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ECUADOR–PERU COOPERATION FOR CLIMATE- INFORMED DENGUE SURVEILLANCE: CREATING AN INTERDISCIPLINARY MULTINATIONAL TEAM

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CONTEXT

Converting weather and climate data into a decision-making tool for health authorities to use in order to reduce the burden of climate-sensitive diseases is a potentially powerful initiative, but remains a challenge in most developing countries.

Strategies for climate change adaptation can reduce morbidity and mortality (1), yet there is very little information exchange between the health and meteorological sectors, causing uncertainty in risk-management decisions to better cope with health threats from climate change.

The epidemiology of dengue transmission over the past 20 years has shown epidemic cycles of three to five years. To date, the only method of preventing and controlling the transmission of the dengue virus is vector control, an integrative and multidisciplinary task (1, 2). WHO recommends that new strategic approaches to address dengue should include the creation of partnerships with organizations such as WMO, and should take into account climate information (3, 4).

Dengue transmission in the common border areas of Ecuador and Peru remains endemic throughout the year and epidemic cycles coincide with rainy seasons. The persistence of dengue transmission is associated with social, economic, environmental and cultural determinants that prevail in approximately 70% of the border areas (5, 6).

Between January and November 2012, a total of 3 227 dengue cases were reported in these border areas (5–7). High human mobility from intense commercial activity and tourism, fragmentation of information systems and morbidity underreporting are factors that characterize the need for interdisciplinary approaches.

In 1998, the Binational Development Plan was established along the Ecuador–Peru border. It was designed to facilitate access to services such as roads, water and sanitation, watershed management, and basic infrastructure for health and education (8).

In 2011, with the support of the Ecuador and Peru WHO country offices and funds from WMO, staff from the ministries of health and the meteorological services from both countries launched a joint initiative to establish a binational dengue surveillance network using climate and health information along the Ecuador–Peru border. The aim was to team up the health and meteorological services and other operational staff to reduce the dengue disease burden.

NEW APPROACHES

Establishment of a team. The project team comprises multinational and multidisciplinary specialists in public health, epidemiology, tropical medicine, climatology and statistics, all participants in a two-week, WHO/WMO-sponsored 'Andean course on the use of climate information for public health' that was held in 2012, attended by a total of 18 experts from nine countries (9).

Workplan. The following workplan, with funds allocated, institutional support and written reporting mechanisms agreed, was set up by the team:

Objective 1: Identify the technical, human, legal and procedural resources of the institutions in charge of human health and of weather and climate information related to vector-borne diseases in the border area.

Activities:

- 1.1 Identify and map stakeholders to participate in the binational dengue surveillance network.
- 1.2 Prepare a workplan.
- 1.3 Prepare a standardized survey form to collect information on the institutional knowledge and capacities to provide weather information related to dengue epidemiology in the border areas.
- 1.4 Review and analyse the results.

Objective 2: Promote the use of selected weather information, adjusted to the needs of the health sector, to monitor and control dengue, within the framework of the Binational Development Plan.

Activities:

- 2.1 Organize a binational planning workshop.
- 2.2 Create a dengue surveillance network website.
- 2.3 Obtain official government approval and support for the establishment of the dengue surveillance network.

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Establishment of a baseline of current institutional capacities. Since 2010, the Ecuador Ministry of Health has addressed health concerns linked to climate change through an integrated approach to manage the social and environmental determinants of health. Likewise, in Peru, the Environmental Health General Directorate of the Ministry of Health implements strategies addressing climate change impacts on human health as a disease prevention approach. The Binational Development Plan is aimed at strengthening health actions in both countries' border areas (8).

The National Service for Meteorology and Hydrology (El Servicio Nacional de Meteorología e Hidrología del Perú, SENAMHI) in Peru leads the meteorological, hydrological and environmental, and agrometeorological activities in the country. SENAMHI monitors and generates atmospheric information useful for the improvement of public health. In Ecuador, the National Institute for Meteorology and Hydrology (Instituto Nacional de Meteorología e Hidrología) has led major research processes using climatological information for predictability models for vector-borne diseases (10).

Figure 2.1 *Aedes Albopictus*. Photo credit: Centers for Disease Control and Prevention, part of the United States Department of Health and Human Services. Photo credit: James Gathany/CDC.



Climate–health capacities and knowledge of local and national institutional actors. The dengue surveillance network standardized form was completed by health and climate authorities in both countries, leading to the following observations:

- All health survey participants knew about the existence of an information system on dengue cases; only half knew about information transfer systems; 88% said there was no quick and fast way to exchange information on dengue cases and indexes.
- Of survey participants, 76% were not aware there was a monthly climate–health information reporting system.
- None were aware of climate information maps.
- All said no correlation of climatic variables and dengue cases was performed.
- All climate survey participants mentioned that weather information was extremely valuable to health, but it was not available in a language assimilable by ministry of health staff.
- Information on dengue cases was centralized in the ministries of health and was not publicly available, and there were no formal avenues for information flow to allow for joint action.
- The high turnover of staff undermined the ability of the two countries to work together.
- Local communities were unaware of climatological information and possible climate–health relationships.
- The Ecuador–Peru Binational Development Plan had a funded framework to improve the health of people living in border areas, but was not socialized among local actors.

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BENEFITS AND LESSONS

Despite restricted funds, the binational monitoring network for dengue control using climate and health information in the border regions of Ecuador and Peru was established, along with a workplan. This promising initiative needs further support. Recommendations for next steps include seeking official recognition for the dengue surveillance network to implement its workplan as part of the Binational Development Plan and become an official part of the regional and local community development plans.