EL NIÑO IN THE AMERICAS: PROTECTING HEALTH AND INCREASING RESILIENCE - A SHORT COURSE

Session 5. Vector-borne and Zoonotic Diseases

In the Americas, the influence of El Niño becomes evident through a range of challenges, from soaring temperatures and severe climate events to the shifting dynamics of disease transmission. The following strategies aim to confront the growing presence of disease vectors, which encompass a diverse group, including Dengue, Zika, Chikungunya, and Malaria, as well as Rodent-borne diseases (such as plague and hantavirus), alongside other vector-borne illnesses like Leishmaniasis and Tick-borne diseases. These short-term actions are designed to mitigate the health impacts of vector-borne and zoonotic diseases exacerbated by El Niño events. They focus on enhancing surveillance, prevention, and response efforts, offering proactive measures to safeguard human and animal populations against these diseases and minimize their transmission.

Acute recommendations to address the impacts of El Niño on Vector-borne and Zoonotic Diseases

Early Warning Systems and Surveillance:

- Strengthen surveillance of disease vectors, such as mosquitoes and ticks, in high-risk areas, monitoring changes in vector populations and behavior in response to El Niño-related environmental conditions.
- Improve data collection and analysis to monitor disease vectors, animal reservoirs, and potential human cases.
- Deploy targeted vector control measures, including larval source reduction, insecticide spraying, and distribution of bed nets or insect repellents, to curtail the transmission of vector-borne diseases such as malaria, dengue, and Zika.
- Upgrade disease surveillance systems to detect and report vector-borne and zoonotic diseases promptly. Provide healthcare workers with training to recognize symptoms and collect diagnostic samples.
- Collaborate with meteorological agencies to incorporate climate data into disease forecasting models.
- Implement community-based surveillance to actively involve local populations in reporting any unusual disease patterns.

Emergency Response:

- Establish rapid response health teams with the necessary expertise and supplies to investigate and manage disease outbreaks swiftly.
- Execute comprehensive vector control programs to prevent diseases transmitted by insects like mosquitoes. This includes the distribution of insecticide-treated bed nets and insect repellents.
- Maintain stockpiles of essential medications and medical supplies to treat vector-borne and zoonotic diseases, especially in high-risk areas prone to outbreaks.
- Implement quarantine and isolation measures where necessary to halt disease spread.
- Administer vaccines for zoonotic diseases with available vaccines to at-risk populations and livestock.

- Ensure access to clean and safe drinking water for affected communities by installing water purification units or distributing water purification tablets.
- Promote proper sanitation and hygiene practices, especially in emergency shelters, to prevent the spread of waterborne diseases. Ensure access to sanitation facilities and hygiene kits.
- Incorporate considerations for the health and well-being of women and children into emergency response plans. This includes providing gender-segregated relief centers, access to early obstetric and gynecologic care, and widespread screening for domestic violence.
- Prepare healthcare facilities for a potential patient surge during disease outbreaks by ensuring sufficient staffing, medical supplies, and available hospital beds.
- Secure access to diagnostic tests and laboratory facilities for accurate diagnoses of vector-borne and zoonotic diseases. Prompt diagnosis is crucial for timely treatment.
- Promote best practices in livestock management to reduce the risk of zoonotic disease transmission from animals to humans. This includes vaccination and regular veterinary care.
- Implement environmental management strategies to reduce breeding sites for disease vectors, such as proper waste disposal, drainage improvement, and habitat modification.

Strengthen Healthcare Service Delivery:

- Ensure that healthcare facilities are well-prepared to manage a patient surge, with sufficient staff and backup power sources.
- Provide healthcare workers with training on diagnosing and treating vector-borne and zoonotic diseases.
- Ensure access to diagnostic tools and treatments in healthcare facilities. Establish mobile clinics or temporary healthcare facilities in areas with limited access to health services, with capacities to provide emergency OB/GYN care.
- Strengthen patient care networks in diagnosis, management and follow-up of patients with suspected chikungunya (including the chronic phase of the disease) or dengue.
- Capacities must be strengthened at the level of primary health care and, from this level, avoid progression to severe forms and deaths from dengue. This requires early clinical diagnosis and recognition of warning signs.
- Establish and update contingency plans in healthcare facilities to ensure the uninterrupted operation of essential health services and strengthen capacity to manage an influx of patients, including migratory populations, during El Niño-related health crises.
- Maintain a stockpile of medical supplies and emergency resources at health networks and healthcare facilities as a critical component of readiness strategies to meet increased demand during El Niño-related health crises.
- Implement swift measures to safeguard the non-structural components of health infrastructure, ensuring the uninterrupted operation of essential health services during El Niño-related health crises.

Research, Capacity Building, and Communication:

- Support research efforts to understand how El Niño conditions may affect the distribution and transmission of vector-borne and zoonotic diseases. Use this knowledge to inform response strategies.
- Promote studies on the influence of climate change and El Niño on disease transmission.
- Investigate emerging pathogens and potential reservoirs to anticipate future threats and studies on the efficacy of vector control measures and interventions.

- Conduct workshops for emergency responders to improve readiness during disease outbreaks.
- Enhance laboratory capacity for diagnosing diseases.
- Develop and disseminate risk communication messages to inform the public about disease risks and prevention measures, particularly during El Niño events when disease patterns may change. Household members should be encouraged to eliminate both residential and peri-domiciliary sources of mosquito breeding.
- Encourage community participation in decision-making processes, planning, and response efforts to enhance community awareness and resilience.
- Create effective communication and information exchange channels between academia, decision-makers at all levels, civil society, and the private sector.
- Conduct public awareness campaigns to educate communities about the risks of vector-borne diseases, how to prevent bites, and the importance of seeking medical care early if symptoms occur.
- Collaborate with neighboring countries to share information and coordinate vector and zoonotic disease control efforts, especially if diseases have cross-border impacts.

Intersectoral coordination for action at all levels:

- Establish a well-coordinated communication network involving health departments, meteorological agencies, and other pertinent sectors.
- Collaborate with international health organizations to access valuable resources and expertise.
- Provide regular updates and briefings to keep all stakeholders informed and aligned with response efforts.
- Promote coordination among relevant sectors, including agriculture, health, water resources, climate change, and disaster management, to harmonize efforts to manage and respond to vector-borne diseases during El Niño events. For example:

1. Energy Sector: Cooperate to maintain a stable power supply for medical facilities and equipment with increased demand.
2. Water Resources Management: Collaborate to ensure access to safe drinking water, a critical factor in preventing waterborne diseases.
3. Transportation Sector: Guarantee the efficient movement of relief supplies and healthcare teams to affected areas during El Niño events.

Example

One significant case of El Niño impacting Latin America with vector-borne and zoonotic diseases is the El Niño event 1997-1998. During this period, several countries in the region faced increased transmission of diseases like dengue and hantavirus. Here, it presents the case of the 1997-1998 El Niño event in Peru and how the government addressed it. This case illustrates how an El Niño event can trigger an upsurge in vector-borne and zoonotic diseases, necessitating a multi-pronged response from the government. Dengue outbreaks during El Niño events in countries like Peru underline the need for preparedness, timely interventions, and robust healthcare services to protect public health. These lessons have informed the region's approach to handling similar situations in subsequent El Niño events.

El Niño in Peru (1997-1998) - Dengue Outbreak

The El Niño event of 1997-1998 brought heavy rains and unusual temperature patterns to Peru.
These climate anomalies created ideal breeding conditions for Aedes aegypti mosquitoes, the primary vector for dengue fever. The increase in Aedes aegypti populations resulted in a surge of dengue fever cases, transmitted by the mosquito vector, leading to widespread illness, hospitalizations, and several deaths.

Government Response:

- The Peruvian government declared a state of emergency in some regions.
- Vector Control: Intensified vector control programs to reduce mosquito populations, such as fumigation and community-based clean-up campaigns:
  • Space Fumigation (Ultra Low Volume)
  • Indoor spraying (residual insecticides)
  • Active search for febrile cases and collection of thick smear samples.
  • Identification, mapping, and treatment of breeding sites through physical and chemical control and biological.
  • Application of chemical larvicides (Temephos)
  • Water chlorination and chlorine distribution
  • Disinfection of water storage systems
  • Campaigns to eliminate unusable potential mosquito breeding sites aedes.
- Healthcare Services: Increased medical staff, hospital beds, and supplies to handle the rising number of dengue cases.
- Public Awareness: Launched public health campaigns to educate communities on dengue prevention, symptoms, and early care-seeking.
- International Assistance: Sought assistance from international health organizations and foreign governments for medical supplies, expertise, and funding.

Outcomes:
The government managed to control the dengue outbreak through coordinated efforts, although it posed a significant challenge. The crisis highlighted the importance of integrated surveillance systems, vector control, and community engagement in preventing and responding to vector-borne diseases during El Niño events.

Relevant Resources

Early Warning, Alert and Response System (EWARS)

- Website and publications related to the WHO's Early Warning, Alert, and Response System (EWARS). EWARS is designed to improve disease outbreak detection in emergency settings, such as in countries in conflict or following a natural disaster. It is a simple, cost-effective way to set up a disease surveillance system rapidly.

Quality criteria for the evaluation of climate-informed early warning systems for infectious diseases

- This guide aims to outline key technical and operational criteria surrounding the performance, application, implementation, and effectiveness of EWS and to illustrate how an understanding of these issues can be used for the evaluation of EWS for multiple infectious disease outbreaks. This guidance is aimed at national authorities of infectious disease programs and health information systems of ministries of health (MoH).

Guidelines for Clinical Diagnosis and Treatment of Dengue, Chikungunya, and Zika.

- The guidelines aim to prevent the progression to severe forms of these diseases and the fatal events they may cause. The recommendations are intended for health professionals, including general, resident, and specialist physicians, nursing professionals, and medical and nursing students, who participate in caring for patients with suspected dengue, chikungunya, or Zika.

Epidemiological Alert-Increase in dengue cases in Central America and the Caribbean - 15 September 2023

- Due to the increase in dengue cases in countries and territories of Central America and the Caribbean and with the start of the summer season in South America, the Pan American Health Organization / World Health Organization (PAHO/WHO) encourages Member States in South America to review their preparedness and response plans, as well as continue surveillance, early diagnosis, and timely care of dengue and other arbovirus cases, in order to prevent severe cases and deaths associated with these diseases.

Multi-Hazard Early Warning Systems: A Checklist

- The checklist, which is structured around the four key elements of early warning systems, aims to be a simple list of the main components and actions to which national governments, community organizations, and partners within and across all sectors can refer when developing or evaluating early warning systems. It is not intended to be a comprehensive design manual but a practical, non-technical reference tool to ensure that the major elements of an effective early warning system are in place.

Climate Change for Health Professionals: A Pocket Book

- Climate Change for Health Professionals is a pocketbook based on empirical data that offers essential information for medical personnel and other health professionals to realize the impacts of climate change on their daily practice. With this quick reference guide, providers can easily recognize diseases and side effects related to climate change, implement appropriate management and provide guidance to exposed populations, provide up-to-date information on the relationship between the adverse effects of certain drugs and the worsening of climate-sensitive health conditions, and determine the possible consequences of climate change for health services. This book addresses key meteorological risks, as well as the health conditions which they may influence, grouped by specific clinical areas.

Protecting health from climate change: vulnerability and adaptation assessment

- This document provides guidance on how countries can prepare Vulnerability and Adaptation Assessments (V&As). These assessments identify and evaluate the vulnerability of different areas and populations within countries. By preparing V&As, countries can concentrate on climate change, health policies, and interventions to where they are most needed.

Global Consortium on Climate and Health Education (GCCHE)

- The GCCHE website houses several courses (recordings + upcoming courses) that PAHO has conducted with Columbia University and others about Climate Change and Health.

PAHO Main page for climate change and health

- The main webpage for PAHO climate change and health resources and information. This website provides infographics, news, upcoming events, and links to many PAHO/WHO climate change and health resources.

Quality Criteria for Health National Adaptation Plans

- The Quality Criteria for Health National Adaptation Plans (HNAPs) presents examples of good practices in HNAP development to assist countries in developing a comprehensive, feasible, and implementable plan. The criteria are also intended to guide countries in setting the foundation for a long-term iterative HNAP process. The proposed criteria are not prescriptive and should be adapted to dynamic country contexts, uncertain and changing climatic conditions, and new knowledge and technologies.

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