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National Dengue Prevention and Control Program and Japanese Encephalitis in the Philippines

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I. Country Profile

The Philippines is an Asian country situated in the Western Pacific Region. With a total land area of 300,000 sq. km., it is composed of 74 provinces, 60 cities, 1,503 towns, and 42,456 barangays. In 1992, it has a population of 63 million.

There are 87 local dialects in the country. Pilipino and English are the major languages spoken. Roman Catholicism is the predominant religion.

The country is divided into 15 regions. Except for the Autonomous Region for Muslim Mindanao, each has a field office of the Department of Health. At present health indices are as follows:

Life expectancy	−64.6 years
Male	−62.7 years
Female	−66.6 years
CBR	−22.4 /1,000 pop.
CDR	− 4.0 /1,000 pop.
IMR	−22.9 /1,000 LB
MMR	− 0.26/1,000 LB

Leading causes of morbidity are still communicable and nutrition−related diseases. Pneumonia leads the list of mortality followed by cardio−vascular causes, Tuberculosis, and accidents.

Key words: Dengue, Japanese encephalitis, Philippines

II. Dengue/ JE Situation in the Philippines

1. Dengue Hemorrhagic Fever

First cases were reported in 1954 as Philippine Hemorrhagic Fever. But it was not until 1958 when it was included by the Department of Health in the list of notifiable diseases in the country.

In the past years, morbidity rate due to the disease ranged from as low as 0.1/100,000 in 1959 to as high as 28/100,000 in 1966. Mortality rate was in the range of 0.04/100,000 in 1959 to 0.07/100,000 in 1966.

At present, all regions of the country are considered endemic to the diseases with trend to epidemicity observed to occur every 3−5 years. Regions 12, NCR (National Capital

Region−Metro Manila), 7, 3, 11, and 10 (in decreasing order) are at present, have the highest incidence in the country. Generally speaking, there are more cases and deaths in urban or urbanized areas than in the rural areas. Commonly affected is the 0−9 age group (see figs. and tables).

Although increases in incidence is noted one to two months after the start of the rainy season, the pattern of occurrence in relation to months of the year is variable.

Table 1. Dengue cases by region, all sites Jan.−Dec, 1990 and 1991

Region	Number of Cases			
	1990		1991	
	N	(%)	N	(%)
NCR	584	(56%)	1488	(80%)
1	2	(0.2%)	48	(3.0%)
3	15	(1.0%)	7	(0.4%)
5	2	(0.2%)	9	(0.5%)
6	41	(4.0%)	12	(0.6%)
7	91	(9.0%)	78	(4.0%)
9	51	(5.0%)	132	(7.0%)
11	256	(24%)	90	(5.0%)
Total	1042	(100%)	1865	(100%)

Table 2. Dengue cases, CFR, by age group, all sites, 1990 & 1991

Agegroup	1990			1991		
	Cases	Fatality	CFR	Cases	Fatality	CFR
0− 9 Yrs.	642	16	3%	1121	18	2%
10−19 Yrs.	306	8	3%	561	2	0.4%
20−29 Yrs.	63	1	2%	134	0	1%
30−39 Yrs.	12	1	8%	30	1	3%
40−49 Yrs.	13	0	0	8	1	13%
50−59 Yrs.	1	0	0	0	0	0
60−69 Yrs.	5	1	20%	1	0	0
>70 Yrs.	0	0	0	1	0	0
Total	1042	27	3%	1865	20	1%

The case fatality ratio dropped significantly in 1991 compared to 1990. This could be attributed to more awareness and better management.

The country was experiencing a more than double increase in the 5 year average morbidity rate of 3.84/100,000 in 1984−1988 compared to the 5 year average of 1.5/100,000 in 1979−1983. Statistics from 1989 to 1991 shows a more alarming level in the incidence of the disease (taken from one of the sentinel sites in Metro Manila−San Lazaro Hospital). Cases shoot up to almost six times more than the usual number of cases admitted.

2. Japanese Encephalitis

Japanese Encephalitis was first described in the Philippines as early as 1950. And the first reported case was a U. S. military personnel who was known to have contracted the disease in the country.

A decade later CSF and serum samples from some Filipino patients clinically diagnosed as viral encephalitis were reported to be positive for JEV infection by complement fixation (CF) and/or hemagglutination inhibition (HI) tests. There was no clinical description of the disease, however. There were reported outbreaks but laboratory examination done was only HI. False positive results cannot be ruled out because of the cross reaction with dengue virus and probably with some other arboviruses.

In 1984, the U. S. Naval Medical Research Unit No. 2 (NAMRU−2) conducted a surveillance study using IgM−ELISA. Data collected were from Nueva Ecija, a rice produc-

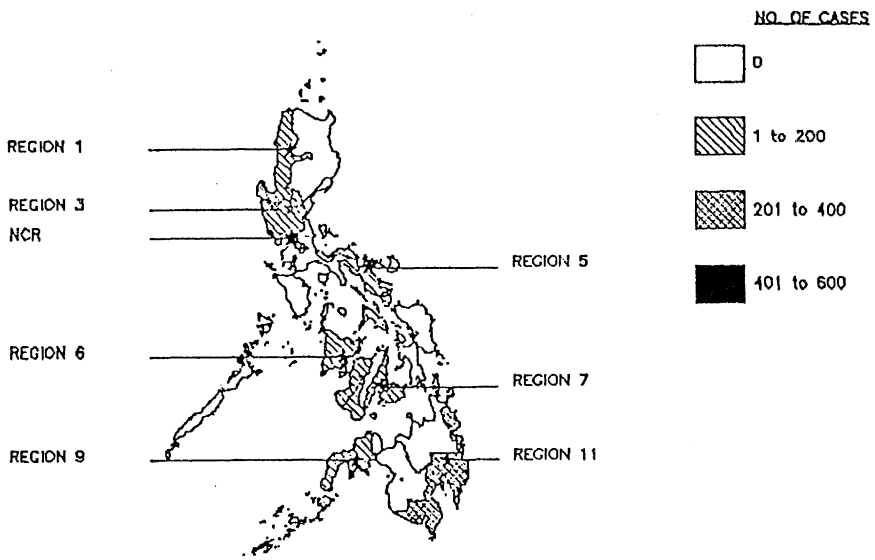

Fig. 1a. Geographical distribution of dengue cases, all sites, 1990

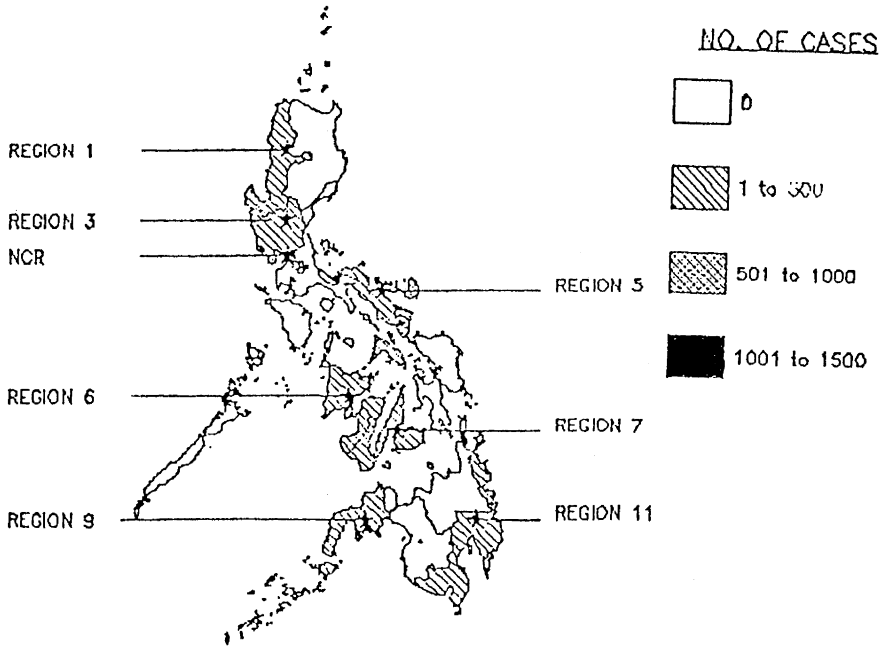

Fig. 1b. Geographical distribution of dengue cases, all sites, 1991

ing province in Central Luzon in Northern Philippines. Fifty four (54) JE cases were recorded and of these 40 (74%) affected the 1−10 year age group. Males and females were equally affected with many of the cases associated with rice fields (see Tables 3 & 4).

At present data about Japanese encephalitis in the Philippines is very little because of the following reasons:

1. It is not a reportable disease in the country.
2. Very limited laboratory facilities exist for adequate differential diagnosis.
3. Very few researches on the disease.
4. No existing program at present.

Ⅲ. The National Dengue Prevention and Control Program

General Objective: To reduce morbidity and mortality rate of Dengue by the end of 15 year period.

Specific objectives:

1. To adopt an integrated vector control approach in the prevention and control of dengue infection.
2. To intensify health education/IEC in dengue prevention and control.
3. To operationalize an effective surveillance system for the control of dengue infection.

Table 3. Age distribution of Japanese encephalitis cases, Cabanatuan, Nueva Ecija, Philippines (1985).

Age group (years)	No. of cases
1	0
1– 5	26
6–10	14
11–15	6
16–20	1
21–25	2
26–30	1
31–35	0
36–40	1
Unknown	3
Total	54

Table 4. Sex distribution of Japanese encephalitis cases Cabanatuan, Nueva Ecija, Philippines (1985).

Sex	No. of cases
Male	28
Female	26
Total	54

Cases associated with rice fields: 41
Cases not associated with rice fields: 1
US NAMRU–2, Manila, courtesy of Dr. C. G. Hayes and Dr. C. Manaloto.

4. To develop capability of health personnel on diagnosis and management and prevention and control of dengue infection.
5. To develop dengue epidemic contingency plan for emergency response.

Guiding Principles of the Program:

1. Active participation of the community.
2. Effective coordinated intersectoral efforts and partnership between public and private health subsectors.
3. Use of appropriate technology which is effective, affordable, and acceptable.
4. Sound management practice, including legislative support, integrated health care delivery, and decentralization of decision making.

5. Development of necessary health manpower.
6. Priorities to the underserved and vulnerable population.

Statement of Policies:

1. The National Dengue Prevention and Control Program is a community based and managed program.
2. Chemical management is confined in areas with confirmed dengue outbreaks.
3. The Department of Health supports an integrated vector control approach and decentralization of decision making.
4. The Department of Health conducts basic and operational researches regarding dengue prevention and control.
5. The Department of Health is responsible for the development of the necessary health manpower for dengue.

Strategies:

1. Case diagnosis and management—identification of cases will be passive during low—incidence period and active during moderate to high incidence. Diagnosis is aided by platelet and hematocrit determination.
2. Rapid response emergency control—the objective is to contain an incipient epidemic before it spreads to other parts of the island.
3. Research and projects—this is to strengthen and improve program strategies and activities.
4. Integrated vector control (IVC)—this is the key program strategy. Source reduction is the cornerstone of control. IVC has five components, namely: (CHLEM) community participation and mobilization, health education, legislation, environmental sanitation, and mosquito control.
5. Surveillance—this is to provide an early warning device for a pro—active surveillance system. Sentinel sites are established to report clinically diagnosed cases. Laboratory surveillance will also be expanded and strengthened.
6. Training—this is to develop the knowledge and skills of the field health workers regarding the diagnosis, management, and prevention and control of dengue.

Current Status:

National Dengue Prevention and Control Program is now being implemented in three pilot areas of the country. Different in their state socio—economic development, these three areas are: Dumaguete city, Manila, and Navotas.

Dumaguete, with a population of about 100,000, is a rural city in Region Ⅶ, in the central portion of Philippine archipelago. Manila and Navotas, on the other hand, highly urbanized city and municipality respectively, are in the island of Luzon in northern Philippines. These latter two, are included in the National Capital Region (NCR). Manila has a population of about 2 million while Navotas has more or less about 500,000.

In these three places, all activities of the program are in full swing. All activities are being participated by everybody in the community with the support of government and

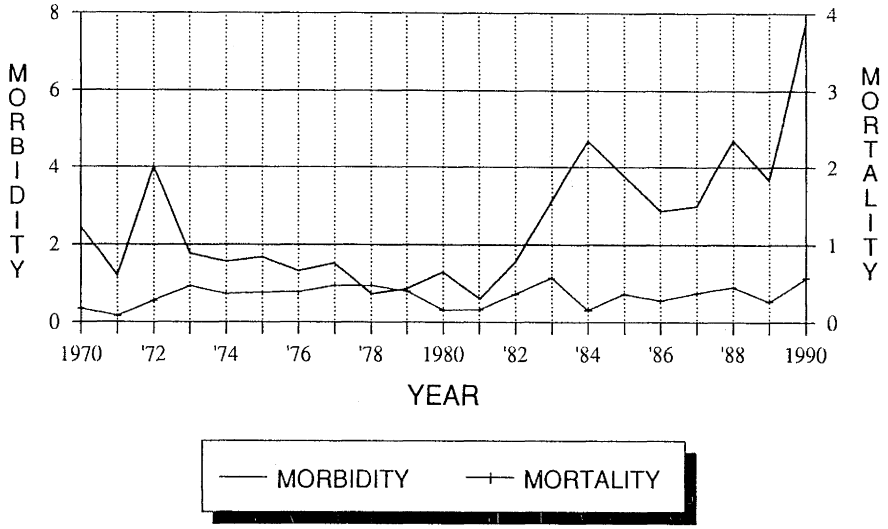

Fig. 2. Dengue morbidity and mortality trends
Rate per 100,000 population of the Philippines, 1970−1990

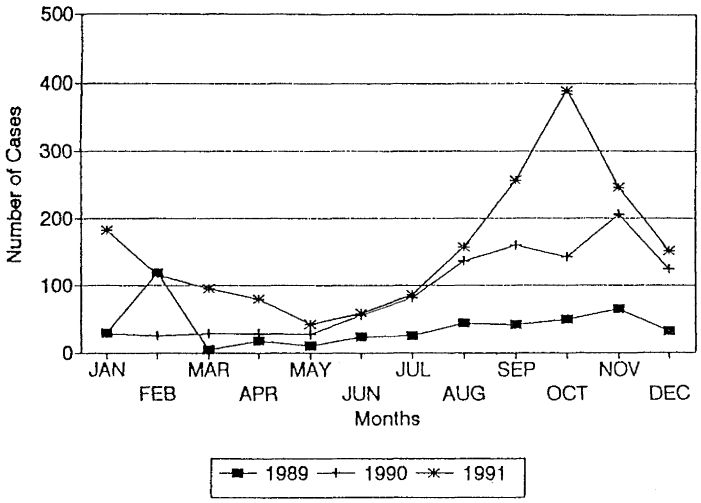

Fig. 3. Dengue cases, 3 year trend, all sites

For three consecutive years, dengue fever cases were noted to increase starting the rainy month of July, peaking in October and November then declining at the year end. During and after rainy months, residual rain water accumulated in jars, tires and other household containers are utilized as breeding places by *A. aegypti*. This could account for the increased number of cases during these months. It is advisable to get rid of these breeding places to prevent disease transmission.

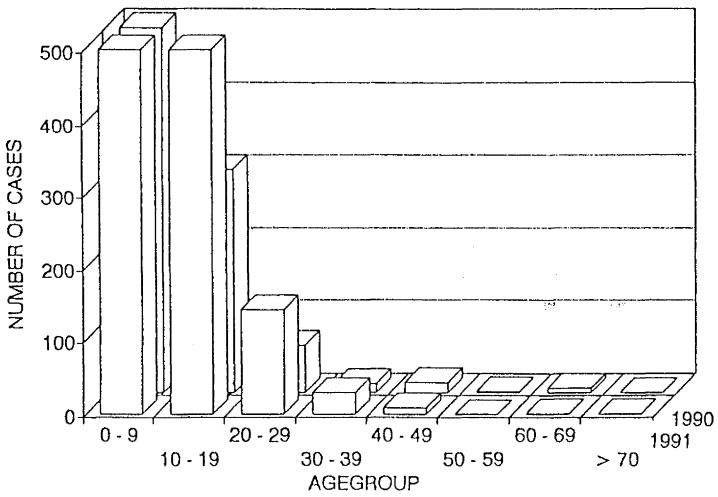

Fig. 4. Dengue cases by age group, all sites, 1990 and 1991
Data for 1990 and 1991 showed that those below 20 years were commonly affected. This showed that similar to reports in other countries, the disease is acquired early in life.

non−government organizations.

Schoolchildren, being the prime target of the disease, take active role in the control program. Brigades, whose function is to look into the potential breeding sites of the mosquitoes both in school and community, were organized in every school, private or public.

With massive information and education campaign in the pilot areas, everybody has become aware of dengue and its mosquito vectors. People were also made to feel that the program is theirs and the success of prevention and control depends to a large extent on their participation.

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