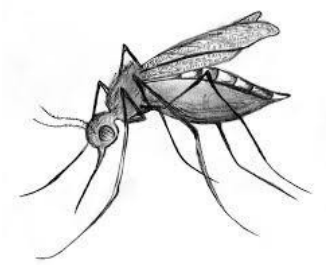
Guam Department of Public Health and Social Services



Arboviral Disease Response Plan

Annex of Guam DPHSS All-Hazards Emergency Response Plan

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Section 1: Introduction

1.1 Background

As one of the Pacific Islands, Guam is especially at risk for arboviral outbreaks as it has a tropical climate, mosquitoes that are known vectors of human arboviruses, and frequent travel of humans and birds from other areas of the Pacific and Asia where arboviruses frequently circulate. According to the Mosquito Surveillance and Control Program, an arm of the Department of Public Health and Social Services' Division of Environmental Health (DEH), there are 24 reported species of mosquitoes on Guam, eight of which are considered a public health concern. Such species include *Aedes albopictus*, *Anopheles barbirostris*, *Aedes pandani*, and *Culex sitiens*. While the *Aedes aegypti* mosquito, the primary carrier of Dengue and other arboviruses, is not currently found on Guam, the possibility for its arrival, and the disease risks it carries poses many serious health threats. Vigilance in detecting any nascent populations of this mosquito on Guam is one of the important justifications for the entire program.

Guam's airport, Antonio B. Won Pat International Airport, is the hub for many travelers to the region. As such, the probability of the arboviral diseases traveling to Guam via off-island visitors may be high. Finally, there are migratory birds that are known reservoirs of arboviruses, such as Japanese Encephalitis, that frequent Guam and could introduce important human pathogens to the island's mosquito population.

Guam's commercial sea port, Port Authority of Guam, is located at Cabras Island in the village of Piti. It is along major Pacific shipping routes and is an important transportation hub linking the Commonwealth of the Northern Marianas, the Micronesian islands, and the expanding Far East markets with the United States and the rest of the world. Travelers arriving at the seaport or cargo from international sources could potentially be a source for the arrival of disease and/or other species of mosquitoes.

The climate of Guam can be described as a typical warm, tropical climate with two different seasons. The dry season is between December and April; the rainy season lasts from April to December, with the greatest rainfall between July and October. Flooding rains create ideal breeding conditions for mosquitoes. More rain means a greater potential for puddles and standing water which creates ideal conditions for mosquito breeding because they lay their eggs on or near standing water. Frequent rainfall paired with tropical temperatures promote mosquito activity; activity which is enhanced if standing water persists long enough to allow larval development. Preventing such activity is difficult because a single female mosquito will lay 100 to 200 eggs per week. The eggs hatch into larvae within 24 to 48 hours and complete development to adulthood in about a week.

Guam's Bureau of Communicable Disease Control in the Department of Health and Social Services, Environmental Public Health Laboratory, and the Division of Environmental Health is the agency charged with monitoring the mosquito population and the potential emergence of arboviral diseases.

Arboviral Diseases

A group of viruses that are spread to humans primarily through the bites of infected mosquitoes, ticks, sand flies or midges are known as arthropod-borne viral (arboviral) diseases. Other modes of transmission for some arboviral diseases include blood transfusion, organ transplantation, perinatal transmission, sexual transmission, breast feeding and laboratory exposures.

There are more than 130 arboviral diseases that cause human diseases. Common mosquito-borne diseases include dengue fever, Zika virus, chikungunya, yellow fever, West Nile virus, Japanese encephalitis, and others. Moreover, new ones are frequently discovered/reported. New arboviruses reported in 2017-2018 include Mayaro and Madriguda viruses, both transmitted by mosquito species known to be on Guam.

There is currently no cure or vaccine for Zika virus, dengue fever and chikungunya diseases.

1.2 Plan Purpose

The purpose of this annex to the Guam DPHSS "All-Hazards Emergency Response Plan" (AHERP) is to define the actions and roles necessary to provide a coordinated response to arboviral diseases within the territory of Guam. It also serves as the basis for DPHSS coordination and collaboration with other public health agencies, healthcare providers and other stakeholders focused on addressing the threat and impact of Zika virus disease, and other arboviruses. The Guam DPHSS AHERP serves as the base document for this annex.

The Guam Arboviral Plan describes the basic strategies, assumptions, operational objectives, and mechanisms through which the Department of Public Health & Social Services will mobilize resources and conduct activities to guide and support management efforts through preparedness, response, recovery, and mitigation.

Objectives of this plan include:

Command and Control – Coordinate all preparedness and response activities for the prevention and mitigation of arboviral diseases.

Communication – Inform stakeholders, vulnerable populations, and the general public of the potential dangers of arboviral diseases and prevention strategies.

Medical surveillance - Monitor clinical management of cases and information from healthcare for early identification of arboviral diseases and identify potential sources and trends of transmission.

Laboratory Testing - Detect arboviral diseases in a timely manner and expand capacity to meet increased testing needs.

Vector Control - Reduce the opportunities for transmission of arboviral diseases, including the Zika virus.

Blood Safety – Ensure the security of blood donations that are free from arboviral diseases, including the Zika virus.

1.3 Plan Composition

This plan incorporates guidance from the U.S. Department of Health and Human Services (DHHS), Centers for Disease Control and Prevention (CDC), Office of the Assistant Secretary for Preparedness and Response (ASPR, U.S. Department of Homeland Security (DHS)) and Federal Emergency Management Agency (FEMA). It also builds on lessons learned from previous public health emergency response activities such as drills, exercises, training, and real life responses.

This plan:

- Serves as an annex to the Guam DPHSS All-Hazards Emergency Response Plan
- (AHERP).

- Incorporates National Incident Management System (NIMS) concepts and guidelines utilizing integrated command and control guidelines for response coordination.

- Describes the approach to be utilized by public health and other health stakeholders in addressing arboviral diseases in Guam.

  Identifies activities to be conducted for based on the level of the threat:
  - Phase 1 – Preparedness & Prevention;
  - Phase 2 – Suspected/Confirmed Case on Island; and
  - Phase 3 – Widespread Transmission

1.4 Authorities

As an annex to the AHERP, this plan's authorities are the same as those mentioned in that document.

1.5 Critical Considerations and Assumptions

This plan is based upon the following critical considerations and assumptions:

- Guam will experience local transmission of arboviral diseases at some point in the future.

- Not all cases will be included in surveillance. Some people with arboviral disease infections will not seek healthcare, may not be diagnosed, and may continue to infect mosquitoes throughout their viremia.

- Local environmental agencies can conduct mosquito abatement activities to reduce the number of mosquitoes available to transmit the disease, to mitigate the spread of the virus and to reduce the public health impact of the disease.

1.6 Plan Maintenance

As an annex to the DPHSS AHERP, this plan will be included in the regularly scheduled reviews for the base plan.

Section 2: Concept of Operations

The Concept of Operations (CONOPS) in the DPHSS All-Hazards Emergency Response Plan will be utilized for this annex. This includes:

- Coordinated approach,
- Threat assessment,
- Alert and notifications
- Operational phases
- Assignment of responsibilities,
- Control and coordination,
- Communication and information sharing,
- and Administration, finance, resources and logistics.

The plan was created to be flexible and adaptable to an emerging situation involving arboviral diseases.

The plan was written to align with, not replace, existing emergency response plans of our stakeholders such as:

Guam Homeland Security

Joint Information Center

Department of Public Health & Social Services

Guam Comprehensive Emergency Management Plan

Communicable Disease Response Plan

Specifically, this plan is divided into three phases of activation:

- Level 1 – Preparedness and Vigilance (yellow);
- Level 2 –Suspected/Confirmed Case on Island (orange); and

- Level 3 – Widespread Transmission on Island (red).
- Within each phase, activities are listed that are recommended for implementation by the responsible office listed below:

Activities	Primary Responsibility	Secondary Responsibility
Command and Control	DPHSS PHEP Program	DPHSS Leadership
Communication	Public Information Officer	DPHSS PHEP Program
Medical surveillance	Territorial Epidemiologist	ELC Team
Laboratory Testing	DPHSS Laboratory	Guam Memorial Hospital
Vector Control	DPHSS DEH	Medical Reserve Corps
Blood Safety	Guam Blood Bank	DPHSS Laboratory

Section 3: Phased Response Activities

3.1 Level 1 (Yellow): Preparedness & Vigilance

Activation Level: Prevention

Risk Level: No confirmed cases on island.

The primary goal at this level is to prevent and mitigate opportunities for mosquito breeding and biting. The focus on this section in on general planning and communication.

3.1.1 Command and Control

- Coordinate and conduct seminars, workshops and exercises to address arboviral disease outbreaks.

- DPHSS should collaborate with public health departments in other Pacific Island nations to develop regional communication and response strategies. Additionally, participate in the Pacific Public Health Surveillance Network (PPHSN).

- DPHSS will identify key partners and stakeholders to help distribute key arboviral educational materials.

3.1.2 Communication

- Initiate a communication campaign with disease appropriate materials educating the public on preventing mosquito bites, controlling mosquito populations, preventing sexual transmission, and accessing and using effective contraception.

- Post awareness information in prominent places at sea ports of entry and airports by DPHSS.

- Public health staff conducting home health visits should distribute awareness and prevention materials as needed.

- Review plans to establish a joint information center to facilitate synchronized messaging.

- Develop draft health alerts to be disseminated if and when the disease is detected on island.

- Ensure messaging reaches vulnerable populations to include women of childbearing age, pregnant women and male partners of pregnant women, and those considering conception.
- Distribute age appropriate informational materials through high schools, college clinics, health clinics, and private clinics and senior centers.

- Coordinate information delivery through the Department of Education for students and

parents.

- Provide arboviral disease prevention information to child care centers for implementation and to share with parents.

- Deploy strategies to help women and men who wish to avoid or delay pregnancies choose and use appropriate contraceptive methods.

- Sample messages, fact sheets and the latest recommendations can be found on the CDC websites. For example Zika information is found at: https://www.cdc.gov/zika/comm-resources/toolkits.html#basics . A few samples can be found in Appendix B.

3.1.3 Medical surveillance

- Review the case definition of the active arboviral disease and distribute it to healthcare providers including laboratory testing guidelines and reporting instructions. (See Appendix C)

- Develop protocols for medical surveillance testing and epidemiological investigations. If the arbovirus circulating is Zika, ensure to utilize CDC's Zika Virus Morbidity Report Form (or modify the existing arboviral report form for Zika-specific information).

- Identify and investigate potential cases in travelers and, if Zika, include investigation of their sexual contacts.

- Follow Territorial and National guidelines for reporting illness. For instance, dengue and chikungunya cases will be reported to the territorial epidemiologist be providers a reportable disease. For Zika, symptomatic or asymptomatic pregnant women with confirmed Zika virus infection will be reported to the epidemiologist for reporting to the U.S. Zika Pregnancy Registry.

- Due to potential transmission through blood products, detailed investigation will be conducted for recipients who develop illness compatible with arboviral diseases within 28 days of receiving the blood by DPHSS medical surveillance and epidemiology staff.

- Children with microcephaly or other neurological disorders should be reported to DPHSS to determine if Zika virus exposure could have caused the abnormality.

3.1.4 Clinical Laboratory Testing

- Evaluate surge capacity for testing increased numbers of laboratory samples.

- Notify the epidemiologist of laboratory results that are positive for arboviral disease or if there is an increase in the number of arboviral or leptospirosis testing on the island. The clinical presentation of leptospirosis is often difficult to distinguish from arboviruses such as dengue. If

clinicians start ordering many tests for leptospirosis, and they are negative, it might actually be the first evidence of a dengue outbreak.

- Encourage private healthcare providers and military medical institutions on island to immediately report laboratory results for any positive cases to DPHSS.

- Provide instructional guidance in sample collection and transport procedures to the healthcare community.

3.1.5 Vector Control

DEH will implement the activities specified in the Guam Vector Management Strategic Plan (2017-2020). Some of the activities include:

- Promote activities such as tire recycling programs and other community-wide mosquito abatement projects.

- Evaluate and coordinate the appropriate vector control activities to reduce mosquitoes for biological and chemical control (i.e., spraying insecticide) in public areas where mosquitos are known to exist.

- Provide information to homeowners and businesses with water catchment systems on how to reduce mosquito breeding and harborage areas.

- Encourage source reduction of mosquito breeding and harborage areas in and around homes, businesses, parks, schools, churches, and other public areas, as needed, through DPHSS and the Medical Reserve Corps.

- Maintain a list of mosquito control service companies and local government mosquito control programs.

- Encourage the use of appropriate attire, avoidance of activities during dusk and dawn (time when the mosquitoes that transmit dengue, Zika and chikungunya are most active), mosquito repellants, window screens, and mosquito nets to reduce exposure to mosquitoes.

3.1.6 Blood Safety

- Review existing testing procedures to ensure that all blood donations are secure and free from arboviral disease.

- Report any positive test results for arboviral diseases to the territorial epidemiologist and the Director of the Guam Environmental Health Laboratory immediately.

- Ensure implementation of FDA’s revised blood safety recommendations.

3.2 Level 2 (Orange): Suspected/Confirmed Case on Island

Activation Level: Partial

Risk Level: A single, locally acquired case, or cases clustered in a single household and occur more than two weeks apart are identified on island or a confirmed case on island from someone who has recently travelled off-island and may have acquired the disease elsewhere.

The goal of this level is to prevent and mitigate the vector opportunities for further local transmission. Determination of local mosquito transmission will be made by DPHSS.

In addition to activities listed in Level 1 above, the activities listed below should be initiated.

3.2.1 Command and Control

- Notification of the situation should be reported by the Director, DPHSS to the Governor, Guam Homeland Security (GHS)/ Office of Civil Defense.

- Activate the Emergency Operations Center in accordance with the DPHSS AHERP.

- Assign response roles to ICS trained personnel to include at a minimum: Incident Commander, Finance, Logistics, Operations, Safety and Planning Sections.

- Begin regularly scheduled meetings to develop a response rhythm to keep appropriate partners informed.

- Clearly document notes from all meetings.

- Notify national and regional partners of cases as appropriate, such as CDC, WHO, SPC, PPHSN, etc.

- Ensure that core DPHSS public health functions sustain operations during the response.

- Review availability of supplies and staff needed for the response and request additional support from governmental, non-profit, or local stakeholders.

- Conduct a meeting of the healthcare coalition to alert all health partners of the situation and ensure that the process and importance of reporting cases is followed.

- Assess the potential need for off-island specialists such as entomologists, epidemiologists, physicians, nurses, etc.

- With the territorial epidemiologist, determine if there is a need for external assistance. For

example, a CDC field team such as Epi Aid, CDC Emergency Response Team (CERT) or rapid response team to provide on-the-ground technical, risk communication, vector control and/or logistical support.

- Continually assess the need for additional activities, supplies, staff and services.

- Conduct regular situation updates to keep healthcare partners informed of the evolving situation.

- Develop a shift schedule for responders to ensure that enough coverage is available and that responders have adequate time to rest between shifts.

- Coordinate response activities with ESF 8 partners as needed.

- Reassess gap analyses for needs assessment and identify what additional resources will be needed.

- Continue command and control activities in Level 1 as needed.

3.2.2 Communication

- Develop a health alert message that will be sent through the approval process.

- Distribute approved messages to the public via newspaper, radio, television, printed flyers, messaging at ports of entry, and social media as appropriate.

- Explore options to provide mosquito prevention education and materials to vulnerable populations through volunteer organizations and local partners at ports of entry, schools, colleges, health fairs, private clinics, public health clinics, senior centers and through home health care visits.

- If Zika has been detected, special attention should be placed on reaching pregnant women through health clinics as their child could be born with severe birth defects, as well as elderly people who may be at risk for prolonged illness or Guillain Barré syndrome (GBS).

- Activate a 24-hour hotline for public inquiries as well as scripted messages to be used by telephone operators.

- Expand outreach efforts to target populations based on CDC and WHO recommendations.

- At airports and seaports, provide information to individuals leaving Guam on the symptoms of arboviral diseases and who to contact if they experience any of these symptoms after leaving.

- Ensure that public information materials are translated into local languages to reach

vulnerable populations.

- Develop communication strategy with vector control officials to share information and coordinate medical surveillance activities.

- Maintain confidentiality of confirmed cases.

- Continue communication activities in Level 1 as needed.

3.2.3 Medical surveillance

- Ensure timely and accurate reporting from healthcare providers, both private and public.

- Review incoming data for accuracy.

- Conduct epidemiologic investigations for positive cases to determine the method of transmission, location, and timing and source of infection (i.e., sexual, mosquito-borne, travel related, transfusion, transplantation, or other) through interviews with suspect cases, family, and possibly primary care providers.

- Encourage healthcare partners to assist with medical surveillance for human cases through outreach, syndromic surveillance in ambulatory and hospital settings.

- Ensure the timely reporting of findings, trends, and recommendations along the lines of communication outlined by the event's ICS structure.

- Pregnant women with confirmed Zika virus infection and their infants, whether symptomatic or asymptomatic, should be reported to the U.S. Zika Pregnancy Registry.

- Notify national and regional partners of cases as appropriate, such as CDC, WHO, SPC, PPHSN, etc.

- Expand epidemiologic investigations to include neighbors in suspected areas by conducting house-to-house surveys.

- If the patient with confirmed arboviral disease is an infant, maternal history should be obtained.

- Enhance syndromic surveillance efforts to report arboviral disease related illnesses.

- Identify and track the spread of arboviral diseases in humans, including adverse birth outcomes that may be caused by Zika.

- Address the potential increase in the need for mental health providers to provide counseling to those exposed to arboviral diseases.

- Provide just-in-time training to healthcare providers who may be asked to assist in conducting neighborhood assessments and/or case investigations and to medical providers on appropriate clinical management of cases.

- Enhance medical surveillance activities in areas near where a locally transmitted case was identified, especially those with documented mosquito breeding areas and those areas that are frequently visited by the public.

- Continue medical surveillance activities in Level 1 as needed.

3.2.4 Clinical Laboratory Testing

- Activate plans for expanding laboratory capacity to handle an increase in laboratory samples.

- Ensure inventory of laboratory supplies are available to meet increased demand for testing.

- Ensure inventory of specimen packaging and shipping supplies are available to meet increased demand for off-island testing.

- Collaborate with healthcare coalition members to include private and military laboratories to collect positive arboviral disease test results.

- Ensure timely specimen transport, testing, and reporting of results to ordering healthcare providers for suspected cases and plan for test confirmation if there is a positive result.

- Encourage healthcare providers to immediately report laboratory results for any positive arboviral disease to DPHSS epidemiologist.

- Review recommended laboratory procedures issued by CDC and/or WHO.

- Reinforce biosafety practices for laboratorians and specimen handlers.

- Continue laboratory testing and reporting of results in Level 1 as needed.

3.2.5 Vector Control

DEH will implement the activities specified in the Guam Vector Management Strategic Plan (2017-2020). Some of the activities include:

- Conduct enhanced mosquito identification surveillance.

- Collaborate with epidemiologist on conducting investigations at potential sites of

transmission.

- Conduct environmental assessment and/or vector-control activities around the patients' residence and/or other appropriate locations within a 200-meter radius in a manner that preserves patient privacy and medical confidentiality.

- Evaluate the efficacy of current vector control methods and, if needed, make recommendations for additional methods.

- Continue vigilant monitoring of the prevalence of mosquito breeding sites.

- Work closely with communication team to ensure that health alerts and other mosquito prevention information is accurate and timely.

- Coordinate with Guam Environmental Protection Agency (GEPA) to provide pesticide recommendations and environmental information for certified applicators, homeowners, businesses, and volunteers.

- Monitor the manufacture, sale, use and distribution of pesticides on Guam.

- Continue vector control activities in Level 1 as needed.

3.2.6 Blood Safety

- Patients receiving blood transfusions and/or organ transplants who experience any illness with arboviral disease symptoms within 28 days, should report this to their healthcare provider.

- Ensure that organ transplant and/or blood donor recipients are aware of the adverse effects that could be attributed to arboviral diseases and the reporting procedures.

- Review and modify, if needed, blood donor screening information to include information about recent travel to an area with an active arboviral disease outbreak or sexual intercourse with an individual who had recently travelled to an area with an active Zika disease outbreak.

- Implement standard procedures for notification of positive laboratory results to the territorial epidemiologist.

- Continue blood safety activities in Level 1 as needed.

3.3 Level 1 (Red): Widespread Transmission on Island

Activation Level: Full

Risk Level: Multiple cases of locally-transmitted arboviral disease have been confirmed on Guam with onsets less than two weeks apart or infected mosquitoes found in multiple locations.

The primary goal of this phase of activation is to maintain an effective response utilizing all available resources to effectively mitigate the spread of arboviral diseases and to effectively treat infected persons.

In addition to activities listed in Levels 2 and 3 above, the activities listed below should be initiated.

3.3.1 Command and Control

- Evaluate the need to expand the response roles needed in the Emergency Operations Center.

- Early in the outbreak, determine if vector reduction is to use existing ground equipment or will require aerial application(s). If the latter, contact aerial spray companies and/or USAF National Guard and the GEPA for applicator certification of the pilots.

- Coordinate with the Guam Hospital Preparedness Program coordinator and healthcare coalition members to conduct inventories of medical equipment and non-medical countermeasures that can be shared.

- Evaluate level of available resources on island and sources to replenish depleted supplies.

- Evaluate the need to advise the Governor of Guam to declare a public health emergency. Ensure that the Director of the Guam Environmental Health Laboratory is on the team that begins working with FEMA so that vector suppression operations will be reimbursable.

- Establish a staffing plan for 24 hour coverage in the Emergency Operations Center.

- Increase distribution of mosquito bite prevention kits.

- Contact local healthcare providers to raise awareness of arboviral disease and to request reporting of suspect and confirmed cases.

- Alert CDC or other federal partners if any additional staff and/or resources are needed.

- Organize volunteer services and donated materials.

- Provide daily situation updates to healthcare partners and stakeholders to ensure coordinated messaging.

- Continue command and control activities in Levels 1 and 2, as needed.

- Develop strategy based on epidemiologic data to determine when the outbreak is over and the response is to end.

- When the outbreak is over, conduct a "hot wash" meeting with responders and stakeholders. Discuss what went well with the response, what didn't go well, recommendations for improvements in the plan before the next outbreak occurs, and any identified training needs. Develop an After Action Report to document these items and when they should be completed.

3.3.2 Communication

- Modify and update health alert messages as needed.

- Increase public information on television, radio, newspapers, social media and other forms of communication.

- Monitor local news and social media postings for inaccurate information.

- Issue travel advisory for Guam, if needed.

- Reinforce mosquito abatement messages and prevention methods through local media outlets.

- Consider school based information programs to encourage children to be aware of efforts they can take to reduce mosquito breeding areas in their neighborhoods and playgrounds.

- Reevaluate the items included in the mosquito prevention kits to determine if the contents should be changed based on the evolving disease.

- Organize volunteer organizations to provide arboviral disease information door-to-door and leave door hangers for those not at home.

- Conduct town hall meetings to address questions from the public and to deliver timely messages.

- Utilize communication strategies to inform pregnant women and women of child bearing age of the presence of arboviral disease in the local area and the precautions that they should take to prevent being infected.

- Implement plans for community outreach to advise use of appropriate contraceptives to prevent infection or abstinence from sexual contact with pregnant women.

- Issue guidance advising pregnant women to postpone travel to Guam.

- Begin distribution of mosquito bite prevention kits to the general population through volunteer organizations and local partners at ports of entry, schools, colleges, health fairs, private clinics, public health clinics, and through home health care visits.

- Continue communication activities in Levels 1 and 2, as needed.

- Notify the public when the emergency has subsided and provide them with information on how they can help to prevent future outbreaks. Provide input to the Incident Commander on what went well with the response, what didn't go well, recommendations for improvements before the next outbreak occurs, and any identified training needs.

3.3.3 Medical surveillance

- Establish case definition of a suspect case and establish enhanced surveillance for all public and private healthcare providers.

- As appropriate or feasible, conduct epidemiologic investigation of confirmed cases to include: in-depth interview of household members, recent travel, deliver prevention and early detection messages to nearby residences (within about 500 feet), conduct door-to-door interviews of neighbors to determine if anyone has similar symptoms, provide house-to-house information about reducing mosquito breeding sites.

- Review and maintain knowledge of new federal guidance documents that are released.

- Provide treatment and management guidelines to obstetricians, gynecologists and pediatricians.

- Encourage healthcare providers to advise suspect and confirmed cases to stay in air-conditioned or screened areas, wear preventive attire (long sleeved shirts, long pants, socks, shoes, hats, etc.) and use mosquito repellant.

- Continue medical surveillance activities in Levels 1 and 2, as needed.

- When the pre-determined level is reached for the outbreak to be declared finished, work with epidemiology staff to gather and analyze medical surveillance data. Provide input to the Incident Commander on what went well with the response, what didn't go well, recommendations for improvements before the next outbreak occurs, and any identified training needs.

3.3.4 Clinical Laboratory Testing

- Provide updated guidance on sample collection and reporting to healthcare providers.

- Expand laboratory data collection to meet demand for increased amount of specimens.

- Ensure timely and accurate specimen packaging, transportation, testing and reporting of results.

- Share changes in laboratory testing guidance with local healthcare providers and laboratories.

- Contact local laboratories performing testing for arboviral diseases to ensure that they are aware of the requirements for monitoring and reporting information on suspect and positive cases.

- Consider expanding laboratory operations to 24 hours to meet demand.

- Continue laboratory testing and reporting results in Levels 1 and 2, as needed.

- When the emergency has ended, return to normal laboratory functions. Provide input to the Incident Commander on what went well with the response, what didn't go well, recommendations for improvements before the next outbreak occurs, and any identified training needs.

3.3.5 Vector Control

DEH will implement the activities specified in the Guam Vector Management Strategic Plan (2017-2020). Some of the activities include:

- Urge community action and support of vector control and mosquito abatement programs.

- Update vector surveillance strategies in response to local transmission cases.

- Conduct continuous evaluation of needs for additional vector control activities.

- Review revised vector control strategies and recommendations based on information from other jurisdictions.

- Expand mosquito abatement activities to prevent further transmission.

- Continue vector control activities in Levels 1 and 2, as needed.

- When the response has ended, replenish utilized supplies, and make plans to resume regular vector control activities.

- Provide input to the Incident Commander on what went well with the response, what didn't go well, recommendations for improvements before the next outbreak occurs, and any identified training needs.

3.3.6 Blood Safety

- Consider implementing appropriate blood safety actions based on recommendations from the Incident Commander and federal partners.

- Ensure that any changes in guidance about laboratory testing or interpretation are promptly communicated to clinicians and local laboratories.

- Anticipate increased demand for diagnostic testing and develop a plan to provide laboratory surge capacity.

- Reinforce laboratory safety guidelines to prevent transmission from specimens to laboratory staff.

- Continue blood safety activities in Levels 1 and 2, as needed.

- When the response has ended, replenish utilized supplies, and make plans to resume regular blood safety and storage activities.

- Provide input to the Incident Commander on what went well with the response, what didn't go well, recommendations for improvements before the next outbreak occurs, and any identified training needs.

Appendix A: Acronyms and Abbreviations

AHERP	Guam Department of Public Health and Social Services All-Hazard Emergency Response Plan
ASPER	Assistant Secretary for Preparedness and Emergency Response
CDC	Centers for Disease Control
CERT	CDC Emergency Response Team
DEH	Division of Environmental Health
DHHS	Department of Health and Human Services
DHS	Department of Homeland Security
DPHSS	Guam Department of Public Health and Social Services
FEMA	Federal Emergency Management Agency
GEPA	Guam Environmental Protection Agency
GHS	Guam Homeland Security
OCD	Office of Civil Defense
PPHSN	Pacific Public Health Surveillance Network
SPC	Secretariat of the Pacific Community
WHO	World Health Organization
Zika	Zika virus disease

Appendix B: Sample Messages for Arboviral Diseases

Four Key Communication Messages for Zika

1) Zika infection during pregnancy is linked to birth defects. Pregnant women should not travel to areas with active Zika virus transmission.

2) Zika is primarily spread through the bite of an infected *Aedes* species mosquito. It can also be spread by a man to his male or female sex partners during vaginal, anal, or oral (mouth-to-penis) sex.

3) The best way to prevent Zika is to prevent mosquito bites. Condoms can reduce the chance of getting Zika from sex, if used correctly from start to finish, every time during vaginal, anal, and oral (mouth-to-penis) sex. Not having sex can eliminate the risk of getting Zika from sex.

4) Most people infected with Zika don't even know they have it. People usually don't get sick enough to go to the hospital, and they very rarely die of Zika. See a healthcare provider or go to your nearest public health clinic if you develop a fever, rash, joint pain, or reddish eyes during a trip or within 2 weeks after traveling to a place with Zika, or if you are pregnant and have had sexual contact with someone who has recently traveled.

Four Key Communication Messages for Dengue Fever

1) Dengue fever is a serious viral illness spread by *Aedes* mosquitoes that bite during the day, especially during early morning and late afternoon hours.

2) Symptoms range from having no symptoms, to causing mild or severe disease. Mild symptoms begin with a high fever severe headache and pain behind the eyes, muscle and joint pain, nausea, vomiting, rash and any abnormal bleeding. See a healthcare provider or go to your nearest public health clinic if you develop any of these symptoms.

3) There is neither a vaccine to prevent nor medication to treat dengue fever. Mild cases may be treated at home; rest, drink plenty of fluids to prevent dehydration. Severe cases of dengue occur and require treatment in a hospital. Avoid taking nonsteroidal anti-inflammatory drugs (NSAIDS) such as aspirin, ibuprofen (Motrin or Advil), or naproxen (Aleve) as they may thin your blood and increase your risk of developing bleeding.

4) The most effective way to prevent dengue fever is to prevent mosquito bites and control mosquito populations. Ways to do this are to use insect repellant (e.g., DEET, Picaridin, IR3535 or Oil of Lemon-Eucalyptus); wear long-sleeved shirts and long pants and light-colored, or loose-fitting clothing; use screens over open windows and doors. Properly cover or discard and dispose of all containers that collect rainwater or water in or near your home, school, or business.

Four Key Communication Messages for Chikungunya

1) Chikungunya is a serious viral illness spread by *Aedes* mosquitoes that bite during the day, especially during early morning and late afternoon hours.

2) Symptoms range from having no symptoms, to causing mild or severe disease. Mild symptoms begin with a high fever severe headache and pain behind the eyes, muscle and joint pain, nausea, vomiting, and rash. See a healthcare provider or go to your nearest public health clinic if you develop any of these symptoms.

3) There is neither a vaccine to prevent nor medication to treat dengue fever or chikungunya. Mild cases may be treated at home; rest, drink plenty of fluids to prevent dehydration. Severe cases may require treatment in a hospital.

4) The most effective way to prevent dengue fever and chikungunya is to prevent mosquito bites and control mosquito populations. Ways to do this are to use insect repellant (e.g., DEET, Picaridin, IR3535 or Oil of Lemon-Eucalyptus); wear long-sleeved shirts and long pants and light-colored, or loose fitting clothing; use screens over open windows and doors; Properly cover or discard and dispose of all containers that collect rainwater or water in or near your home, school, or business.

Appendix C: Zika Virus Case Definition

CDC Zika Virus Case Definition

Source: https://wwwn.cdc.gov/nndss/conditions/zika/case-definition/2016/06/

CSTE Position Statement(s)

- 16-ID-01

Subtype(s)

- Zika virus disease, congenital
- Zika virus disease, non-congenital
- Zika virus infection, congenital
- Zika virus infection, non-congenital

Background

Zika virus (ZIKV), a flavivirus transmitted by *Aedes* species mosquitoes, was first identified in the Zika Forest by the Virus Research Institute in Uganda in a non-human primate in 1947 and from *Aedes africanus* mosquitoes in 1948. Before 2007, there had been only 14 human ZIKV disease cases documented. In 2007, an outbreak of ZIKV disease occurred on Yap Island, Federated States of Micronesia and the ensuing investigation included the first population-based epidemiological study of ZIKV infection and disease. It was estimated that 75% (attack rate) of the island's inhabitants were infected with ZIKV resulting in 18% symptomatic and 82% asymptomatic infections. The most common symptoms documented in this outbreak were maculopapular rash, fever, arthralgia, and conjunctivitis. From 2013 to 2014 there was a large outbreak in French Polynesia where *Aedes aegypti* was considered the most important vector. There continues to be ongoing transmission in the Pacific Islands.

Due to the rapidly evolving epidemic of Zika virus infection, the Council of State and Territorial Epidemiologists (CSTE) Executive Board developed an interim position statement to establish standardized case definitions for Zika virus disease and ZIKV congenital infection dated February 26, 2016, and to add these conditions to the Nationally Notifiable Diseases List. As laboratory testing for ZIKV has been more widely performed, limitations of the interpretation of serologic test results, including plaque

reduction neutralization testing have been recognized, necessitating revisions to the laboratory criteria of the case definitions. Additionally, numerous asymptomatic persons, particularly pregnant women are tested for ZIKV infection and will meet laboratory criteria for infection. Because asymptomatic infection might be epidemiologically significant, revisions to the interim surveillance case definitions are proposed to include ZIKV infections without disease. Public health jurisdictions are encouraged to evaluate, report, and monitor identified ZIKV infections, particularly in pregnant women, that don't meet the clinical criteria of the confirmed and probable congenital and non-congenital disease case classifications.

Laboratory Criteria for Diagnosis

Recent ZIKV infection

- Culture of ZIKV from blood, body fluid, or tissue; **OR**
- Detection of ZIKV antigen or viral ribonucleic acid (RNA) in serum, cerebrospinal fluid (CSF),

  placenta, umbilical cord, fetal tissue, or other specimen (e.g., amniotic fluid, urine, semen, saliva), **OR**

- Positive ZIKV immunoglobulin M (IgM) antibody test in serum or CSF **with** positive ZIKV neutralizing antibody titers and negative neutralizing antibody titers against dengue or other flaviviruses endemic to the region where exposure occurred

Recent flavivirus infection, possible ZIKV

- Positive ZIKV IgM antibody test of serum or CSF with positive neutralizing antibody titers against ZIKV and dengue virus or other flaviviruses endemic to the region where exposure occurred
- Positive ZIKV IgM antibody test **AND** negative dengue virus IgM antibody test with no neutralizing antibody testing performed

Epidemiologic Linkage

- Resides in or recent travel to an area with known ZIKV transmission; **OR**

- Sexual contact with a confirmed or probable case within the infection transmission risk window of ZIKV infection or person with recent travel to an area with known ZIKV transmission; **OR**
- Receipt of blood or blood products within 30 days of symptom onset; **OR**
- Organ or tissue transplant recipient within 30 days of symptom onset; **OR**
- Association in time and place with a confirmed or probable case; **OR**