveillance activities.

1.5. Resource and Policy Enhancements

- **Plans and Policies**: The dengue operational plan, integrated vector management, and public health emergency operation center (PHEOC) plans were identified as crucial policy frameworks.
- **Resources**: Key resources include trained personnel, communication facilities, and international support from WHO, IOC, and CDC. However, gaps in resource allocation, and timely procurement especially in vector control and laboratory operations, were noted.

1.6. Recommendations for Strengthening Response

- **Improved Coordination Mechanisms**: A more structured approach, such as establishing a Public Health Emergency Operations Center and formalizing multisectoral coordination, through the use of IMS is essential for timely interventions.
- **Implementation of the Integrated Vector Management and Insecticide Resistance Management Plans:** development of the technical working group with clear roles and need for accountability.
- **Enhanced Communication and Surveillance**: Developing a unified data-sharing platform, better communication channels between health departments, and strengthening event-based surveillance systems are crucial to improving response efficiency. Ensuring that 3rd guideline IDSR is rolled out to more than 90% through the republic of Mauritius.
- **Capacity Building**: Regular training for public health officials and workers, community leaders, and healthcare staff, along with improved resources for surveillance and laboratory operations, are necessary for sustained dengue management.

1.7. Conclusion

The review underscores the importance of multisectoral coordination, enhanced resource allocation, and capacity building to improve the dengue response in Mauritius. Addressing the identified gaps, particularly in surveillance, communication, and community engagement, will enable a more robust and effective public health system to manage future outbreaks.

2. Context of the surge in Dengue cases response and objectives of the IAR

2.1. Epidemiological update

After the first locally acquired dengue case reported by the Ministry of Health and Wellness (MOHW), Mauritius on 11 December 2023, dengue cases rapidly increased between December 2023 and February 2024, reaching a peak during week nine of 2024. In addition, on the week of 15 January 2024, a concurrent outbreak of dengue was reported on the autonomous island of Rodrigues. *Aedes albopictus* is the sole mosquito species responsible for dengue transmission for the current and previous outbreaks on the two islands, and only serotypes 1 and 2 have been detected in Mauritius.

2.2. Island of Mauritius

The island of Mauritius has seen the largest share of dengue cases in the ongoing outbreak. From 11 December 2023 to 31st August 2024, 6848 cases of dengue have been recorded. This outbreak was characterised by a rapid increase in cases in December 2023, leading to a peak in cases during the week of 26 February 2024 due to adverse climatic conditions. Cases have declined since then. In week 33, (12 -18 August 2024) only 2 cases were reported.

The factors contributing to the decline include intensified response from the MOHW, as well as the recent drop in temperatures and rain across the island, with entry into winter season.

The most affected districts where there was an upsurge of cases were Riviere du Rempart, Pamplemousses, situated in the north of the island, and Port Louis while cases were also reported in other districts, essentially from individuals who work in highly affected regions. Cases have been largely concentrated in the adult population, with relatively lower number of cases in children and the elderly, however recent data distribution showed increase in cases in above 60 years. 54% of cases are male.

2.3. Objectives

Provide the overall scope and objectives.

Overall Objective

The purpose of the Mauritius DENGUE Intra-Action Review is fourfold:

i. to provide an opportunity to share experiences and collectively analyze the ongoing response to the surge in dengue cases in Mauritius by identifying challenges and best practices

ii. to facilitate consensus building among stakeholders and compile the lessons learned by various stakeholders during the response to improve the current response by sustaining best practices that have demonstrated success and by preventing recurrent errors

iii. to document and apply lessons learned from the response efforts to date to enable health systems strengthening

iv. to provide a basis to update and validate the current dengue operational plan and other strategic plans accordingly

3. Methodology of the IAR

Date(s) of the IAR activity	3/09/2024 - 5/09/2024
Location(s)	Country: Mauritius
Set-up	☐ Online ☒ Onsite ☐ Mixed (online and onsite)
Participating institutions and entities	*Ministry of Health and Wellness* *WHO*
Total number of participants and observers (if applicable)	*31*
Period covered by the review	(11/12/2023 - 03/09/2024)
Response pillar(s) reviewed	☒ Country-level coordination, planning and monitoring ☒ Risk communication, community engagement, and infodemic management ☒ Surveillance, case investigation and contact tracing ☒ Points of entry ☒ National laboratory system ☒ Infection prevention and control/Case management and knowledge sharing about innovations and the latest research/ Operational support and logistics in the management of supply chains and workforce resilience/ Strengthening essential health services during the surge in cases.

4. Findings

4.1. Country-level coordination, planning and monitoring	
Observations	
Best practices	- Regular multisectoral and interdepartmental meetings organised at strategic, operational and tactical level - Availability of active informal coordination mechanism - Mobilisation of staff (Surge staff) from other ministries and sectors for vector control and private sector - Availability of operational plan/ SOPs of dengue prior to outbreak
Challenges	- Concurrence with other public health events - Initial delayed multisectoral response coordination - Limited timely information sharing for decision making - Response not coordinated using incident management system (IMS) and lack of an established Public Health Emergency Operation Centre (PHEOC) - Limited involvement of private sectors in coordination - Communication challenges between physicians/Regional Public Health Superintendent/Community Physicians and Domiciliary medical unit - Management of Financial Resources towards the response not well coordinated which led to inability to tap into available funds in a timely manner

Prioritized actions

a. For immediate implementation:

- Prompt action in initiating multisectoral meeting as guided by surveillance unit.
- Prompt activation of response
- Training of key staff and stakeholders in management of financial resources
- To update and disseminate the Dengue operational plan to all stakeholders including the private sector
- Develop SOPs for communication/ dissemination of information
- Train frontline workers and response teams on the operational plan
- Develop a single official data sharing platform for dengue positive patients
- Develop SOPs for engagement and communication with private institutions and private doctors
- Roster of surge staff
- Record keeping of surge staff from other related ministries

b. For mid to long-term implementation:

- To improve the response for dengue management:
- Training of trainers targeting 50 Trainers on operational plan, followed by cascade training
- Conduct half day training for staff of regional hospitals, health offices and other staff of other ministries
- Establish an incident management system to enhance response to public health emergencies
- Scale up the training on International Health Regulation so that there is more capacity and understanding of the process
- Establish the One-Health platform to foster effective multisectoral coordination for public health emergencies

PLANS/POLICIES	RESOURCES
• Regulations\act: Public health act • Operational plan for dengue/ chikungunya/ zika • PHEOC plan	• Trained personnel (medical, paramedical and public health food and safety health officer) • CDCU • Communication facilities, internet etc. • INTERNATIONAL assistance from WHO, IOC, African Union, CDC) • Focal point for dengue who interacts within and with WHO/COI/CDC • Stock control mechanism • VBCD
COORDINATION MECHANISMS	**PREPAREDNESS ACTIVITIES**
• Coordination within MOHW, CDCU, PH unit, VBCD, point of entry, RPHS office, health inspectorates, CHL • Intersectoral and multisectoral coordination • Multisectoral steering committee including partners from private sector • Private public partnerships • One health platform • Interministerial collaboration mechanism in place • Setting up of IHR steering committee • IHR technical group • Structure of governance mechanism	• Operational plan • IHR training • Ongoing CME • IDSR training • PHEOC / IMS training

4.2. Risk communication, community engagement, and infodemic management	
Observations	

Best practices	- Training of trainers for dengue prevention and awareness for:
	  o Social welfare centres
	  o Religious leaders
	  o Community centres
	  o Teachers, Rectors and student representatives.
	- KAP survey (Knowledge, Attitude, Practice survey)
	  o Sensitisation
	  ▪ in schools, (students, head of schools primary and secondary) across the island;
	  ▪ in the community;
	  ▪ in workplace and in community - especially After-hours to make sure working population is reached
	  ▪ Social media platforms
	- Door to door awareness prior to fogging
	- RCCE coordinated and supported social mobilisation for the Clean-up campaign organised by local government and district councils
	- Mass media campaign to sensitise the general public, Live radio and TV programs by health professionals
	- Production and distribution of IEC materials such Pamphlets, posters, flyers and short videos.
	- Ministry of education in collaboration with Ministry of Health and Wellness conducted a campaign on prevention of dengue among teachers and school children following the training of trainers on dengue sensitization
	- Awaiting validation of costing for RCCE plan prior to approval

Challenges	- Inadequate materials (not readily available) prior and during the outbreak such as posters and pamphlets which somehow delayed the communication response. - Pre- and post- evaluation of the campaign materials were not conducted, including the pre-testing of the posters and pamphlets to ensure the message was clearly understood and effective. Resistance to behaviour change from population and misconception that elimination of mosquitoes is the MOHW issue only - Delayed interventions (due to heavy rain and flash floods). Also, the country did not anticipate such a significant outbreak. Lack of dedicated staff for RCCE - Clean-up campaign limited to Local government and district council

Prioritized actions

a. For immediate implementation:
   i. Continuous/regular Training of trainers (TOTs) for dengue awareness/refresher with monitoring and evaluation mechanism.
   ii. Conduct KAP survey using an independent committee such as University of Mauritius and Mauritius Institute of Health
   iii. High level advocacy for RCCE of Dengue at senior management
   iv. To establish clear TOR and SOPS and implement

b. For mid to long-term implementation to improve the response to the surge in Dengue cases:
   i. Expedite approval and implement the costed plan for RCCE
   ii. Training of health care workers and community champions
   iii. Regular national clean up campaigns involving different ministries and NGOs
   iv. To include cleanliness and hygiene with a public health perspective in the school syllabuses.
   v. Regular / sustained targeted sensitisation campaigns to be carried out prior to start of rainy/ cyclonic seasons.
   vi. Ensure presence of an RCCE strategy for all priority diseases
   vii. Monitoring and evaluation plan

4.3. Disease surveillance, case investigation and contact tracing	
Observations	
Best practices	• Coordination of surveillance between regional and central level • Notification of all confirmed cases by PCR or RAT is communicated to concerned departments by fastest means of communication available. • Surveillance system between VBCD/laboratory/ ports of entry / facility-based surveillance and CDCU. • Reporting of cases through daily routines / situational reports/ press communique to all stakeholders. • Detailed data analysis to inform the response. • Multiple surveillance system ongoing for other communicable diseases • Outbreak investigations carried out • Region wise training of medical and paramedical staff on dengue • Transport of dengue specimen to laboratory within 24h • Use of eIDSR through DHIS2.
Challenges	• Lack of interoperable electronic information management system- the current electronic systems are fragmented. • The national public health rapid response team was not fully trained to support surveillance activities • Event based surveillance is still in the pipeline including Epidemic Intelligence from open sources system • Feedback mechanisms on data sharing currently absent leading to inefficient data sharing between the departments and relevant agencies • Difficulty in tracing the DC due to incorrect/incomplete DC's address at the root level provided by patients at healthcare centre

Prioritized actions

a. For immediate implementation:

   i. Request for technical assistance to train staff in Geographical Information System (GIS)

   ii. Strengthening and training the Public Health Rapid Response Teams at national and sub-national levels with clear ToRs in line with SOPs

   iii. Strengthen surveillance capacity for effective preparedness, detection and response to public health emergencies including dengue

   iv. Institutionalize the use of GIS to improve the surveillance system

   v. Roll out IDSR throughout the country including enhanced Event-based Surveillance to strengthen EWARS

b. For mid to long-term implementation to improve the response to the surge in dengue cases

   i. Cascade training of members of the public health emergency response team at national, regional and health facility levels

   ii. Establish EIOS in Mauritius

   iii. Identify and train Staff on epidemic intelligence from open sources [EIOS]

   iv. Recruit system analyst to develop, harmonize and maintain interoperable system for surveillance

4.4. Vector Control

Observations	
Best practices	- Forecasted procurement of reagents - Spraying and, fogging equipment easily mobilized and deployed. - Rapid Communication between RPHS Offices and Health Offices - Fogging and, larviciding of peridomestic premises around positive cases - Enhanced entry screening of all incoming passengers at the point of entry linked to the national surveillance system - Mass fogging done in major hotspots
Challenges	- Inadequate resources (human and supplies-consumables) especially at the peak of the outbreak. Inadequate transport services for the deployment of insecticide spraying apparatus and sprayer operators to the field Usage of Vehicle-mounted fogger - Sub-optimal supervision of vector control activities leading to ineffective vector control activities - Implementation of the Integrated Vector Management Plan

Prioritized actions

a. For immediate implementation:
   - Develop and test vector control plan (simulation of worst outbreak scenario)

b. For mid to long-term implementation to improve the response to the surge in dengue cases:
   - Training of the recruited staff by the fogging machine supplier
   - Elaborate and mobilize manpower required for vector Control
   - Approval of dengue specific vector control plan by MOHW
   - Engage MOHW for the recruitment of trained staff of all grades
   - Training of newly recruited staff
   - Provide an adequate working space for the health inspectorate at the port

   Sustain, update and maintain the list of surge staff involved for larviciding

4.5. National Laboratory System

Observations	
Best practices	• Existing system for Malaria and vector-borne disease surveillance with expertise (3 MLTs (Medical Laboratory Technologist) also did FETP (Field Epidemiology Training Programme) training supported by the Indian Ocean Commission), equipment (dengue typing kit), consumables and reasonable testing capacity (Up scalable: Able to test > 10,000 Dengue) • Acquired Dengue typing kit • Provided support to Rodrigues in timely manner / good coordination between the two labs • Timely and regular communication with CDCU HQ - Fast dissemination of results for early detection of the outbreak
Challenges	- The laboratory has a dual function – acts as clinical laboratory as well as a public health laboratory, participating in surveillance and timely detection - Inadequate number of trained staff to meet demands during outbreaks • Inadequate resources such as reagents for effective and efficient laboratory operations resulting in delays to upscale testing • Missing NIC no. on request forms

Prioritized actions

a. For immediate implementation:

- Review redundant forms and data sharing policies, update them to enhance service delivery

b. For mid to long-term implementation to improve the response to the surge in dengue cases:

- Recruit adequate number of staff needed based on the lab establishment
- Train staff in dengue PCR e.g. Medical Lab. Technologists (MLT) and Biomedical Engineers (BME) in maintainance of equipements
- Mobilize adequate contingency funds from both the government and partners for enhanced laboratory preparedness and planning

4.6. Infection prevention and control/Case management/ Operational support and logistics in the management of supply chains and workforce resilience/ Strengthening essential health services during the SURGE IN DENGUE CASES	
Observations	
Best practices	- Availability of dedicated isolation wards in some hospitals - Readily available international and national protocols and guidelines - Clear specifications for procuring equipment and supplies for dengue management - Regular patient monitoring by Domiciliary Monitoring Unit (DMU) - Regular patient education by DMU
Challenges	- Delay in obtaining confirmed diagnosis from the lab - Intermittent scarcity of rapid dengue antigen test kits during the outbreak - Variations in treatment practices by clinicians due insufficient training of healthcare workers on national protocols - Regular stockouts of Platelet Concentrates for patient management partly due to overprescription of platelet transfusion by clinicians - Communication problem: it was often observed that the patients' contact details were not correctly provided - Delayed top-down communication whereby healthcare workers were unaware in a timely manner of the prevalence trend and mortality rate - Patients were not complying with DMU rules - Some patients refused to be examined by doctors, refused to have their blood collected and / or refused to answer phone calls from

	the health department - Inadequate and frequent breakdown of transport for blood sample transportation resulting in hemolysis and inaccurate results. - Shortcomings at triage level whereby patients who met case definitions were not promptly tested or isolated - Non-compliance in isolation of dengue patients at hospital level i.e., dengue patients were often found not to be under a mosquito net - Dengue patients were placed next to non-dengue patients in some hospitals Mortality and Morbidity meetings and investigations on dengue deaths were either not conducted or if conducted, findings were not available to all stakeholders.
Prioritized actions	
a. For immediate implementation: - More accurate quantification of rapid tests should be carried out to reduce the risk of stock-outs. Emergency funds should be available during outbreaks to allow for rapid procurement of such items. - Standardized treatment practices through dissemination and training on guidelines and SOPs throughout the country, to improve patient care to eliminate the variations in practices. - Training of triage staff on the triage process. - To establish an efficient and prompt line of communication between MOHW and clinicians so that updated epidemiological data on outbreaks are available at regular intervals - To ensure all staff have basic resources to carry out their duties e.g., laptops, phones, Wi-Fi access, an office, etc.	

- Improvement in isolation facilities at hospital level.
- Conduct clinical audits including mortality audits on a regular basis especially via a Mortality and Morbidity Committee

b. For mid to long-term implementation to improve the response to the ongoing surge in dengue cases:
    - Continue engaging and sensitizing the community and patients to improve cooperation and adherence to treatment
    - To develop an action plan on quality management of laboratory systems to reduce delays in acquiring results. The plan should tackle issues related to transport of blood samples including storage in cold boxes.
    - Develop a mechanism to improve, maintain and sustain platelet concentrates
        - Training of clinicians
        - Sensitize the community about blood donations and its importance
        - Incentivize blood donors to encourage them to regularly donate blood

4.7. Vector Biology Control Division	
Observations	
Best practices	- A well-established vector surveillance system - A national mosquito incidence threshold during epidemics - Presence of an operational/preparedness plan to guide interventions - Deployment of staff from other departments/Ministries to support vector surveillance during outbreak - Vector surveillance improved with the introduction of BG traps baited with dry ice - Utilization of vector surveillance data to guide vector control interventions and sensitization campaigns - Evaluation and validation of new methods (i.e. use of drones and use of mist blowers for Bti application) to improve vector control - Assistance from WHO, IOC, ARS Reunion, MCIA and MSIRI - Development of an Insecticide Resistance Management (IRM) action plan and an Integrated Vector Management (IVM) action plan with WHO assistance

Challenges	- Inadequate resources at the VBCD, - including sub-optimal lab space and infrastructure; lack of human resources and vehicles with fixed drivers - to meet demands during outbreak and to implement the IRM and the IVM action plans - Delays (of several months) in settling bills of procured items (such as dry ice), jeopardizing supply stability - Lack of an SOP for prioritization of vector surveillance and vector control interventions at the peak of the outbreak - Sub-optimal supervision of vector surveillance activities due to lack of sufficient supervisors (SHSOs and Scientific officers) - Insufficient access to meteo data to anticipate spread of mosquito and cases during outbreak - Lack of resources and trained personnel to characterize mechanisms of insecticide resistance - Lack of an established mapping system with precise geo-localization of dengue cases to assess the temporal and spatial evolution of cases by locality for informed decisions during high level committee - Lack of a common platform to accede and to share dengue-related information among other departments

Prioritized actions

a. For immediate implementation:

- Recruit adequate number of staff needed as per Human Resource proposal
- Successful relocation of the VBCD to a more spacious and adequate location
- WHO assistance in terms of logistics (ELISA, PCR equipment and consumables) and capacity building of VBCD staff to characterize insecticide resistance mechanisms
- Development of an SOP for prioritization of vector surveillance and vector control interventions during different outbreak scenarios

b. **For mid to long-term implementation to improve the response to the surge in dengue cases:**

- To create a new cadre 'Entomological Field Officers' (to replace HSOs) for carrying out vector surveillance activities which will be completely managed by the VBCD – as per Human Resource proposal
- Signature of an MoU with Mauritius Meteorological Services for sharing of meteo data with the MOHW
- To create a common platform for sharing of dengue related information among MOHW departments
- Gap analysis and resolution of bottlenecks at the level of the procurement and/or finance sections for timely settlement of bills
- Resource allocation (tablets) and capacity building (ex: in Qfield and QGIS) of frontline field staff to geolocalize cases and use of digital maps for reporting during high level committee

5. The Way Forward

The strategy for implementing the activities identified during the IAR, will be as follows:

- Establishing an IAR Follow-up Team and designating their roles and responsibilities and clear terms of reference to be shared to all participants
- Implementation of the priority activities
- The process to document and monitor progress in implementing the IAR recommendations
    - Quarterly review and report
    - Use of indicators
- The approaches to best engage the senior leadership team throughout the entire process.
    - Progress update to the leadership

6. Annexes

- *Annex 1: List of participants and Intra-Action Review (IAR) team*
- *Annex 2: Agenda of the review*
- *Annex 3: Completed note-taking template*

Annex 1: Participants for the workshop on IAR

Name	Designation
1. Mrs W. Somun	APS MOHW
2. Dr. R. Luchmun	RPHS CDCU HQ
3. Dr. S. Valaydon	RPHS CDCU HQ
4. Dr. D. Jowaheer	CP CDCU HQ
5. Dr. H. Bhadain-Gokhool	CP CDCU HQ
6. Ms. N. Khodabocus	Epidemiologist MOHW
7. Mr. A. Seeburn	Statistician CDCU
8. Mr. Khurwolah	PHFSI Airport
9. Mr. Boodhna	PHFSI Port
10. Mr. Baboolall	PHFSI CDCU Petite Riviere
11. Dr. D. Nuckchady	Specialist Infectious Diseases / IPC
12. Mr. H. Mathur	MLT - CHL
13. Dr. D. Iyaloo	VBCD
14. Dr. N. Suffee	NCD, Health Promotion & Research Unit
15. Mr. Beedassur	HIEC
16. Dr. Issany	Hotline Coordinator
17. Dr. M. Boghun	CP SSRNH
18. Dr. Y.A. Khoodoruth	RPHS JH
19. Dr. S. Casse	RPHS BCH
20. Dr. K. Beedassy	RPHS VH
21. Dr. A. Molabaccus	RPHS JNH
22. Dr. K. Badulla	WHO country office
23. Dr. Abha Jodheea-Jutton	Emergency Preparedness and Response Officer WHO
24. Dr. R. Kurrimbukus	Consultant Physician
25. Dr. Sungkur	Consultant Paediatrician
26. Dr. W. Peerun	Representing MS JH – DMU JH
27. Manager	Procurement (Logistics)
28. Mr. Namah	Chief Health Aministrator
29. Mrs. Purahoo	Ag. Principle PHNO
30. Dr. Peelonah	Senior CP, V.H (replacing Dr. Beedassy)
31. Mrs. V. Vythelingam	WHO Mauritius – RCCE focal point

Annex 2: Agenda of the Review

Day 1 - 03 September 2024	MINISTRY OF HEALTH AND WELLNESS	
TIME	**SESSION**	**RESPONSIBLE CADRE**
08:30-09:00	Registration and administrative formalities and instructions	Admin
09:00-09:15	Introduction of participants	All
09:15-09:25	Welcome/Opening Remarks	**MOH**
09:25-09:35	Objectives and Expected Outcomes	
09:35-10:10	**Intra-Action Review methodology**	**WHO**
10:10-10:25	Coffee Break	Admin
10:25-10:50	**SESSION 1: Introduction: Overview of the Response (Response plan and actual timeline of the response)**	**CDCU**
10:50-11:00	**Formation of Groups [**Coordination, Surveillance (Case, Lab), Vector Control across the Island and at PoEs, RCCE, Operations & Logistics, and Case Management]	
11:00-11:30	**What was in place? Timelines of activities implemented**. Participants work in groups to identify what was in place and timelines of activities implemented per pillar	**Facilitators, Group Leaders, Note Takers**
11:30-12:15	Plenary	**All**

12:15-13:15	Lunch	**admin**
13:15-13:35	**SESSION 2 – Introduction to session 2: What went well? What worked less well? And why? —Root Cause Analysis**	WHO
13:35-14:35	**SESSION 2 - What went well? What worked less well? And why?** Participants work in groups to identify the best practices and challenges and why? of the response	Facilitators, Group Leaders and Note Takers
14:35-14:45	Health Break	All
14:45-15:55	**Plenary**	**All**
15:55-16:00	**Debrief**	**Facilitators**
Day 2 - 04 September 2024		
TIME	**SESSION**	**RESPONSIBLE CADRE**
09:00-09:15	Registration and administrative formalities and instructions	Admin
09:15-09:30	Recap of Day 1 session	**WHO**
09:30-09:45	Introduction to session 3: (What went less well, What can we do to improve the Dengue response?)	WHO
09:45-10:00	Coffee Break	Admin
10:00-11:00	Session 3: Group Work (What went less well, What can we do to improve the Dengue Response	Admin
11:00-12:30	**Plenary**	**CDCU + APS/DPS**

12:30-13:30	**Lunch**	**Admin**
13:30-14:30	**World Café (Groups rotate to see other groups work and provide feedback)**	**All**
14:30-15:30	Consolidate feedback from other group Members	Facilitators, Note Takers
15:30-16:00	**Session 4: Introduction of Way Forward (short, med-long term interventions to improve response**	**WHO**
Day 3 - 05 September 2024		
TIME	**SESSION**	**RESPONSIBLE CADRE**
09:00-09:15	Registration and administrative formalities and instructions	Admin
09:15-10:15	**Group Work on of Way Forward (short, med-long term interventions to improve response) Identify activities with timelines and responsible entities/people**	
10:15-10:45	Coffee Break	Admin
10:45-12:45	**Presentation of the way forward**	**WHO**
12:45-13:45	Lunch	Admin
13:45-15:00	**Discussion – Other Pillars**	All
15:00-15:15	Coffee Break	Admin
	Closure	

Annex 3: Note taking template for Intra-Action Review of Dengue Fever outbreak

A. Coordination Pillar

Instructions:

Note down all those things that were in place prior to response to support a health emergency response

PLANS/POLICIES	RESOURCES	OTHER
• Regulations\act: Public health act • Operational plan for dengue/ chikungunya/ zika • PHEOC plan	• Trained personnel (medical, paramedical and public health food and safety health officer) • CDCU • Communication facilities, internet etc. • INTERNATIONAL assistance from WHO, IOC, African Union, CDC) • Focal point for dengue who interacts within and with WHO/COI/CDC • Stock control mechanism	

• Coordination within MOH, CDCU, PH unit, VBCD, point of entry, RPHS office, inspectorates • Intersectoral and multisectoral coordination • Multisectoral steering committee including partners from private sector • Private public partnerships • One health platform • Interministerial collaboration mechanism in place • Setting up of IHR steering committee • IHR technical group • Structure of Governance Mechanism	• Operational plan • IHR training • Ongoing CME • IDSR training • PHEOC/IMS training	

Instructions:

Best practices- coordination		
BEST PRACTICES	**IMPACT/S**	**ENABLING FACTORS** **(What were the enabling factors which led to this good practice)**
Regular multisectoral and interdepartmental meetings organised at strategic and operational level	• Coordinated timely response • Timely strategic decisions	• Prior established relationships • Willingness of stakeholders • Political commitment
Narrative/background Best Practice 1.		
Best Practice 2: Availability of active informal coordination mechanism (wats app groups)	Time saving Outbreak managed	Prior established relationship Availability of infrastructure and resources (for meetings)
Narrative/background Best Practice 2.		

Best practices		
BEST PRACTICES	**IMPACT/S**	**ENABLING FACTORS (What were the enabling factors which led to this good practice)**
Best Practice 3: Mobilisation of staff from other ministries and sectors for vector control	Effective response for vector control	Political commitment and political will
Narrative/Background Best Practice 3.		
Best Practice 4 Availability of operational plan/ SOPs of dengue prior to outbreak	Coordinated response	Experience in previous outbreak
Narrative/Background Best Practice 4.		

Challenges

CHALLENGES	IMPACT	LIMITING FACTORS (What were the limiting factors which led to this challenging)
CHALLENGE 1: **CONCURRENCE WITH OTHER PUBLIC HEALTH EVENTS**	DELAYED DECISION MAKING	NO DEDICATED PERSONNEL- CROSS CUTTING OF STAFF, i.e, ONE STAFF HAVING MULTIPLE ROLES.
FOR EXAMPLE: 1. INVOLVEMENT OF POLITICIANS AND DEVIATION OF TIME TOWARDS FLOOD/CYCLONE 2. INDEPENDENCE DAY: POLICEMEN WHO WERE HELPING WITH VECTOR CONTROL ACTIVITIES ARE INVOLVED ELSEWHWERE		
CHALLENGE 2: **INEFFECTIVE RESPONSE COORDINATION**	WASTE OF HUMAN RESOURCES DUPLICATION OF WORK	CLEAR ROLES AND RESPONSIBILITIES ILLDEFINED. OPERATIONAL PLAN WAS NOT ALWAYS OBSERVED.
AT MINISTRY LEVEL, THERE ARE MANY HEADS OF DEPARTMENTS. ROLES ARE NOT CLEARLY DEFINED AFFECTING DECISION MAKING.		
CHALLENGE 3: **LIMITED INFORMATION SHARING**	DECISION MAKING NOT ALWAYS COORDINATED	NO SOP FOR INFORMATION SHARING.
NARRATIVE/BACKGROUND CHALLENGE 3. INTERDEPARTMENTAL COMMUNICATION LIMITED AND NOT WELL ESTABLISHED. RELUCTANCE TO SHARE INFORMATION BETWEEN STAKEHOLDERS (PROPER CHANNELLING INHIBITING RAPID COMMUNICATION)		

CHALLENGES		
CHALLENGES	**IMPACT**	**LIMITING FACTORS** **(WHAT WERE THE LIMITING FACTORS WHICH LED TO THIS CHALLENGING)**
CHALLENGE 4: RESPONSE NOT COORDINATED USING IMS	WEAK COORDINATION	LACK OF PROTOCOL FOR IMS
POOR HORIZONTAL COMMUNICATION NO APPROPRIATE OFFICIAL PLATFORM FOR INFORMATION SHARING\DATA COLLECTION NO CLEARLY DEFINED ROLES AND RESPONSIBILITIES		
CHALLENGE 5: LIMITED INVOLVEMENT OF PRIVATE SECTORS IN COORDINATION	LIMITED INFORMATION FROM PRIVATE HEALTH INSTITUTIONS NON-REPORTING OF CASES	NO SOP IN PLACE
NO DEDICATED LIAISON OFFICER		

NO MECHANISM IN PLACE NO CLEAR ROLES		
CHALLENGE 6: COMMUNICATION CHALLENGES BETWEEN PHYSICIANS\RPHS\CP\DMU	DELAYS IN DIAGNOSIS AND TREATMENT DELAYS IN VECTOR CONTROL ACTIVITIES	LACK OF DATA SHARING POLICY AND TOOLS NO ORIENTATION FOR USING DATA SHARING TOOLS
PHYSICIANS/DOCTORS ARE UNAWARE OF PROTOCOLS AND POLICIES. NO COORDINATION MEETING AT LEVEL OF REGIONAL HOSPITAL. ALSO, MEETINGS DO NOT INVOLVE ALL STAKEHOLDERS. NO DOWNWARD COMMUNICATION OF ITS OUTCOME.		
CHALLENGE 7: FINANCIAL MANAGEMENT NOT COORDINATED	DESPITE AVAILABILITY OF FINANCIAL RESOURCES, DENGUE MANAGEMENT RESPONSES COULD NOT BE FULLY OPTIMISED	LACK OF KNOWLEDGE IN FINANCIAL MANAGEMENT/ LACK OF KNOWLEDGE OF ALLOCATION OF FUNDS
EXAMPLE: FUNDS ALLOCATED BY WHO DURING OUTBREAK NOT UTILISED WITHIN TIME FRAME AND HENCE RETURNED BACK		

ACTIVITY	DATE OF DESIRED ACHIEVEMENT	RESPONSIBLE AND FOCAL POINT	REQUIRED SUPPORT	INDICATORS	IMPACT	DIFFICULTY	PRIORITY
1. TO UPDATE OPERATIONAL PLAN	2 MONTHS	DHS PUBLIC HEALTH	VENUE STATIONARIES REFRESHMENTS	OPERATIONAL PLAN UPDATED	+++	+	++
			STAFF OF CDCU, RPHS, STATISTICIAN, EPIDEMIOLOGIST, VBCD, HEALTH INSPECTORATE (VECTOR CONTROL UNIT PHYSICIAN, PEADIATRICIAN, MINISTRY OF AGRO AND LOCAL GOVERNMENT, IRRIGATION AUTHORITY ETC				
			TECHNICAL ASSISTANCE OF WHO				
2. TRAINING OF 50 TRAINERS ON OPERATIONAL PLAN	1 WEEK FROM TIME OF UPDATE	DHS PUBLIC HEALTH	VENUE STATIONARIES REFRESHMENTS	50 TRAINERS TRAINED	+++	+	+++
			TRAINERS: TWG TRAINEE: HEAD OF UNITS				

3. CONDUCT HALF DAY TRAINING FOR STAFF OF REGIONAL HOSPITALS, HEALTH OFFICES AND OTHER STAFF OF OTHER MINISTRIES	FROM TIME OF UPDATE – ONGOING TRAINING	HEAD OF UNITS	DEVELOPMENT OF TRAINING MATERIAL	ACHIEVE TRAINING OF 80% OF STAFF WITHIN 1 YEAR	+++	++	+
			VENUE FOR TRAINING (CONFERENCE ROOM OF HOSPITAL, ETC)				

ACTIVITY	DATE OF DESIRED ACHIEVEMENT	RESPONSIBLE AND FOCAL POINT	REQUIRED SUPPORT	INDICATORS	IMPACT	DIFFICULTY	PRIORITY
4. DEVELOP SOP FOR COMMUNICATION/ DISSEMINATION OF INFORMATION	2 WEEKS	DHS PUBLIC HEALTH	TWG	SOP DEVELOPPED	+++	+	+
			VENUE STATIONARIES REFRESHMENTS				
5. DEVELOP AN OFFICIAL DATA SHARING PLATFORM FOR DENGUE POSITIVE PATIENTS	1 OCTOBER 2024	IT DEPARTMENT OF MINISTRY OF HEALTH	WHO TECHNICAL ASSISTANCE	SOFTWARE PLATFORM DEVELOPPED	++	+++	+++
			INVOLVEMENT OF USERS: CDCU, RPHS, PHFSI, COMMUNITY PHYSICIANS, LAB, NURSING OFFICERS				
			VENUE FOR MEETINGS STATIONARIES REFRESHMENTS INTERNET				

			COMPUTERS				
6. DEVELOP SOP FOR COMMUNICATION WITH PRIVATE INSTITUTIONS AND PRIVATE DOCTORS	14 SEPTEMBER 2024	DHS PH	REPRESENTATIVES FROM PRIVATE CLINICS AND DOCTORS	SOP DEVELOPPED	++	+++	+++
			VENUE STATIONARIES REFRESHMENTS				

ACTIVITY	DATE OF DESIRED ACHIEVEMENT	RESPONSIBLE AND FOCAL POINT	REQUIRED SUPPORT	INDICATORS	IMPACT	DIFFICULTY	PRIORITY
7. ESTABLISH AN INCIDENT MANAGEMENT SYSTEM	1 YEAR	STEERING COMMITTEE INVOLVING DG	WHO TECHNICAL GROUP	IMS ESTABLISHED	+++	++	+++++
			VENUE STATIONARIES REFRESHMENTS				
8. SCALE UP IHR TRAINING	6 MONTHS	TWG	WHO TECHNICAL ASSISTANCE	80% IDENTIFIED STAFF TRAINED WITHIN 6 MONTHS	++	+	+++++
			TRAINEES: PUBLIC HEALTH STAFF				
			VENUE STATIONARIES REFRESHMENTS				
9. DEVELOP ONE HEALTH PLATFORM	6 MONTHS	IT DEPARTMENT OF MINISTRY OF HEALTH	WHO TECHNICAL ASSISTANCE	ACTIVE ONE HEALTH PLATFORM DEVELOPPED	++	+++	++

			INPUT FROM ALL RELEVANT STAKEHOLDERS				
10. TRAINING IN FINANCIAL MANAGEMENT – 2 SESSIONS	2 WEEKS	DHS PUBLIC HEALTH	FINANCE SECTION, WHO TECHNICAL ASSISTANCE, CDCU STAFF, RELEVANT STAFF OF MINISTRY OF HEALTH	STAFF OF MINISTRY OF HEALTH TRAINED FOR PROPER FUND MANAGEMENT	++	++	
			VENUE STATIONARIES REFRESHMENTS				

B: Health System Strengthening, case management, IPC, Vaccination, Logistics and Resources

Instructions:

Note down all those things that were in place prior to response to support a health emergency response

PLANS/POLICIES	RESOURCES	OTHER
National preparedness plan for dengue (2021) Surveillance of incoming passengers Dengue endemic areas – Airport/port Integrated disease surveillance (IDSR) in all primary centres	Human resources: Doctor, Nurses, Specialist, Sanitary Officers, Sprayer men, surveillance officers Funding available PCR testing kits available Equipment and Transport Rapid Respond Team Infection disease isolation facilities Mosquito nets/ repellents	

COORDINATION MECHANISMS	PREPAREDNESS ACTIVITIES	
High Level committee, MOHW/CDCU, Intersectoral Collaboration, Ministry of education/Tourism/Environment, NGO, Police/SMF, WHO office	Case definition/Preparedness plan Campaign through media for mosquito control e.g. T.V./pamphlets and radio Health information education and communication (HEIC)	

Instructions:

List all best practices and for each, identify the impact/s and enabling factors that led to its success.

Please include all best practice, even those that are not prioritized and included on the flipcharts.

Where possible please include a narrative or background information relevant to the best practice

Best practices		
BEST PRACTICES	**IMPACT/S**	**ENABLING FACTORS** **(What were the enabling factors which led to this good practice)**
Best Practice 1. International protocols and guidelines	This helped to have a quick and effective response in dealing with cases	Enabling factor 1: regular updated reviews and protocols
Narrative/background Best Practice 1.		
Best Practice 2: Clear specifications for procuring equipment	Clear specs allowed suppliers to respond quickly and effectively	Enabling factor 1: Available funds Enabling factor 2: Effective procurement procedures (Emergency procurement)

Narrative/background Best Practice 2.		
Best practices		
BEST PRACTICES	**IMPACT/S**	**ENABLING FACTORS (What were the enabling factors which led to this good practice)**
Best Practice 3: Dedicated isolation wards	Isolated wards were already identified prior to the outbreak. During the outbreak, these wards were ready for admission of patients thus saving time and preventing spread of the disease	Enabling factor 1: Existing system inherited after COVID-19
Narrative/Background Best Practice 3.		
Best Practice 4 Regular patient monitoring by Domiciliary	DMU relieved burden on hospitals by visiting	Enabling factor 1: Availability of personnel, transport and funds

Monitoring Unit (DMU)	patients at home for monitoring	
Narrative/Background Best Practice 4.		
Best Practice 5 **Patient education by DMU**	Create awareness among family members	Enabling factor 1: Already trained personnel
Narrative/Background Best Practice 5		

Instructions:

List all challenges and for each, identify the impact/s and limiting factors that led to that challenge

Where possible please include a narrative or background information relevant to the best practice

Please include all challenges, even those that are not prioritized and included on the flipcharts.

Challenges		
CHALLENGES	**IMPACT**	**LIMITING FACTORS** **(What were the limiting factors which led to this challenging)**
Challenge 1: **Delay in obtaining confirmed diagnosis**	Patients were compelled to stay for longer number of days	Limiting factor 1: Only one central lab available Limiting factor 2: Lab not open 24/7 Limiting factor 3: Lack of personnel to operate 24/7
Challenge 2: **Variations in treatment practices**	This led to patients being discharged early or had a longer	Limiting factor 1 Lack of proper guidance/training of staff

	hospital stay Increase in mortality rate	
Narrative/Background Challenge 2		
Challenge 3: Unavailability of Platelet Concentrate	Delay in treatment	Limiting factor 1 Over prescribing of Platelet transfusion Limiting factor 2 Limited blood in Blood bank
Narrative/Background Challenge 3.		

Instructions:

List all challenges and for each, identify the impact/s and limiting factors that led to that challenge

Where possible for

Despite being identified as challenges, list positive aspects that were identified during discussion

Please include all best practice, even those that are not prioritized and included on the flipcharts.

Challenges		
CHALLENGES	**IMPACT**	**LIMITING FACTORS** **(What were the limiting factors which led to this challenging)**
Challenge 1: DMU Communication problem: unable to give proper direction, give wrong and inadequate phone numbers, not answering phone	Delays on going on site	Limiting factor 1: incompliance of patients
Challenge 2: Patients issues with DMU Community Resistance Rude patient, refuse to	Delays treatment, increase spread of disease,	Limiting factor 1 lack of awareness Limiting factor 2 Fixed Mindset/ mentality of patients

be seen and allow blood collection **Patient would stop answering phone after 1st visit**		
Challenge 3: DMU tech issues **Blood sample suffered degradation due to long hour in cars despite in ice box** **High risk and dangerous areas** **Inadequate transport and frequent breakdown**	Resulted in false thrombocytopenia, patients were recalled to hospital and were retested Demotivates staff i.e. Doctors and nurse, affecting health care offered to patients	Limiting factor 1 lack of good cars from the transport services Limiting factor 2 Delayed time for sample to reach lab Limiting factor 3

ACTIVITY	DATE OF DESIRED ACHIEVEMENT	RESPONSIBLE AND FOCAL POINT	REQUIRED SUPPORT	INDICATORS	IMPACT	DIFFICULTY	PRIORITY
TO COUNTER DELAY OBTAINING CONFIRMED DIAGNOSIS	End of September 2024	Laboratory	Equipment, decentralised Lab, use of RDT (rapid diagnostic test)	Lab results from patient sheets	Mark either +, ++ or +++	Mark either +, ++ or +++	# dots allocated
			More staff	Number of discharges recorded	++	++	Nil
			Financial Support		++		
Conduct training TO STANDARDISE TREATMENT PRACTICES AND AVOID VARIATION IN TREATMENT PRACTICES	End of October 2024	CONSULTANTS IN CHARGE IN EACH DEPARTMENT	Quality training	PERCENTAGE OF STAFF TRAINED	+++	+	8
			Case monitoring & follow-up				
CLINICAL AUDIT DEATH CAUSALITY COMMITTEE	WEEKLY DURING UPDATE	REGIONAL HOSPITALS	MOST UP TO DATE EVIDENCE OF BEST PRACTICE Protocol, check list, Human resources, financial support	DECREASE COMPLICATION DECREASE MORTALITY (DATA OBTAINED FROM PATIENT FOLDERS)	+++	+	Nil

ACTIVITY	DATE OF DESIRED ACHIEVEMENT	RESPONSIBLE AND FOCAL POINT	REQUIRED SUPPORT	INDICATORS	IMPACT	DIFFICULTY	PRIORITY
AWARENESS IN PATIENT	October 2024	HEALTH INFORMATION EDUCATION AND COMMUNICATION (HIEC)	EDUCATION THROUGH MEDIA COMMUNICATION TO CREATE AWARENESS	DECREASE NUMBER OF CASES	Mark either +, ++ or +++	Mark either +, ++ or +++	# dots allocated
				INCREASE REPONSE OF PATIENT POSITIVELY			2
					+++	+	
UNAVAILABILITY OF PLATELET CONCENTRATE	Mid-September 2024	BLOOD BANK	INCREASE BLOOD DONATION CARAVAN AND RELATIVES	INCREASE IN NUMBER OF BLOOD COLLECTED			
			Standardising protocols on platelet transfusion	PATIENT MANAGED QUICKLY AND DISCHARGED	+++	+	2

C. Vector Control & Port of Entry- (Implementers: CDCU Petite Riviere and Public Health & Food Safety Inspectorate)

Instructions:

Note down all those things that were in place prior to response to support a health emergency response

PLANS/POLICIES	RESOURCES	OTHER
- Larvciding activities are ongoing and follow a cycle of 2 weeks throughout the Port Area. - Regular inspections are carried out by the Port Health Office to detect any sanitary nuisance regarding presence of stagnant water and overgrown bare land within the port area. - Sanitary notices/Statement of nuisances are then issued for the abatement of all sanitary nuisances.	- 3 Insecticide Sprayer Operators and 2 General workers are posted permanently in the Port Area or vector control activities and they are issued with protective equipment. - 1 4x4 vehicle with a driver is attached to the Port Health Office. - Necessary equipment for larvicing sprayer (sprayer apparatus), mist blowing (mist blower) and fogging (fogging machines) are available.	

- For all positive dengue fever cases detected in the Port Area, mist blowing, fogging and larviciding activities are carried out according to protocol. - Weekly larviciding of airport compound and regular inspection	- Adequate stock of insecticides for mist blowing, fogging and larviciding activities are kept in store. - Insecticide Sprayer Operator from Mahebourg Health Office for Airport.	

Instructions:

List all best practices and for each, identify the impact/s and enabling factors that led to its success.

Please include all best practice, even those that are not prioritized and included on the flipcharts.

Where possible please include a narrative or background information relevant to the best practice

Best practices		
BEST PRACTICES	**IMPACT/S**	**ENABLING FACTORS** **(What were the enabling factors which led to this good practice)**
Best Practice 1. Forecasted procurement of reagents	Vector control activities could be started as soon as cases were detected.	Enabling factor 1: Previous experience on managing dengue and chikungunya cases. Enabling factor 2: Dedicated Unit for the coordination of vector control activities at CDCU Petite Riviere. Enabling factor 3: Leadership
Best practices		

BEST PRACTICES	IMPACT/S	ENABLING FACTORS (What were the enabling factors which led to this good practice)
Best Practice 3: Rapid Communication between RPHS Offices and Health Offices	Early Action is initiated and monitored	Enabling factor 1: Effective Communication Enabling factor 2: Good collaboration Enabling factor 3: Experience in handling vector diseases Enabling factor 4: Dedicated teams on ground level
Narrative/Background Best Practice 3.		
Best Practice 4: Fogging around positive cases, larviciding of peri domestic premises around positive cases	Both fogging and larviciding contribute to eliminate the vector thus providing a control on the surge in dengue cases. Fogging leads to quick elimination of adult mosquitoes and make workplace mosquito free. Larviciding enabled mass elimination of mosquito larvae in stagnant water.	
Narrative/Background Best Practice 4.		

Best Practice 5 **Border Surveillance was strengthened**	Enabling surveillance of all incoming passengers staying in the country and detection of cases of communicable diseases including but not limited to dengue	Enabling factor 1: Established working relationships with the port and airport authorities. Enabling factor 2: Regular meeting between all stakeholders
Narrative/Background Best Practice 5: Screening of all incoming passengers and crews. The information is relayed to the 13 District Health Offices for Surveillance. Boarding of all vessels at port to ensure that no vector (pest) is entering the country.		
Best practice 6 **Mass fogging done in major hotspots**	This has helped to decrease the number of cases.	Enabling factor 1: Intersectoral and multisectoral collaboration in terms of surge staffs and transport. Enabling factor 2: Regular monitoring and assessment of dengue situation Enabling factor 3: Strong leadership, commitment and advocacy Enabling factor 4: Availability of reagents and equipment Enabling factor 5: In country experience
Narrative/Background Best Practice 6		

Instructions:

List all challenges and for each, identify the impact/s and limiting factors that led to that challenge

Where possible please include a narrative or background information relevant to the best practice

Please include all challenges, even those that are not prioritized and included on the flipcharts.

Challenges		
CHALLENGES	**IMPACT**	**LIMITING FACTORS** **(What were the limiting factors which led to this challenging)**
Challenge 1: **Lack of human resources and consumables as the upsurge of cases progressed.**	Both negatively impacted the control of dengue.	Limiting factor 1: Lack of manpower plan as to proper availability of skilled manpower. Limiting factor 2: Procurement procedures cumbersome affecting the urgent need of additional solutions, BTI, Abate and equipment Note: A point was mentioned on the inadequate manpower and increase in workload thereby affecting health of staffs leading to demotivation of teams.
Narrative/Background Challenge 1.		
Challenge 2: **Unavailability of transport services for Health Surveillance Officers**		Limiting factor 1: Limiting factor 2: Limiting factor 3:
Narrative/Background Challenge 2		

Challenge 3: Usage of Vehicle mounted fogger	Predetermined plan of action could not be followed. Waste lands could not be treated quickly.	Limiting factor 1: Certain spare parts of vehicle mounted fogger not available in Mauritius Limiting factor 2: lack of scheduled Maintenance by suppliers for major repairs of Vehicle Mounted Fogger was not available on weekends/public holidays Limiting factor 3: Manpower (Insecticide Spraying Operators) were not in adequate number to operate vehicle mounted fogger.
Narrative/Background Challenge 3. The vehicle mounted fogger could not be used in time.		

Instructions:

List all challenges and for each, identify the impact/s and limiting factors that led to that challenge

Where possible for

Despite being identified as challenges, list positive aspects that were identified during discussion

Please include all best practice, even those that are not prioritized and included on the flipcharts.

ACTIVITY	DATE OF DESIRED ACHIEVEMENT	RESPONSIBLE AND FOCAL POINT	REQUIRED SUPPORT	INDICATORS	IMPACT	DIFFICULTY	PRIORITY
1.Recruit 4 ISO (Insecticide Spraying Operator) to operate the two-vehicle mounted fogger	End of Nov 2024		Support from the Director Health Services	Number of ISO operators recruited	+++	+++	# dots allocated
			Support from the Human Resource Section and Administrative Cadre				
			Funding is needed				
2.Training of the recruited staff by	Feb 2025			Number of recruited staff trained	+++	++	

fogging machine supplier							
3. Elaborate manpower plan required for vector Control	Feb 2025	Director PHFSI	CDCU Petite Riviere, Director Health Services, Human Resource Section, Administrative Support	Manpower plan for vector control elaborated			
4. Approval of Plan by MOHW		Director PHFSI	DHS and Administrative Support	Approval of plan by MOHW	+++	+	
5. Recruitment of Manpower in all grades		Director PHFSI	DHS and Administrative Support	Number of inspectors recruited Number of ISO recruited Number of General Workers recruited Number of Drivers recruited	+++	+	
6. Training of recruited Staff							

7. Provide a better working space for Inspectorate at the port			DHS, Administrative Support, Ports Authority	Improved workspace is available	+++	++	
8. Recruit additional inspectors at port				Number of additional inspectors recruited at port	+++	++	
9. Maintain surge staff involved in larviciding							

Instructions:

List all best practices and for each, identify the impact/s and enabling factors that led to its success.

Please include all best practice, even those that are not prioritized and included on the flipcharts.

Where possible please include a narrative or background information relevant to the best practice

D. Laboratory Surveillance

Note: **The role of the laboratory**

- Real time PCR (Polymerase Chain Reaction)
- On-going surveillance of Arboviruses (Dengue, Chikungunya; Zika mainly)
- Data entry on OpenElis (UNDP donated LIMS)
- Dengue Typing
- Ability of a laboratory to successfully identify a pathogen depends on appropriate specimen collection and transport

Best practices

BEST PRACTICES	IMPACT/S	ENABLING FACTORS (What were the enabling factors which led to this good practice)
Best Practice 1. **Lab: fast dissemination of results**	Rapid action taken to manage outbreak	Enabling factor 1: UPSCALING OF LABORATORY CAPACITY, EXPERIENCE ACQUIRED DURING COVID Enabling factor 2: digital communication: email, fax. Enabling factor 3: regular phone communication between LAB AND CDCU HQ

Additional information for laboratory:

Strengths of Lab System

- Existing Malaria surveillance
- Expertise
- Reagents from COVID pandemic available
- Dedicated staff
- Continuous investment in equipment
- Good Maintenance
- High score EQA
- Plan B!!!! available

Things that went well for the laboratory:

- Reagents (for extraction and amplification) were left over from COVID
- Up scalable: Able to test > 10,000 Dengue

- Acquired Dengue typing kit
- 3 MLTs (Medical Laboratory Technologist) also did FETP (Field Epidemiology Training Programme) training supported by the Indian Ocean Commission
- Passed EQA (External Quality Assurance_ with high score
- The use of National Identity Card onto the Laboratory Information Management System gave comprehensive and powerful data
- In-house primers for Dengue screening (LOWER COST)
- (High volume: maximise costs / more for less)
- Easily up-scalable and reproducible
- SMART system for laboratory: Sustainable, Measurable, Achievable, Reproducible, Timely
- Cater for Rodrigues in timely manner / good coordination between the two labs
- Communication with CDCU HQ

Instructions:

List all challenges and for each, identify the impact/s and limiting factors that led to that challenge

Where possible please include a narrative or background information relevant to the best practice

Please include all challenges, even those that are not prioritized and included on the flipcharts.

Challenges		
CHALLENGES	**IMPACT**	**LIMITING FACTORS** **(What were the limiting factors which led to this challenging)**
Challenge 1: **The laboratory has a dual function.**	The laboratory acts as both public health lab and clinical lab. This leads to shared human resources in the event of an outbreak and there is a lack of	Limiting factor 1: (MUST HAVE A POLITICAL WILL TO GO IN THE DIRECTION OF INVESTING IN INFRASTRUCTURE) Limiting factor 2 LACK STAFF Limiting factor 3 DURING AN OUTBREAK ALL RESOURCES ARE DIRECTED TO PUBLIC HEALTH TESTING AT THE EXPENSE OF CLINICAL TESTS. …. **CLINICAL TESTS ARE PUT ON HOLD… PATIENTS DO NOT GET THEIR CLINICAL RESULTS OF TESTS OTHER THAN DEN CHIK ETC**

	staff for clinical tests	
Narrative/Background Challenge 1.		
Challenge 2: lack of staff in the laboratory	Adequate number of Staffs cannot be trained.	Limiting factor 1 : recruitment processes Limiting factor 2: political will to recruit
Narrative/Background Challenge 2		
Challenge 3: **Limited funds**	The lab must inflate annual requirements for clinical test to cope with public health demands	
Narrative/Background Challenge 3: There is no **dedicated** laboratory to public health that is available 24/7. **Ideally,** re-group ALL labs and other epidemiology-related entities in one building. It facilitates response; policy making, control measures from one central point. At present, CHL is at Candos, VBCD is at Curepipe, one CDC Unit at Petite Riviere and HQ CDCU at Port Louis. The current set up / scatter is ideal for administrative / political responses rather than field response.		

Instructions:

List all challenges and for each, identify the impact/s and limiting factors that led to that challenge.

Where possible for despite being identified as challenges, list positive aspects that were identified during discussion.

Challenges		
CHALLENGES	**IMPACT**	**LIMITING FACTORS** **(What were the limiting factors which led to this challenging)**
Challenge 4: **Lack of space in the laboratory**	electrical overload which is not safe for the staff working there leading to an increased risk of health problems. The lack of space can be for biosafety and bio security. The present laboratory is overcrowded, having to accommodate a large amount of equipment.	Limiting factor 1: no policy from the Ministry of Health regarding lab space Limiting factor: Limiting factor 3
Challenge 5: **Reagent Availability**		Limiting factor 1: No dedicated fund to rapidly acquire tests that pertain to public health specifically Limiting factor 2: The extent of outbreaks **cannot** be predicted, therefore how much of reagents to order cannot be predicted / ordered as per a schedule like we do for annual requirements Limiting factor 3: Procurement of Reagents is administratively bulky / slow / insufficient / lengthy

Note: Capacity building at the level of the laboratory is lengthy as it is requiring hands on training for months.

ACTIVITY	DATE OF DESIRED ACHIEVEMENT	RESPONSIBLE AND FOCAL POINT	REQUIRED SUPPORT	INDICATORS	IMPACT	DIFFICULTY	PRIORITY
Recruit adequate number of staff needed To be clarified by lab and number to specified	To be specified by lab	Director Lab Services	Directors Health Services of different schedules, Administrative cadre, Human Resource Cadre	Number of staff recruited for laboratory	+++	+++	# dots allocated
Train Staff e.g. MLT and BME in performing Dengue tests	To be specified by lab	Director Lab services	To be specified by lab	Number of staff trained	+++	++	
			WHO workshops / training for lab and				
Keep a **contingency fund** for emerging) outbreaks	To be specified by MOHW	DLS and DHS (Communicable diseases)	IHR Steering Committee, IHR Technical working Group, Director Health Services, administrative cadre, Ministry of Finance	Availability of contingency fund for lab (SPEED ?)	+++	++	

ACTIVITY	DATE OF DESIRED ACHIEVEMENT	RESPONSIBLE AND FOCAL POINT	REQUIRED SUPPORT	INDICATORS	IMPACT	DIFFICULTY	PRIORITY
Improve existing services by reviewing redundant forms and data sharing policies			CDCU, Director Health Services	Form reviewed Feedback input from users Data sharing policy developed	Mark either +, ++ or +++	Mark either +, ++ or +++	# dots allocated
Build Public Health laboratory					+++	++	