WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiological Unit,

Ministry of Healthcare & Nutrition

231, de Saram Place,Colombo 01000, Sri Lanka.

Tele:(+94-011)2695112/681548/4740490/4740492,E-Mail:epidunit@sltnet.lk

Epidemiologist:(+94-011) 4740491,E-mail:chepid@sltnet.lk, Web: www.epid.gov.lk

Vol. 35 No. 10 **1st – 7th March 2008**

WER SRI LANKA 2008

EPIDEMIOLOGY OF JE—PART II

Environmental control : It has been proposed that urbanization and economic development have led to decreased JE transmission but this has not been well documented. In Singapore the urbanization of the entire country has stopped viral transmission; however, this model is hard to replicate elsewhere. Recent viral transmission in wild pigs on the outlying islands has raised concern about the potential for human exposure. Prior to the availability of vaccines, vector and environmental control were the only options to control JE. Multiple reviews have shown that these measures are not sustainable, not cost-effective, and have limited temporary impact. As JE virus is a part of the ecosystem with multiple hosts and vectors, eradication is not possible.

Mosquito control

Mosquito control includes spraying, draining mosquito habitats, personal protection, and the use of bed nets. Spraying is both resource-intensive and expensive while frequently ineffective. To be effective, control measures must cover all mosquito habitats, which include paddy fields, puddles and drainage areas. This is difficult especially during the monsoon season, and in rural paddy growing areas where JE is most common. The time taken for a *Culex* mosquito to develop from an egg to an adult is 10-12 days. Therefore, in addition to the large area to be included in control programs, spraying must also be repeated very frequently (every 10-12 days) to control mosquito populations. An average paddy field can produce 30,000 mosquitoes in one day which presents an incredible challenge. Indoor residual spraying has not been shown to be effective and fogging has only resulted in reducing the mosquito population for one day with complete recovery in four days.

With increasing resistance to pesticides, it is now recognized that chemical control of JE mosquito populations for disease control is not effective. Similarly, non-chemical options, including alternative wet dry irrigation and biological control measures, have shown a temporary drop in mosquito populations. But none has been linked to a decrease in JE cases. Regardless of its effectiveness against JE, vector control is important for the control of many vector borne diseases and should be maintained for the control of those diseases.

Bed nets are only effective for young children that may be in bed in the early evening as the *Culex* mosquito bites in the twilight hours. The population at-risk for Japanese encephalitis is aged 1-15 years, and usually this population is still active during these peak hours resulting in a large portion of the at-risk population still being exposed despite the use of bed nets.

Amplifying host control

As the vector of JE is hard to control, additional efforts have been directed to the main amplifying host, the pig. Pig control has been attempted in three ways; segregation, slaughtering, or vaccination. Segregation is not practical in many settings. Slaughtering has a high economic impact and affects the livelihood of many families. Vaccination of pigs is costly, difficult, and time consuming. The window of opportunity for immunization is limited as pigs are often slaughtered at 6-8 months of age and vaccinating too

Contents ***Page***

early has interference from maternal antibodies. Pig vaccination, therefore, has not been shown to have a significant impact on human cases of JE. In addition to the challenges of controlling pigs, many other animal hosts exist in the life cycle of JE virus.

For examples, birds have been implicated in several outbreaks in different settings. So even with excellent control of pigs the risk of transmission is still prevalent.

Prevention of JE with vaccination

JE control through vaccination has been well established in many countries. The success of this intervention is best illustrated by the experience of Thailand. From 1973 to 1983, a vertical control program for JE with vector control, case detection, and outbreak response was used without much effect on the disease burden. From 1983 this program was integrated into the primary health care system as a horizontal control program which also had little effect. However, when JE vaccine was introduced in a phased manner and as coverage increased, the incidence of JE fell dramatically. At a Biregional meeting on JE, held in 2004 in Bangkok, control strategies were reviewed for all countries from both South-East Asia and Western Pacific Regions. One of the main conclusions of this consultation was the general agreement that a preventative campaign in high risk populations followed by introduction of JE vaccine into the routine EPI in endemic regions is an appropriate strategy. This strategy mirrors the approach used for yellow fever which is also a mosquito borne flavivirus. Recent work has shown that JE immunization is not only cost effective but also cost saving.

Inactivated JE vaccines have been available since several decades and have shown their capacity to control the disease in countries including Sri Lanka where they have been used programmatically. However, despite their proven efficacy, overall utilization of these vaccines have remained low, which is primarily due to their relatively high cost and the need for multiple doses and booster immunizations. Moreover, lack of reliable disease-burden data has contributed to low prioritization of JE vaccination.

More cost effective and safe vaccines are now available and technical support through WHO and partners can help countries control JE throughout Asia. One vaccine, the live attenuated SA 14-14-2, now has a specific public sector pricing available for the JE endemic countries of Asia with GNP less than US $1000 to allow increased access. With the availability of safe effective and affordable vaccines, JE control is now possible as an integrated part of the public health system; vaccination now provide an effective and reliable public health intervention.

Sri Lankan and Thailand experienceS clearly show the dramatic effect that the two countries had, following the introduction of inactivated JE vaccine.

Vaccine licensing or registration:

Currently no JE vaccines are WHO pre-qualified. However, WHO pre-qualification is not required for use of vaccines in countries as long as the vaccines are known to be of assured quality. Such an assurance comes when a country has a functional National Regulatory Authority (NRA). Countries should consider and license JE vaccine through their NRA.

General WHO position on vaccines

Vaccines for large-scale public health interventions should meet the current WHO quality requirements; be safe and have a significant impact against the actual disease in all target populations; if intended for infants or young children, be easily adapted to the schedules and timing of national childhood immunization programmes; not interfere significantly with the immune response to other vaccines given simultaneously; be formulated to meet common technical limitations, e.g. in terms of refrigeration and storage capacity; and be appropriately priced for different markets.

WHO position on JE vaccines

The need for increased regional and national awareness of JE and for international support to control this disease is . With increasing availability of efficacious, safe and affordable vaccines, JE immunization should be integrated into the EPI programmes in all areas where JE constitutes a public health problem. The most effective immunization strategy in JE-endemic settings is one time catch-up campaigns including child health weeks or multi-antigen campaigns in the locally-defined primary target population, followed by incorporation of the JE vaccine into the routine immunization programme. This approach has a greater public health impact than either strategy separately.

JE surveillance is critical for characterizing the epidemiology, measuring the burden of disease, identifying high-risk areas and areas of new disease activity, as well as for documenting the impact of control measures. Realizing the need to harmonize surveillance efforts in different countries, WHO has developed surveillance standards that also include specific recommendations on JE surveillance.

Sources:

Weekly Epidemiological Report, World Health Organization
No. 28, 2005, 80, 241–248.
[http://www.who.int/wer]

Vector Born Viral Infections - Japanese Encephalitis, WHO Fact sheet.
[F:/JE/WHO Vector—Borne Viral infections.htm]

Proceedings of the Sri Lanka National Immunization Summit—2007 , Epidemiology Unit , Ministry of Health Sri Lanka.

The Editor wishes to acknowledge Dr Ranjan Wijesinghe - Consultant Epidemiologist for the assistance provided in the preparation of this article.

Table 1: Vaccine-preventable Diseases & AFP

23rd – 29th Feb 2008 (9th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	02 HB=1 MT=1	00	00	00	00	00	00	02	01	12	14	-14.3%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	00	01	00	00	00	00	00	02	03	02	27	09	+200.0%
Tetanus	00	00	00	00	02 BT=2	00	00	00	00	02	00	08	08	00.0%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	07	08	-12.5%
Tuberculosis	66	12	04	21	05	24	13	00	05	150	195	1722	1675	+2.8`%

Table 2: Newly Introduced Notifiable Diseases

23rd – 29th Feb 2008(9th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	42	07	29	10	05	10	08	10	16	137	49	973	478	+103.6%
Meningitis	00	02 KD=1 ML=1	01 GL=1	03 JF=1 MN=1 VA=1	01 TR=1	03 KR=2 PU=1	02 PO=1 AP=1	02 BD=2	06 KG=6	20	01	333	38	+776.3%
Mumps	03	04	02	01	07	05	04	02	04	32	10	396	114	+247.4%

Key to Table 1 & 2

Provinces: W=Western, C=Central, S=Southern, N=North, E= East, NC=North Central, NW=North Western, U=Uva, Sab=Sabaragamuwa.
DPDHS Divisions: CB=Colombo, GM=Gampaha, KL=Kalutara, KD=Kandy, ML=Matale, NE=Nuwara Eliya, GL=Galle, HB=Hambantota, MT=Matara, JF=Jaffna, KN=Killinochchi, MN=Mannar, VA=Vavuniya, MU=Mullaitivu, BT=Batticaloa, AM=Ampara, TR=Trincomalee, KM=Kalmunai, KR=Kurunegala,

Table 3: Laboratory Surveillance of Dengue Fever

23rd – 29th Feb 2008 (9th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	07	00	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	50	18	05	06	00	00	03	02	00	00	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]
* Not all positives are subjected to serotyping.
NA= Not Available.
Data Sources:
Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Human Rabies, Dengue Haemorrhagic Fever, Japanese Encephalitis, Chickenpox, Meningitis, Mumps.
Special Surveillance: Acute Flaccid Paralysis.
National Control Program for Tuberculosis and Chest Diseases: Tuberculosis.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

23rd – 29th Feb 2008 (9th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal -itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Returns Re-ceived Timely**
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	29	341	05	33	00	04	03	35	02	51	06	25	00	00	00	24	00	00	**77**
Gampaha	16	234	03	26	00	03	02	15	00	13	05	34	00	01	05	34	00	00	**57**
Kalutara	12	114	07	80	01	06	02	20	00	04	04	43	00	02	02	12	00	00	**92**
Kandy	03	44	04	49	00	01	04	11	00	07	04	39	01	16	02	40	00	00	**71**
Matale	03	19	09	51	00	00	01	10	00	00	04	119	00	01	03	09	00	00	**58**
Nuwara Eliya	00	05	10	34	00	00	10	51	62	62	00	09	04	20	02	41	00	01	**92**
Galle	04	26	02	30	00	06	00	04	00	00	08	53	00	06	00	02	00	02	**88**
Hambantota	05	37	01	24	00	02	00	02	00	01	03	22	05	23	01	04	00	00	**100**
Matara	03	58	05	45	01	02	02	15	00	02	03	32	05	44	00	02	00	01	**82**
Jaffna	02	29	04	30	00	00	17	96	00	02	00	00	08	83	05	16	00	00	**88**
Kilinochchi	00	00	00	01	00	00	00	00	00	00	00	01	00	00	00	01	00	00	**25**
Mannar	00	08	00	01	00	06	12	66	00	00	00	00	00	00	03	08	00	00	**75**
Vavuniya	01	10	00	09	00	01	00	01	02	04	00	00	00	00	00	02	00	00	**75**
Mullaitivu	00	00	00	01	00	00	00	05	00	00	00	00	00	00	00	04	00	00	**80**
Batticaloa	01	37	03	19	00	00	00	03	00	00	00	00	00	00	04	34	00	02	**55**
Ampara	00	06	05	59	00	00	01	01	00	00	00	05	00	00	00	01	00	00	**100**
Trincomalee	14	88	00	19	00	00	00	02	00	01	01	04	02	07	01	07	00	00	**80**
Kurunegala	02	105	09	94	00	05	02	15	00	01	02	08	00	10	00	10	01	01	**78**
Puttalam	14	115	03	25	00	01	01	28	01	02	00	02	02	09	01	09	00	00	**78**
Anuradhapur	07	60	01	19	00	03	00	03	00	04	02	19	01	07	02	04	00	00	**74**
Polonnaruwa	01	22	02	24	00	01	00	07	00	04	01	06	00	00	00	08	00	00	**100**
Badulla	00	15	09	85	00	01	03	25	00	01	00	06	03	26	04	42	00	01	**73**
Monaragala	02	18	06	46	00	01	03	10	00	07	01	15	05	29	00	06	00	00	**100**
Ratnapura	04	73	06	49	00	12	02	29	00	42	04	24	01	43	00	23	00	00	**81**
Kegalle	08	63	06	109	01	13	00	06	00	00	01	16	04	16	12	91	00	00	**82**
Kalmunai	00	03	00	39	00	00	00	00	00	03	00	00	00	01	00	09	00	00	**54**
SRI LANKA	**131**	**1530**	**100**	**1001**	**03**	**68**	**65**	**460**	**67**	**211**	**49**	**482**	**41**	**344**	**47**	**443**	**01**	**08**	**78**

Source: Weekly Returns of Communicable Diseases (WRCD).
***Dengue Fever / DHF** refers to Dengue Fever / Dengue Haemorrhagic Fever.
****Timely** refers to returns received on or before 8 March , 2008 Total number of reporting units =290. Number of reporting units data provided for the current week: 238

PRINTING OF THIS PUBLICATION IS FUNDED BY THE UNITED NATIONS CHILDREN'S FUND (UNICEF).

Comments and contributions for publication in the WER Sri Lanka are welcome. However, the editor reserves the right to accept or reject items for publication. All correspondence should be mailed to The Editor, WER Sri Lanka, Epidemiological Unit, P.O. Box 1567, Colombo or sent by E-mail to chepid@sltnet.lk.

ON STATE SERVICE

Dr. M. R. N. ABEYSINGHE
EPIDEMIOLOGIST
EPIDEMIOLOGICAL UNIT
231, DE SARAM PLACE
COLOMBO 10