

ANNEX I. DENGUE HEMORRHAGIC FEVER RECORD SHEET

Name _____ Age _____ Sex _____ Hospital Name _____
 Race _____ Weight _____ Date of hospitalization _____ Patient No. _____
 Address _____

Day of illness (circle day)	1	2	3	4	5	6	7	8	9	10	11	12
Maximum temp., °C or °F (circle)												
Pulse/BP												
Headache												
Tourniquet test (positive, negative, or not done)												
Petechiae												
Purpura/ecchymoses												
Epistaxis												
Hematemesis/melena												
Other hemorrhage												
Hepatomegaly (size)												
<u>Shock</u> Cold extremities Cold, clammy sweat												
Restlessness												
Lethargy												
Pleural effusions												
Ascites												
Rash (describe)												
Lymph nodes												
Other signs/symptoms												
Hematocrit (%)												
Platelets ($\times 10^3$)												
Hemoglobin (Hb)												
WBC												
Neutrophils segments/stabs												
Lymphocytes/monocytes												
Serum albumin												
Serum ALT												
Serum AST												
Serum bilirubin												
Hematuria												
<u>Blood for virology/serology</u> Acute Convalescent												
<u>Treatment</u> LR/NSS Plasma Blood Others												

Notes:

ANNEX II. SAMPLE DENGUE CASE INVESTIGATION FORM

DENGUE CASE INVESTIGATION

HOSPITALIZED:

Yes _____ No _____

Name of hospital _____

Please complete all sections:

Country _____ ID (1-6)

Study (7)
Source (8)
Species (9)

Name _____
Last name First name Middle name

HOME ADDRESS

Number & Street: _____
City, Town or Post Office: _____
State & Zip or/
Province, County or Parish: _____
Telephone: _____

Doctor who referred
the case: _____

Office address: _____
Phone no: _____
Hospital & address: _____

Work Address: _____

Sex: Male _____ Female _____

Age: _____ years Date of birth: _____
Month Day Year

Place of birth: _____

CLINICAL DATA

	Month	Day	Year
Date of first symptom	_____	_____	_____
Date specimen taken:			
{ first specimen	_____	_____	_____
{ second specimen	_____	_____	_____
{ third specimen	_____	_____	_____
Other (specify): _____	_____	_____	_____

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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(11)	(61)	(60)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(12-13)	(14-15)	(78)
Onset Date		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	(22-25)	Date of
Kind	Lab No.	Collection
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(10)	(16-21)	(26-29)
		Days after Onset
		(30)

	Don't Know			
	Yes	No		
Fever				(19)
Headache				(20)
Eye pain				(21)
Body pain				(22)
Joint pain				(23)
Rash				(24)
Nausea or vomiting				(25)
Diarrhea				(26)
Chills				(27)
Cough				(28)
Petechiae				(29)
Purpura/Ecchymoses				(30)
Hemetamiasis				(31)
Melena				(32)
Epistaxis				(33)
Bleeding gums				(34)
Hematuria				(35)
Vaginal bleeding				(36)
Nasal congestion				(37)
Sore throat				(38)
Jaundice				(39)

Tourniquet Test _____ (19)
Blood pressure _____ (20)
Immunizations: _____ (21)
 Yellow fever: _____ (22)
 Others _____ (23-24)
Pregnant? _____ (25)
 Yes _____ Month of pregnancy _____ (26-28)

COMMENTS: _____ (29-39)

LABORATORY DATA:
CBC: WBC _____
 Hct _____
 Hb _____
Platelets _____
Other: _____

EPIDEMIOLOGIC DATA:
1. Have you had dengue before (with fever, body pain, and rash)?
 Yes _____ No _____ Don't know _____ (62)
2. When? _____/_____/_____
 Month Year (63-65)
3. How long have you lived in this location? _____ (66)
4. During the 10 days before onset of illness have you traveled in other locations?
 Yes _____ No _____ (67)
5. Where did you travel? _____

(Courtesy: Dengue Branch, DVVID, NCID, Centers for Disease Control, San Juan, Puerto Rico).

Form CDC 56.31A. This questionnaire is authorized by law (Public Health Service Act, 42 USC 241). Although response to the questions asked is voluntary, the cooperation of the patient is necessary for the study and control of the disease.
REV. 10-85

ANNEX III. SAMPLE SIZE IN *Aedes* LARVAL SURVEYS

For *Aedes* larval surveys, the number of houses to inspect in each locality depends on the level of precision required, level of infestation, and available resources. Although the more houses inspected, the greater the precision, it is usually impractical to inspect a large percentage of the houses because of limited human resources.

Table 1 shows the numbers of houses that should be inspected to detect presence or absence of infestation. For example, in a locality with 5,000 houses, in order to detect an infestation of > 1%, it is necessary to inspect at least 290 houses. There is still a 5% chance of not finding any positive houses when the true house index = 1%.

Table 1. Number of houses that should be inspected to detect *Aedes* larval infestation.

Number of houses in the locality	True house index		
	> 1%	> 2%	> 5%
100	95	78	45
200	155	105	51
300	189	117	54
400	211	124	55
500	225	129	56
1,000	258	138	57
2,000	277	143	58
5,000	290	147	59
10,000	294	148	59
Infinite	299	149	59

Table 2 shows the number of houses that should be inspected in a large (> 5,000 houses), positive locality, as determined by the expected house index and the degree of precision desired. For example, if preliminary sampling has indicated that the expected house index is approximately 10%, and a 95% confidence interval of 8%–12% is desired, then 1,000 houses should be inspected. If there are only sufficient resources to inspect 200 houses, the 95% confidence limits will be 6%–14%. In other words, there is only a 5% chance that the true house index is less than 6% or greater than 14%.

Table 2. Precision of the *Aedes* house index in large localities (> 5,000 houses), 95% confidence interval of the house index.

House index (%)	Number of houses inspected			
	100	200	300	1,000
2	0.2–7.0	0.5–5.0	0.7–4.3	1.2–3.1
5	2–11	2–9	3–8	4–7
10	5–18	6–14	7–14	8–12
20	13–29	16–26	16–25	18–23
50	40–60	43–57	44–56	47–53
70	60–79	62–76	64–75	67–73

In small localities, the same precision may be obtained by inspecting fewer houses. For example, if the expected house index is 50% and a 95% confidence interval of 44%–56% is acceptable, then in a *large* locality it would be necessary to inspect 300 houses (Table 2). However, as seen in Table 3, if the locality consists of only 1,000 houses the same precision will be obtained by inspecting 231 houses.

Table 3. Number of houses to inspect in small localities.

Total number of houses in the locality	Number of houses to be inspected for desired precision if this were a large locality (from Table 2)			
	100	200	300	1,000
50	33	40	50	50
100	50	66	75	100
200	67	100	120	170
300	77	122	150	230
400	80	134	171	290
500	83	142	189	330
1,000	91	166	231	500
5,000	100	200	285	830
10,000	100	200	300	910
20,000	100	200	300	950
30,000	100	200	300	1,000
40,000	100	200	300	1,000
100,000		200	300	1,000

ANNEX IV. EMERGENCY PLAN GUIDE

- I. The Emergency Committee (appointed by the Minister of Health)
 - A. Membership
 1. Chairman and Dengue Control Coordinator (from Ministry of Health)
 2. National epidemiologist
 3. Press officer (Ministry of Health)
 4. Chief of the national public health laboratory
 5. Chief medical officer
 6. Chief public health inspector
 7. Chief of vector or *Aedes aegypti* control program
 8. Sentinel physician representative
 9. Representatives from other governmental agencies and NGOs.
 - a. Agriculture
 - b. Tourism/Chamber of Commerce
 - c. Defense
 - d. Public works
 - e. Housing
 - f. Civil aviation authority
 10. PAHO Representation
 - B. Duties
 1. Writing the plan
 2. Declaring an emergency
 3. Coordinating emergency activities
 4. Designating responsibilities during an emergency
 5. Procuring necessary resources
 - C. Center of Operations
 1. Location
 2. Requirements
 - a. Space
 - b. Telephones and communications equipment
 - D. Meetings
 1. Frequency
 2. Purpose
- II. The Emergency Plan
 - A. Preparatory Phase
 1. Analysis of risk (i.e., preparation of tables, figures, maps, aerial photographs)
 - a. Vector
 - 1) Distribution
 - 2) Indices
 - 3) Susceptibility to insecticide
 - b. Disease
 - 1) Historical and present occurrence of dengue, DHF/DSS, and yellow fever in the country and neighboring countries
 - 2) Populations at risk

- 3) Number and distribution of cases
 - a) House surveys
 - b) Notification from health posts/clinics.
 2. Analysis of Current Vector Control Programs
 - a. Institutions
 - 1) National (National Malaria Eradication Service, Vector Control Division)
 - 2) Local (General Health Service; public works, solid waste management, potable water, etc.)
 - b. Inventory of Resources
 - 1) Human resources
 - 2) Space spray equipment and spare parts (number, condition, etc.)
 - 3) Vehicles (number, condition)
 - 4) Insecticides (quantity, age, storage, and location)
 - 5) Source reduction tools and implements.
 3. Emergency Requirements (based on an estimate of the area and population at risk and the treatment strategy)
 - a. Items now available
 - b. Items to be stockpiled
 - c. Items to be obtained locally or internationally upon entering into an "alert phase" or an "emergency phase."
 4. Procurement of Equipment and Supplies
 - a. Emergency budget
 - 1) Standing emergency reserve funds
 - 2) Provision for allotment of funds upon declaring an emergency.
 - b. Sources of equipment
 - 1) Local (Ministry of Health, Ministry Responsible for Agriculture, Ministry Responsible for Tourism, Ministry of Defense, hotels/private industry, pest control agencies, and private enterprise)
 - 2) Imported (For a list of sources, see *Emergency Vector Control After Natural Disaster* [PAHO Scientific Publication No. 419, pp. 90-93]; also consider bilateral agreements for possible provision of insecticide and equipment)
 - c. Sources of human resources
 - d. Funding agencies
 - e. Contingency contracts for consultants or equipment
 5. Special training in preparation for an emergency
 - a. Courses
 - b. Field training simulation exercises to test the Emergency Plan
 - c. Evaluation of current and new methodologies
- B. The Alert Phase:**
1. Dengue, DHF/DSS, or yellow fever in the country
 - a. Criteria
 - b. Plan of Action
 2. Dengue, DHF/DSS, or yellow fever in a neighboring country
 - a. Criteria
 - b. Plan of Action
 3. After a natural disaster
 - a. Criteria
 - b. Plan of Action
- C. The Emergency Phase:**
1. Criteria for determination of an emergency
 - a. Epidemiologic
 - 1) Dengue, DHF/DSS, or yellow fever

- 2) Clinical cases
- 3) Laboratory confirmation
- 4) Determining whether isolation is necessary
- 5) Populations at risk
- 6) Probability of epidemic
- b. Entomologic
 - 1) Adult vector indices
 - 2) Larval indices
2. Declaring an emergency
3. Responsibilities
 - a. Coordination
 - b. Vector control and surveillance
 - c. Disease treatment and surveillance
 - d. Setting up rehydration wards in hospitals and clinics
4. Dissemination of information
 - a. Other government agencies
 - b. General public
 - c. Bee keepers
 - d. NGOs, service clubs, tourist resorts
5. Procurement and organization of necessary human resources, equipment, and supplies
6. Determination of areas to be treated
 - a. If area is large and located in a heavily populated urban area, consider aerial ULV.
 - b. If cases are in a small city, or in a confined area, consider using vehicle mounted machines.
 - 1) On a map, divide affected area into zones, each zone corresponding to an area that a vehicle mounted fogger could cover in one day of operation.
 - 2) Use a color scheme with corresponding color to designate type of application.
 - 3) Color the zone treated with a particular machine and include date of treatment, thereby visually following the progress of what has been treated, what has not been treated, where individual machines are spraying, zones that still require treatment or retreatment, and smaller zones for which back pack or combination treatment can be designated.
 - c. If cases occur in slums or are scattered in areas with no roads, consider using portable back pack mistblowers or foggers.
 - d. Many areas will require the use of both vehicle mounted and back pack portable equipment.
7. Vector control
 - a. Adult control
 - 1) Ground application
 - a) Type of machines
 - (1) Vehicle mounted
 - (2) Back pack
 - b) Insecticides (based on susceptibility and previous trials)
 - c) Dosage as determine by:
 - (1) Discharge rate
 - (2) Swath width
 - (3) Speed of vehicle
 - 2) Aircraft application
 - a) Type and source of aircraft and spray equipment

- (1) Single engine aircraft
- (2) Twin engine aircraft
- (3) Helicopter
- b) Time required to formalize contract
- c) Configuration time and steps for installation of spray equipment
- d) Federal aviation restrictions over urban areas
- e) Center of operations at airport
- f) Calibrations
- g) Reconnaissance flights
- h) Special staff
 - (1) Pilot
 - (2) Ground crew
- i) Swath markers
- j) Insecticide, dosage, droplet size, and climatological limitations
- k) Height of flights during spraying
- b. Larval control
 - 1) Focal
 - 2) Elimination of breeding containers
 - a) Source reduction
 - b) Destruction and removal
- 8. Evaluation of the emergency control measures (tables, graphs, and maps)
 - a. Type
 - 1) Operational
 - 2) Entomological
 - a) Adult mosquito bioassays
 - b) Ovitrap
 - c) Resting adults
 - 3) Epidemiologic: serological surveys; house surveys
 - b. Frequency

ANNEX V. HANDOUT FOR PATIENTS WITH DENGUE FEVER

Important information to be given to the parents or family members of outpatients suspected of having dengue fever

Your child or family member probably has dengue fever.

Since this disease can *rapidly* become very serious and lead to a medical emergency, it is important for you to carefully watch your child or relative for the next few days. The complications associated with dengue fever usually appear between the third and fifth day of illness, and, therefore, you should watch the patient for two days after the fever disappears.

“What should you do?”

1) In order to lower the fever, bathe the patient in tepid water and then place ice (in a pack or bag) or cold water on the head and abdomen.

Give the patient: _____.

DO NOT GIVE THE PATIENT ASPIRIN.

2) Give large amounts of fluids (water, soups, milk, juices, and sodas) along with the patient’s normal diet.

3) See that the patient gets plenty of bed rest.

4) *Immediately consult your physician if any of the following manifestations appear:* red spots or points on the skin; bleeding from the nose or gums; frequent vomiting; vomiting with blood; black stools; sleepiness; constant crying; abdominal pain; excessive thirst (dry mouth); pale, cold, or clammy skin; or difficulty breathing.

Do not wait. Immediately consult your physician. It is critical to quickly treat anyone with these complications.

**ANNEX VI.
PARTICIPANTS AT THE
DENGUE GUIDELINES MEETING,
16–20 DECEMBER 1991, WASHINGTON, D.C.¹**

Brazil

Rogério Valls de Souza, Fundação Oswaldo Cruz
Carlos J. Mangabeira da Silva, Fundação Nacional da Saúde

Cuba

Rafael Figueredo, Ministerio de Salud Pública
Gustavo Kouri, Instituto de Medicina Tropical "Pedro Kouri," Chairman

Honduras

José Gómez, División de Enfermedades Transmitidas por Vectores, Ministerio de Salud Pública
Enrique Gil-Bellorín, Ministerio de Salud Pública

Mexico

Jorge Méndez Galván, Dirección de Promoción de Salud, Chiapas
Héctor Gómez Dantés, Dirección General de Epidemiología

Panama

Bedsy Dutary, Laboratorio Conmemorativo Gorgas

United States

Andrew Arata, USAID Vector Biology and Control Project
Steven Ault, California Environmental Protection Agency and Environmental Health Consultants International, Rapporteur
Gary G. Clark, Centers for Disease Control and Prevention
Duane J. Gubler, Centers for Disease Control and Prevention
Carl Kendall, The Johns Hopkins School
José G. Rigau, Centers for Disease Control and Prevention
Andrew Spielman, Harvard School of Health

Venezuela

Iris V. de Chacón, Hospital Central de Maracay
Diógenes Coello, Ministerio de Salud

Pan American Health Organization

Antonio Benítez, Haiti
Mónica Bolis, HSP, Washington, D.C.
Roberto Capote, HSD, Washington, D.C.
Carlos Castillo-Salgado, HPT, Washington, D.C.
Francisco López Antuñano, HPD, Washington, D.C.
Michael Nathan, Caribbean Program Coordination, Barbados
Michael Nelson, HPT, Panama
Ramón Ocegüera, HPT, Panama
Francisco P. Pinheiro, HPT, Washington, D.C.
Rodolfo Sáenz, HPE, Washington, D.C.
Gabriel Schmunis, HPT, Washington, D.C.

¹Subsequent to the meeting, Erick Martínez of Hospital William Soler in Havana, Cuba, and Suchitra Nimmannitya of Children's Hospital in Bangkok, Thailand, also contributed invaluable to these guidelines.