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Ministry of Healthcare & Nutrition

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

Tele:(+94-011)2695112, 681548, 4740490, 4740492, 2677600 Fax: 2696583

Epidemiologist:(+94-011) 4740491, E-mail:chepid@sltnet.lk, epidunit@sltnet.lk

Web: www.epid.gov.lk

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Integrated vector management - Part I

Integrated vector management [IVM] is "a rational decision-making process for the optimal use of resources for vector control". Its goal is to make a significant contribution to the prevention and control of vector-borne diseases. Implementation of IVM requires institutional arrangements, regulatory frameworks, decision-making criteria and procedures that can be applied at the lowest administrative level. It also requires decision-making skills that support intersectoral action and are able to establish vector control and health-based targets.

The Global Strategic Framework for Integrated Vector Management (IVM) provides a basis for strengthening vector control in a manner that is compatible with national health systems. Through evidence-based decision-making, IVM rationalizes the use of human and financial resources and organizational structures for the control of vector borne disease, and emphasizes the engagement of communities to ensure sustainability. It encourages a multi disease control approach, integration with other disease control measures and the considered and systematic application of a range of interventions, often in combination and synergistically.

Vector-borne diseases are responsible for a significant fraction of the global disease burden and have profound effects not only on health but also on the socioeconomic development of affected nations. Thus, an econometric model for malaria which is responsible for more than 1 million deaths every year suggests that countries with intensive malaria have income levels only 33% of those without malaria.

Vector control strategies have a proven track record of successfully reducing or interrupting disease transmission when coverage is sufficiently high. Thus, vector control has an important part to play in reducing the burden of vector-borne disease, adding resilience to the public health gains achieved through disease management and giving high priority to prevention.

The distribution and incidence of vector-borne diseases are strongly determined by the ecological conditions that favor different species of disease vectors. Knowledge and understanding of these characteristics provide a unique opportunity to prevent and control such diseases, by reducing vector–human contact and vector population density and survival.

For many vector-borne diseases there are no vaccines, and drug resistance or the threat of resistance is an increasing problem. In such circumstances vector control often plays a vital role. In some cases, and dengue is one example, effective vector control is the primary or even sole measure for preventing disease outbreaks. Vector control programmes have relied heavily on the use of residual insecticides and the selective use of such compounds is likely to continue, as a part of IVM.

However, vector control also has proven weaknesses that are contextual in nature and relate especially to technical and managerial deficien-

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But today we know how to better monitor and manage vector resistance. Similarly, we have learnt that significant success in the short term may be a weakness because it can lead to premature diversion of resources. And we know that any particular intervention may not be suitable for every setting; additionally, over-reliance on a single intervention may undermine the flexibility needed by health services to use an adaptive management approach to the control of vector borne diseases. It is well known that the development of insecticide resistance played a role in the breakdown of the malaria eradication campaign of the 1960s.

Bringing together different types of vector control interventions is not simply a matter of adding them up. It requires careful consideration of synergies and antagonisms to achieve vector-control goals in specific settings. It also requires reconsideration of these combinations over time, as contexts change and needs evolusion.

Vector control is well suited for integrated approaches because some vectors are responsible for multiple diseases, and some interventions are effective against several vectors. The concept of IVM was developed as a result of lessons learnt from integrated pest management, which is used in the agricultural sector; IVM aims to optimize and rationalize the use of resources and tools for vector control. For example, insecticide treated nets are currently used in the control of malaria and other vector-borne diseases, with minimal impact on ecosystems and the environment. The Onchocerciasis Control Programme eliminated the disease from much of the programme areas using various insecticides in rotation, and the Southern Cone Initiative for the control of Chagas disease in South America has relied primarily on spraying inside houses with residual insecticides to achieve its objectives of elimination.

However, the environmental and health concerns over persistent organic pollutants identified in the Stockholm Convention, together with the increasing problem of insecticide resistance, emphasize the need for alternative strategies for sustainable vector control and management Such considerations led to World Health Assembly resolution WHA 50.13, which called on Member States to support the development and adoption of viable alternative methods of controlling vector-borne diseases and thereby reduce reliance on insecticides. IVM provides a management framework within which such changes can be effected.

Although many vector-borne disease control programmes continue to rely heavily on vector control, the benefits are far from being fully realized. Reasons for this include the following:

• The skills to both manage and implement vector control programmes remain scarce, particularly in the resource-poor countries that are in most need of effective vector-borne disease control. This has led to control measures that are unsuitable or poorly targeted, with insufficient coverage and consequent wastage of resources and sometimes avoidable insecticide contamination of the environment.

• The use of insecticides in agriculture and poor management of insecticides in public health programmes have contributed to resistance in disease vectors.

• Development programmes, including irrigated agriculture, hydroelectric dam construction, road building, forest clearance, housing development and industrial expansion, all influence vector-borne diseases but opportunities for cooperation between sectors and for adoption of strategies other than those based on insecticides are seldom grasped. In addition, health sector reform, with its emphasis on decentralization of operational control, poses new challenges but also affords significant new opportunities for delivering vector control.

This Global Strategic Framework for integrated vector management has been developed both to address deficiencies in vector control and to improve the efficacy, cost-effectiveness, ecological soundness and sustainability of that control. More effective disease vector control will make a significant contribution to the attainment of the Millennium development goals,

Sources:

1. WHO position statement on vector management. Weekly Epidemiological Record. WHO, No 20, 2008, 83,177—184 [http://www.who.int/wer].

2. Global Strategic Framework for Integral vector man agement. WHO Geneva 2004. WHO /CDS/CPE/ PVC/2004.10

This article was compiled by Dr Samitha Ginige - Consultant Epidemiologist.

Part II of this article will be continued in the next issue

Table 1: Vaccine-preventable Diseases & AFP

14th - 20th June 2008 (25thWeek)

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	01 GM=1	00	00	00	00	00	00	01 MO=1	00	02	04	49	46	+4.3%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	00	00	00	00	01 KR=1	00	00	00	01	02	60	38	+57.8%
Tetanus	00	00	00	00	01 TR=1	00	00	00	00	01	00	19	17	+11.8%
Whooping Cough	01 C0=1	00	00	00	00	00	00	00	00	01	02	20	21	- 4.8%
Tuberculosis	119	30	12	05	03	51	06	05	00	231	120	4080	4820	-15.3`%

Table 2: Newly Introduced Notifiable Diseases

14th - 20th June 2008 (25thWeek)

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	15	05	03	03	04	04	04	07	22	67	57	2839	1800	+57. 7%
Meningitis	04 KL=3 C0=1	01 NE=1	02 GL=2	00	00	02 KR=1 PU=1	02 PO=2	01 BD=1	04 RP=3 KG=1	16	37	751	123	+510.6%
Mumps	02	01	06	00	14	07	04	00	06	40	23	1265	717	+76.4%

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, PU=Puttalam, AP=Anuradhapura, PO=Polonnaruwa, BD=Badulla, MO=Moneragala, RP=Ratnapura, KG=Kegalle.

Table 3: Laboratory Surveillance of Dengue Fever 14th - 20th June 2008 (25thWeek)

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	02	04	00	02	00	00	00	02	00	00	00	00	00	00
Total number to date in 2008	95	86	07	17	00	00	04	08	01	05	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

14th - 20th June 2008 (25thWeek)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	36	915	02	83	00	06	02	56	00	61	08	210	00	02	02	64	00	00	**92**
Gampaha	12	558	03	89	01	12	00	30	00	66	03	213	00	04	00	74	00	03	**57**
Kalutara	04	292	09	187	00	08	00	42	00	16	19	259	00	02	00	25	00	00	**100**
Kandy	01	126	04	135	00	05	01	33	05	39	08	242	01	56	02	85	00	01	**68**
Matale	00	62	01	126	00	02	01	31	00	03	14	531	00	01	00	19	00	00	**83**
Nuwara Eliya	00	15	02	128	01	02	01	171	00	107	00	30	00	34	02	79	00	01	**92**
Galle	02	64	00	97	00	11	01	11	00	42	02	194	00	10	00	06	00	03	**94**
Hambantota	02	54	04	51	00	03	00	06	01	07	01	64	02	54	00	04	00	00	**73**
Matara	07	137	04	106	00	04	00	22	00	02	03	198	05	113	01	08	00	01	**94**
Jaffna	00	52	00	78	00	01	03	202	00	08	00	00	01	140	01	24	00	00	**63**
Kilinochchi	00	00	00	12	00	00	00	00	00	00	00	02	00	00	00	01	00	00	**00**
Mannar	00	24	01	11	00	06	00	108	00	00	00	00	00	01	00	11	00	00	**50**
Vavuniya	00	10	01	32	00	02	01	03	02	13	00	04	00	01	00	04	00	00	**100**
Mullaitivu	00	00	00	02	00	00	00	08	00	12	00	00	00	01	00	06	00	00	**60**
Batticaloa	00	84	03	55	00	03	00	17	00	19	01	03	00	01	01	77	00	05	**73**
Ampara	00	19	00	116	00	00	00	04	00	00	00	16	00	00	00	05	00	00	**29**
Trincomalee	00	171	01	56	00	00	00	09	00	12	00	24	00	15	00	12	00	00	**80**
Kurunegala	02	223	01	140	00	11	02	33	00	11	04	148	00	16	02	31	01	04	**78**
Puttalam	00	253	02	47	00	06	06	118	00	21	06	20	00	32	01	23	00	03	**100**
Anuradhapur	00	107	02	47	00	06	00	08	00	05	03	211	00	10	00	10	00	02	**58**
Polonnaruwa	02	52	02	73	00	01	00	21	00	06	05	53	01	01	00	16	00	00	**100**
Badulla	01	48	07	247	00	04	04	72	00	13	01	28	00	69	01	63	00	01	**73**
Monaragala	00	41	05	157	00	02	00	27	10	110	02	82	00	64	01	19	00	00	**91**
Ratnapura	02	138	06	155	00	22	00	41	00	43	00	110	02	71	02	41	00	00	**88**
Kegalle	13	243	03	202	00	21	01	38	00	01	10	175	01	44	10	379	00	00	**91**
Kalmunai	05	29	12	159	00	03	00	09	00	10	00	00	00	02	00	19	00	00	**77**
SRI LANKA	**89**	**3718**	**75**	**2591**	**02**	**141**	**23**	**1120**	**18**	**627**	**90**	**2817**	**13**	**744**	**26**	**1105**	**01**	**24**	**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 28 June, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 262

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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