

Ensuring Healthy Lives for All
In Lalitpur Metropolitan City & Beyond



CITY-TO-CITY CONSULTATION ON DENGUE FEVER PREVENTION & PREPAREDNESS







GOOD HEALTH



I. INTRODUCTION

■ BACKGROUND

CityNet Secretariat organized a series of city-to-city (C2C) cooperation sessions on Dengue fever prevention and preparedness based on a request from the Mayor of Lalitpur, Chiri Babu Maharjan, during the 42nd Executive Committee meeting in Kuala Lumpur, on 23 September 2022.

As a follow-up, the Secretariat made a visit to Lalitpur Metropolitan City to conduct a rapid assessment and inspection of the medical facilities and institutional capacity of Dengue prevention from both the medical and public sectors, on 3-4 December 2022.

Based on the rapid assessment, the Secretariat organized a series of sessions, connecting Lalitpur Metropolitan City (Lalitpur) with the City Government of Makati (Makati) and the Colombo Municipal Council (Colombo). During these sessions, the National Society for Earthquake Technology - Nepal (NSET) as a host of CityNet Nepal National Chapter (CNNC) and CityNet-Plus Arts Center for Creative Partnerships joined to contribute with their expertise. The two sessions took place on 6-7 February 2023. The last session took place on 6 March 2023, after a month, to draft a concrete action plan together with the World Health Organization (WHO).

■ FOCUS AREA

Based on a brainstorming meeting with stakeholders, prior to the two consultation sessions, the Secretariat narrowed down a focus area into seven categories to address.

- 1) Briefing of the Dengue Situation
- 2) Control of Dengue
- 3) Institutional Preparation & Capacity Building
- 4) Community Management & Engagement
- 5) Public Awareness
- 6) Data Collection & Management
- 7) Treatment during Specific Circumstances

OBJECTIVE

This report is drafted and written by Ms. Danbee Lee, Senior Program Officer at CityNet Secretariat to summarize the highlights of each city's practices based on the knowledge gathered throughout the two consultation sessions.







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Through this project, it is expected to increase the institutional capacity of Dengue prevention in Lalitpur through knowledge exchange and drafting an action plan for 2023 guided by WHO Nepal.

The long-term goal is to share the gathered knowledge with all Nepali members including cities and Non-Government Organizations (NGOs) so that other urban stakeholders which have a similar environment with a risk of Dengue fever can benchmark and adopt Lalitpur's action plans in their cities to further prevent the nationwide spread. Furthermore, this long-term goal involves the sustainability of the lessons learned and practiced at the municipal levels to minimize Dengue cases through proper budget allocation, conducting simulation drills, maintaining active profiling of the cases, and an immediate response plan which is reviewed on an annual basis so that the potential outbreak does not happen.







II. CITY PROFILE OF LALITPUR

1. BRIEFING OF THE DENGUE SITUATION

■ Dengue Case

- Experienced Dengue for the second time, but this is the first time with the highest number of cases in 2022 (4,300+ cases – male 2,191 & female 2,170)
- First identified Dengue case on 23 June 2022 at Ganesh Man Singh Hospital, the case originated from Pahdma Girls' Hostel
- Declared the end of Dengue season on 17 October 2022
- Adjacent to neighboring cities, so it is crucial to control Dengue traveling through people who commute

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Ward No	Female	Male	Total	Discharged/Cured	Death
1	41	32	73	73	0
2	79	76	155	155	0
3	104	112	216	216	0
4	165	155	320	320	0
5	187	184	371	371	0
6	57	42	99	99	0
7	21	14	35	35	0
8	46	43	89	89	0
9	141	137	278	278	0
10	42	43	85	85	0
11	108	110	218	218	0
12	136	148	284	284	0
13	214	201	415	415	0
14	213	230	443	443	0
15	148	166	314	314	0
16	60	49	109	109	0
17	74	63	137	137	0
18	73	70	143	143	0
19	49	60	109	109	0
20	41	42	83	83	0
21	9	15	24	24	0
22	11	23	34	34	0
23	26	38	64	64	0
24	28	30	58	58	0
25	49	54	103	103	0
26	11	16	27	27	0
27	12	13	25	25	0
28	14	18	32	32	0
29	11	7	18	18	0

Table 1. Dengue Cases in Lalitpur from 23 June to 17 October 2022

■ Climate Conditions during the Dengue Peak

• June-July: monsoon season







2. RAPID RESPONSE TO DENGUE

Medical Treatment at Patan Hospital (Public Hospital)

- Patients were screened at the Emergency Room (ER) first, then sent to a special ER for Dengue patients only, to conduct a blood test
- Medical staff raised a need to conduct an epidemic emergency drill for capacity building for Dengue, which was conducted for the first time in Nepal since 2018

■ Control of Dengue

- Activated Search and Destroy System for Dengue larva
- Donated 700+ mosquito nets to the public hospital and distributed antigen kits to health facilities





■ Institutional Preparation & Capacity Building

- Cooperated between LMC Public Health Department and Province Health Department Formed 29 Rapid Response Teams (RRT) in all 29 wards, under the guidance of the epidemiology team in the Department of Health in Lalitpur
- Administration team in Lalitpur conducted investigations of the Dengue-infected area
- 600+ officers in Lalitpur immediately conducted meetings to handle the situation

■ Community Management & Engagement

- Coordination with stakeholders including 29 wards chairs, local committees, local volunteer workers, NGOs, INGOs, etc.
 - Conducted orientation including for Female Community Health Volunteers (FCHV) on how to control the Dengue







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3. PUBLIC AWARENESS

Video Announcements through Local Television

- Messages from Mayor and Deputy Mayor
- Recorded in Nepali and Newari languages





■ Public Awareness Program

- House-to-house visits distributing pamphlets
- Education sessions at 22 health facilities
- Health education for 55 community schools and 400 private schools

■ Weekly Cleaning Campaign on Saturdays

- 7-8 AM house cleaning campaign monitored by the health department
- Miking in Neighborhoods, Sending SMS, Jingles







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III. C2C CONSULTATION WITH MAKATI

1. BRIEFING OF THE DENGUE SITUATION

■ History of Dengue in the Philippines

- Dengue has been around in the Philippines even before World War II. People spread Dengue while moving from place to place because of the war
- In the '60s to '80s, people got Dengue only during the rainy season. Due to urbanization and climate change, however, Dengue cases are found throughout the year
- People who commute from one city to Makati increase the spread of Dengue
 - Official population: 640,000
 - Daytime population due to the commuters: 640,000 X 5-10 times
- Males and children (5-14 years old) are more vulnerable than the others

Climate Conditions during the Dengue

Peak during the rainy season from June to December

2. CONTROL OF DENGUE

Self-protection Measures

- Distribution of anti-Dengue kits to all public school children
 - The kits include lotion (appears to be the most effective), spray, citronella bracelets
 - Distributed three times a year that can cover the entire academic year to 47,212 public schools
- Installation of mosquito nets on windows with chemicals applied in school buildings
 - Buildings in Makati have lots of windows due to the tropical climate
 - For this reason, instead of mosquito nets, window nets are used with ventilation on a regular basis, in public schools
- House clean-up on a regular basis every three months
 - People are asked to continuously search for areas with a high possibility of having mosquitoes









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■ Search & Destroy Vector Breeding Sites (Vector Surveillance)

Manual of Procedures 2nd Ed (page 95-99)

- Conduct a house-to-house environmental assessment to identify all the areas in the community to find possible breeding sites
- Ovi-larvi trap installation throughout the year for every household & public school
 - Monthly installation in communities and public schools to monitor vector density
 - Integrated vector control through regular and sustained vector surveillance
 - If one house is positive from the test, the house becomes an index area and 300m of radius from the house is under surveillance
 - If there are no Dengue cases, one of every five houses is randomly selected for ovi-larvi testing



Detection Activities

- Rapid Dengue test: NS1, IgG, IgM test for free
- Used for early detection, results are produced within the day
- Dengue lane fast track at the hospital

Using Different Methods for Adulticiding and Larviciding

- Chemical spraying for adulticiding
 - Manual of Procedures 2nd Ed (page 81-89)
 - Difficult to convince citizens due to skepticism about using chemicals
 - Conduct spraying when the Dengue cases reach the alert threshold
 - Conducted in at least two cycles with 10-14 days intervals during the Dengue outbreaks, spraying 300m radius
- Chemical & biological method for larviciding Manual of Procedures 2nd Ed (page 92-94)
 - Chemical method: Temephos 1% sand granules and insect growth regulator or pyriproxyfen
 - Biological method: add fish (Tilapia) in open water

3. INSTITUTIONAL PREPARATION & CAPACITY BUILDING

■ Reference of Policies and Guidelines

DILG Memorandum Circular No. 2012-16 DOH Administrative Order No. 2016-0043 DOH Administrative Order No. 2020-0670 City Ordinance No. 2019-A-102









- Prioritizing "Index" Area for Surveillance and Control *Manual of Procedures 2nd Ed (page 53-58)*
 - Prioritize an index area
 - Difficult to convince citizens due to skepticism about using chemicals

■ Multi-sectoral Cooperation

Manual of Procedures 2nd Ed (page 143)

- National level
 - Guideline from the National policy from the Department of Health (DOH)
 - Department of Interior and Local Government (DILG)
- City level
 - League of Barangay (same as wards in Nepal)
 - Department of Education in Makati: in charge of Dengue education for 5-14year-old students and teachers
 - City Epidemiology Surveillance Unit (CESU)

4. COMMUNITY MANAGEMENT & ENGAGEMENT

■ Enforcement (Police Mandate)

City Ordinance No. 2012-077

- First warning: requested to clean the house
- Second warning: punishment (three hours of community work)
- Third warning: fine (appx. US\$20) + community work
- Last warning: fine (appx. US\$60) + community work

■ Cooperation with Schools

- "Dengue Brigade"
 - A group of students who have a mission to prevent Dengue in their schools (task force among students group)

5. PUBLIC AWARENESS

■ Campaign

- Community health forums
 - Conducted a minimum of once a month, throughout the year
 - Organized by public health center focusing on 4S
- Search and destroy focusing on "4S"
 - Search and destroy
 - Seek early consultation, if you are sick
 - Self-protection
 - Say yes to spraying (misting)
- Conduct other creative events for awareness
 - Lectures, symposia, film screening







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Created catchphrases using K-dramas titles

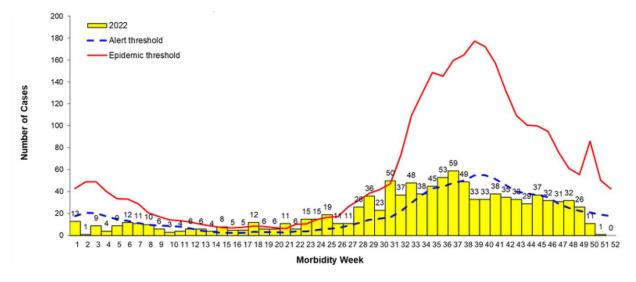




6. DATA COLLECTION & MANAGEMENT

■ Dengue Prediction and Prevention through Collected Data

- Alert and epidemiological threshold established compared to five-year data
- Used for routine surveillance monitoring
- Can detect case trends for prompt initiation of control measures
- When the bar graph reaches the blue line (alert threshold) everyone will be alerted
- When the bar graph reaches the red line (epidemic threshold) the government immediately needs to do something









■ CESU Dengue Case Surveillance Using the Philippines Integrated Disease Surveillance Reporting System

Manual of Procedures 2nd Ed (page 38, 43)

- Health center (both public and private) has an obligation to report the cases within 24 hours to the City Epidemiology and Surveillance Unit (CESU) in the city government via email
- Once the data is collected, CESU incorporates the data with the geological information system (GIS) so that the city can track down the index area easier

■ Data from Individuals

 There is no mandatory report from the individuals. However, by providing Dengue medication for free at the local health center, people have the incentive to go there to receive medicines and the health center can collect the data

7. TREATMENT DURING SPECIFIC CIRCUMSTANCES

■ Dengue & COVID-19

Manual of Procedures 2nd Ed (page 96-99)

 In case of causing confusion between Dengue and COVID-19 (signs and symptoms), the health center tested for both. If a patient receives a 'positive' result from the Dengue test, then the epidemiology team immediately executes the relevant procedures









IV. C2C CONSULTATION WITH COLOMBO

1. BRIEFING OF THE DENGUE SITUATION

■ History of Dengue in Sri Lanka

- Dengue cases are reported throughout the year, especially in a populated area in Sri Lanka
 - First case was found in 1965 and the first official report was done in 1988
 - Colombo had 3,100 cases in 2022
- Colombo is divided into six municipal districts, further divided into 47 wards
 - Colombo has a 700,000 population (37km²) and the floating population is
 1.2 million including commuters

■ Climate Conditions during the Dengue

- Peak before and after monsoon seasons with mild rain
 - First peak in June-August (Summer monsoon), the second peak in November-January
 - Heavy rain washes off the larvae, so this season is not considered as dangerous. However, mild and moderate rainfall will create breeding grounds for the mosquitoes
- Temperature around 26-32 degrees Celsius (average = 28)
 - Their life cycle gets shortened when the temperature goes over 32
 - Now, it is around the 29-32 range. Due to global warming, Colombo is now observing more cases in which the temperature affects the outbreak of Dengue

2. CONTROL OF DENGUE

■ Detection of Dengue Virus

- Three types of Dengue virus (1, 2, 3)
- Type 2 has been prevailing in 2017-2020, After people established their immune systems, Type 3 is the most prevailing

■ Three Criteria to Judge Dengue as an Epidemic

- Number of cases reported per month
- Number of cases in the hospital
- Number of death from Dengue fever









Management in Construction Sites

- Construction sites can be a huge breeding ground
 - The breeding sites are treated with Aquatain AMF
 - Aquatain AMF is a unique silicone-based liquid for mosquito control, that is used for the last 8 years with great success
- · Construction company needs an approval
 - When a building permit is issued by the city planning division, this information goes to the medical department of the area, and the city designates health inspectors for the building
 - Once the firm starts the construction, each construction site has to set up a Dengue Prevention Committee and arrange officials for each building/zones
 - Each official has responsible for the buildings and needs to inspect for a possible breeding place every day
 - Also, the firm has the right to hire officials from private control agencies to do the jobs instead of them

Activities with Households

- Indoor inspection
 - Inspection in the toilet, kitchen taps, below/behind refrigerators, roof, and fogging indoor
- Conduct a container removal program





■ Two Approaches of Prevention in Colombo

- Primary prevention: before Dengue comes
 - Prediction: designation of "City Dengue Control Weeks": three weeks before the monsoon seasons
 - Health education & report: house-to-house visit by the health department, environmental police, and military (army, navy, or air force) to mandate clean-up of the potential breeding sites, report, and issue a fine notice if needed
 - Promotion







GOOD HEALTH AND WELL-BEING



- Secondary prevention: early diagnosis, treatment, and control of spreading
 - Heavily focused on reducing the source of Dengue (vector reduction)
 - When a Dengue case is found, the city does an inspection within a 50m radius to inspect any breeding sites targeting infected female mosquitoes

■ Using Different Methods

- Biological methods
 - Aquatain AMF: silicone-based liquid and with 25 ml, it spreads across the surface of standing water even large water bodies and forms a very thin film. As silicones have a very low surface tension, the film prevents pupae and larvae from attaching themselves to the surface while attempting to breathe, thereby causing them to drown. Also, it creates a barrier for lava to get much-needed oxygen, hence, it is ideal for construction breeding sites, last for two months
 - BTI (Bacillus Thuringiensis Israelensis) dunks: last for one month
- Chemical methods
 - Ramda Cyhalothrin: effective during an epidemic; spraying this toxin on the wall lasting for 4-5 months

■ Penalty & Rewarding System

- Penalty
 - Penalty will be issued if people do not comply with the mandate during the government's house-to-house inspection
 - Yellow notice: under suspicion of having breeding sites at home. Will be notified that the surveillance team will visit for an inspection
 - Red notice: household with breeding sites discovered
 - LKR 5,000 (US\$15) for the first time not showing up during the house-tohouse inspection
 - LKR 100,000 (US\$300) for being overdue for more than six months









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- Rewarding
 - Recognition ceremony for Dengue free house by the Mayor of Colombo





3. INSTITUTIONAL PREPARATION & CAPACITY BUILDING

■ Cooperation with WHO, NGOs, and Other Countries

- Colombo used to have a higher mortality rate (3%)
- Cooperated with NGOs, WHO, and Thailand, receiving their knowledge through doctors and practitioners, and eventually the mortality rate went down to 0.2% (no death at all in 2022)
- City has a well-established training program for medical staff on early response through support from the central government and established the National Dengue Control Division and Epidemiological Unit

4. COMMUNITY MANAGEMENT & ENGAGEMENT

Strengthening Communities

- Community Development Council is organized in low-income settlements (consisting of 40% of the population)
 - The government contacts the council for the operation, collecting information on the Dengue cases, and making requests for visits
 - 50m radius is inspected to find breeding sites (most of the clusters are coming from breeding sites within the houses that require indoor fogging)







GOOD HEALTH AND WELL-BEING



5. PUBLIC AWARENESS

 Campaigns through videos, and posters produced by the National Dengue Control Unit

Amination in Sri Lankan

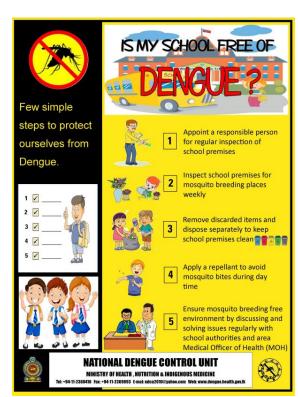
https://www.youtube.com/watch?v=6evc 1CZFrs

Animation in English

https://www.youtube.com/watch?v=aj-iH9pC1YU

Video in English

https://www.youtube.com/watch?v=FA2E-DwZxKc





6. DATA COLLECTION & MANAGEMENT

Case Reporting System

- City is divided into six districts and 47 sub-districts, and data is collected from each district
- Meteorological department and epidemiological department collects data for analysis
 - Temperatureature, humidity, satellite pictures, data from hospital







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Data Collection

- · Colombo has two ways of collecting data with paper-based fill-out
 - Passive collection: collected by the National Dengue Unit (Epidemiology Unit). This is not as useful to control the epidemic and prevent Dengue, as the point when all relevant data is gathered already passes one month after the case was discovered
 - Active collection: collected directly from households to Dengue Data System (DDS). This data is very useful during the epidemic period to execute an immediate response. Approximately 70% of cases are found in this way. During an outbreak period of Dengue, a patient who has a fever is presumed to have Dengue and the National Dengue Unit will immediately act on them regardless of the exact disease that the fever patient is having

■ Data Analysis & Usage of GPS

- City collects data on temperature and humidity from the meteorological department
- Two weeks prior to the monsoonal season, the city gathers satellite pictures, humidity data, and temperature patterns for the forecast
- City deploys workforce based on the assessment from the GPS (this helps scarcity in the workforce, as it enables allocating efficiently)

■ Data Collection & Analysis System

- Developed a "Mobuzz Project" jointly with Nan Yang University, Singapore
- Colombo has a good hospitalized patient data reporting and collection system called "Densys" and a citywide active dengue surveillance system









V. ACTION PLAN

1. IDEAS FOR ACTION PLAN

■ Control of Dengue

- Distribution of anti-Dengue kits to schools
- Adoption of mosquito window nets
- Adoption of Dengue Ovi-larvi trap
- Adoption of biological methods for larviciding
- · Adoption of rewards and penalty system
 - Provide rewards for those who self-report or join public awaresness campaign

■ Institutional Preparation & Capacity Building

- Review of other cities' operational guidelines
- City-to-city study visits
 - Visit Makati during Disaster Cluster Seminar in mid-June during the dengue prevention month with a focus on vector surveillance
 - Visit Colombo with a focus on data management and software
 - Visit Bangkok for medical staff training
- Multi-sectoral cooperation
 - Cooperation with Rotary Club within Lalitpur and through Kathmandu Mayor's Forum
 - Signing a Memorandum of Understanding of Dengue Task Force among Executive Committee Members including Lalitpur, Makati, Colombo, International Climate Development Institute (ICDI)
 - Continue the Task Force under the SDG Cluster

Community Management & Engagement

Designation of task force among student groups in each school

■ Public Awareness

- Weekly household cleaning campaign
- Declaration of Dengue Prevention month
- Creation of Information, Education, Communication (IEC) materials with visual contents
- Risk communication via trucks, miking (i.e. daily garbage pick-up truck)

■ Data Collection & Management

- Adopting a self-reporting system via QR or during the pick-up of the medicine at the health center/pharmacy
- Creation of data collection of meteorology including temperature, humidity, the direction of the wind









ANNEX 1. CONTRIBUTORS

1. LALITPUR METROPOLITAN CITY

- 1) Dr. Tara Man Amatya (Public Health Advisor)
- 2) Mr. Raju Maharjan (Aide to the Mayor)
- 3) Ms. Devi Thapa Gurung (Programme Coordinator, Health Department)
- 4) Ms. Sarita Maharjan (Chief, Public Health Department)

2. CITY GOVERNMENT OF MAKATI

- 1) Dr. Johanne Florence C. Legaspi (Head, City Epidemiology Surveillance Unit)
- 2) Ms. Joyce Sy (Planning Officer II, Urban Development Department)

3. COLOMBO MUNICIPAL COUNCIL

- 1) Dr. Ruwan Wijayamuni (Chief Medical Officer, Public Health Department)
- 2) Ms. Thamara Mallawaarachchi (Senior Technical Advisor to the Mayor)

4. WORLD HEALTH ORGANIZATION NEPAL

 Dr. Mukesh Poudel (Technical Assistance Malaria Surveillance M&E, Department of Communicable Diseases)

5. CITYNET-PLUS ARTS CENTER FOR CREATIVE PARTNERSHIPS

1) Mr. Kendra Hirata (Executive Director)

6. NATIONAL SOCIETY FOR EARTHQUAKE TECHNOLOGY - NEPAL

1) Dr. Ganesh Kumar Jimee (Deputy Executive Director)

7. CITYNET SECRETARIAT

1) Ms. Danbee Lee (Senior Program Officer)







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ANNEX 2. POSTER & PHOTO

City-to-city Consultation on Dengue Fever Prevention & Preparedness



Ensuring healthy lives for all in Lalitpur Metropolitan City and beyond

Feb. 6th 2023 2PM KST

Makati

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City Government of Makati
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Feb. 7th 2023 2PM KST

Colombo

Dr. Ruwan
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Colombo Municipal Council
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Figure 1. Participants in the city-to-city consultation session



Figure 2. Participants in the drafting action plan session