



WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit
Ministry of Health

231, de Saram Place, Colombo 01000, Sri Lanka
Tele: + 94 11 2695112, Fax: +94 11 2696583, E mail: epidunit@slt.net.lk
Epidemiologist: +94 11 2681548, E mail: chepid@slt.net.lk
Web: <http://www.epid.gov.lk>

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Malaria (Part I)

This is the first in a series of three-article on Malaria

Key facts

- Malaria is a life-threatening disease caused by parasites that are transmitted to people through the bites of infected mosquitoes.
- In 2013, malaria caused an estimated 584 000 deaths (with an uncertainty range of 367 000 to 755 000), mostly among African children.
- Malaria is preventable and curable.
- Increased malaria prevention and control measures are dramatically reducing the malaria burden in many places.
- Non-immune travellers from malaria-free areas are very vulnerable to the disease when they get infected.

According to the latest estimates, released in December 2014, there were about 198 million cases of malaria in 2013 (with an uncertainty range of 124 million to 283 million) and an estimated 584 000 deaths (with an uncertainty range of 367 000 to 755 000). Malaria mortality rates have fallen by 47% globally since 2000, and by 54% in the WHO African Region.

Most deaths occur among children living in Africa where a child dies every minute from malaria. Malaria mortality rates among children in Africa have been reduced by an estimated 58% since 2000.

Malaria is caused by Plasmodium parasites. The parasites are spread to people through the bites of infected Anopheles mosquitoes, called "malaria vectors", which bite mainly between dusk and dawn.

There are four parasite species that cause malaria in humans:

- Plasmodium falciparum
- Plasmodium vivax
- Plasmodium malariae
- Plasmodium ovale.

Plasmodium falciparum and Plasmodium vivax are the most common. Plasmodium falciparum is the most deadly.

In recent years, some human cases of malaria have also occurred with Plasmodium knowlesi – a species that causes malaria among monkeys and occurs in certain forested areas of South-East Asia.

Transmission

Malaria is transmitted exclusively through the bites of Anopheles mosquitoes. The intensity of transmission depends on factors related to the parasite, the vector, the human host and the environment.

About 20 different Anopheles species are locally important around the world. All of the important vector species bite at night. Anopheles mosquitoes breed in water and each species has its own breeding preference; for example some prefer shallow collections of fresh water, such as

Contents

Page

1. <i>Leading Article – Malaria –(Part I)</i>	1
2. <i>Summary of selected notifiable diseases reported - (28th – 03rd April 2015)</i>	3
3. <i>Surveillance of vaccine preventable diseases & AFP - (28th – 03rd April 2015)</i>	4

WEEKLY SRI LANKA - 2015

puddles, rice fields and hoof prints. Transmission is more intense in places where the mosquito lifespan is longer (so that the parasite has time to complete its development inside the mosquito) and where it prefers to bite humans rather than other animals. For example, the long lifespan and strong human-biting habit of the African vector species is the main reason why about 90% of the world's malaria deaths are in Africa.

Transmission also depends on climatic conditions that may affect the number and survival of mosquitoes, such as rainfall patterns, temperature and humidity. In many places, transmission is seasonal, with the peak during and just after the rainy season. Malaria epidemics can occur when climate and other conditions suddenly favour transmission in areas where people have little or no immunity to malaria. They can also occur when people with low immunity move into areas with intense malaria transmission, for instance to find work, or as refugees.

Human immunity is another important factor, especially among adults in areas of moderate or intense transmission conditions. Partial immunity is developed over years of exposure, and while it never provides complete protection, it does reduce the risk that malaria infection will cause severe disease. For this reason, most malaria deaths in Africa occur in young children, whereas in areas with less transmission and low immunity, all age groups are at risk.

Symptoms

Malaria is an acute febrile illness. In a non-immune individual, symptoms appear seven days or more (usually 10–15 days) after the infective mosquito bite. The first symptoms – fever, headache, chills and vomiting – may be mild and difficult to recognize as malaria. If not treated within 24 hours, *P. falciparum* malaria can progress to severe illness often leading to death. Children with severe malaria frequently develop one or more of the following symptoms: severe anemia, respiratory distress in relation to metabolic acidosis, or cerebral malaria. In adults, multi-organ involvement is also frequent. In malaria endemic areas, persons may develop partial immunity, allowing asymptomatic infections to occur.

For both *P. vivax* and *P. ovale*, clinical relapses may occur weeks to months after the first infection, even if the patient has left the malaria's area. These new episodes arise from dormant liver forms known as hypnozoites (absent in *P. falciparum* and *P. malariae*); special treatment – targeted at these liver stages – is required for a complete cure.

Who is at risk?

Approximately half of the world's population is at risk of malaria. Most malaria cases and deaths occur in sub-Saharan Africa. However, Asia, Latin America and to a lesser extent the Middle East and parts of Europe are also affected. In 2014, 97 countries and territories had ongoing malaria transmission.

Specific population risk groups include:

- Young children in stable transmission areas who have not yet developed protective immunity against the most severe forms of the disease
- Non-immune pregnant women as malaria causes high rates of miscarriage and can lead to maternal death
- Semi-immune pregnant women in areas of high transmission. Malaria can result in miscarriage and low birth weight, especially during first and second pregnancies
- Semi-immune HIV-infected pregnant women in stable transmission areas, during all pregnancies. Women with malaria infection of the placenta also have a higher risk of passing HIV infection to their newborns
- People with HIV/AIDS
- International travellers from non-endemic areas because they lack immunity
- Immigrants from endemic areas and their children living in non-endemic areas and returning to their home countries to visit friends and relatives are similarly at risk because of waning or absent immunity.

Sources:

Malaria, available at <http://www.who.int/mediacentre/factsheets/fs094/en/>

WHO Sri Lanka country report

Compiled by Dr. C U D Gunasekara of the Epidemiology Unit

Table 1: Selected notifiable diseases reported by Medical Officers of Health 28th - 03rd April 2015 (14th Week)

RDHS Division	Dengue Fever		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Chickenpox		Meningitis		Leishmaniasis		WRCD	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	T*	C**
Colombo	63	3460	1	60	0	4	0	25	1	48	5	83	0	1	0	14	0	2	7	146	1	12	0	0	63	38
Gampaha	64	1579	0	22	0	3	0	7	0	10	11	149	3	6	3	57	0	0	7	62	1	7	0	0	80	20
Kalutara	11	571	0	30	0	3	0	14	0	64	4	102	0	0	0	9	0	1	3	91	2	13	0	0	69	31
Kandy	7	474	0	40	1	2	2	13	0	2	3	19	0	19	3	57	0	0	2	72	0	4	0	1	61	39
Matale	4	288	2	21	0	0	0	3	0	3	1	19	0	4	0	151	0	0	0	7	0	2	0	3	62	38
Nuwareliya	2	76	5	86	0	1	1	6	0	0	0	8	2	26	3	35	0	0	0	19	0	18	0	0	69	31
Galle	1	283	1	24	0	0	0	2	0	6	1	55	0	22	0	4	0	0	1	60	0	13	0	0	5	95
Hambantota	6	131	0	10	0	0	0	4	0	4	2	32	1	15	1	16	0	0	2	31	0	4	0	0	75	25
Matara	12	180	2	27	0	3	0	4	0	44	9	70	0	17	0	11	0	0	4	83	1	9	1	21	100	0
Jaffna	13	957	16	206	0	7	1	121	3	24	0	9	7	453	0	7	0	1	7	65	0	5	0	0	83	17
Kilinochchi	0	32	0	31	0	0	0	3	0	25	0	1	0	7	0	0	0	0	0	8	0	0	0	0	25	75
Mannar	0	68	0	4	0	0	0	4	0	1	0	8	0	14	0	0	0	0	0	0	0	0	0	0	60	40
Vavuniya	1	56	0	8	0	4	3	24	0	2	0	9	0	11	0	1	0	1	0	6	0	3	0	1	100	0
Mullaitivu	0	60	0	10	0	2	1	4	0	1	0	2	0	6	0	1	0	0	0	1	0	2	1	3	80	20
Batticaloa	17	891	10	89	0	4	0	6	16	16	0	2	0	0	0	0	0	0	0	12	0	10	0	0	71	29
Ampara	0	20	0	16	0	0	1	1	0	0	0	6	0	0	0	1	0	0	2	72	0	3	0	0	57	43
Trincomalee	30	310	0	11	0	0	0	14	0	22	1	7	0	2	0	4	0	0	9	29	0	2	1	1	58	42
Kurunegala	17	623	3	57	0	2	0	3	1	10	2	91	1	13	1	14	0	1	4	145	2	7	1	27	78	22
Puttalam	8	374	0	13	0	2	0	1	0	6	0	17	0	7	0	1	0	0	0	27	2	8	0	1	62	38
Anuradhapura	3	228	1	21	0	1	0	2	2	36	5	106	1	11	0	7	0	0	9	58	0	11	5	75	84	16
Polonnaruwa	0	108	1	22	0	2	0	5	0	0	0	37	0	1	0	3	0	0	0	45	0	11	2	35	71	29
Badulla	10	292	2	48	0	3	0	3	0	5	0	22	3	33	3	46	0	2	2	41	4	20	0	4	82	18
Monaragala	1	88	3	38	0	1	0	8	0	2	5	87	0	23	0	20	0	1	1	33	0	5	0	8	82	18
Ratnapura	7	372	3	96	0	3	2	14	0	1	2	111	0	22	2	118	0	0	3	35	0	12	0	4	67	33
Kegalle	10	207	0	27	1	5	2	33	0	3	3	81	1	15	2	41	0	0	4	70	0	14	0	0	91	9
Kalmune	2	332	0	39	0	0	0	0	0	13	0	2	0	0	0	0	0	0	3	43	0	2	0	0	46	54
SRILANKA	289	12060	50	1056	2	52	13	324	23	348	54	1135	19	728	18	482	0	10	70	1261	13	197	11	271	68	32

Source: Weekly Returns of Communicable Diseases (WRCD).

*T=Timeliness refers to returns received on or before 03rd April, 2015. Total number of reporting units 337. Number of reporting units data provided for the current week: 233. C**=Completeness

Table 2: Vaccine-Preventable Diseases & AFP

28th - 03rd April 2015 (14th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2015	Number of cases during same week in 2014	Total number of cases to date in 2015	Total number of cases to date in 2014	Difference between the number of cases to date in 2014 & 2015
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	00	00	00	00	00	00	00	00	00	02	20	25	-20%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	%
Mumps	00	00	00	05	01	00	00	01	01	8	08	103	221	-53.4%
Measles	15	01	07	00	00	06	02	01	05	37	67	350	1312	-73.3%
Rubella	00	00	00	00	00	00	00	00	00	00	00	04	06	-33.3%
CRS**	00	00	00	00	00	00	00	00	00	00	00	00	02	%
Tetanus	00	01	00	00	00	00	00	00	00	01	00	04	06	-33.3%
Japanese Encephalitis	00	00	00	00	00	00	00	00	00	00	00	06	17	-65.1%
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	00	00	00	%
Whooping Cough	00	00	00	01	00	00	00	00	00	01	00	27	16	+69.1%
Tuberculosis	78	13	05	11	01	07	13	06	30	164	131	2591	2883	-10.1%

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.
 RDHS 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.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Neonatal Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps., Rubella, CRS,

Special Surveillance: AFP* (Acute Flaccid Paralysis), Japanese Encephalitis

CRS** =Congenital Rubella Syndrome

AFP and all clinically confirmed Vaccine Preventable Diseases except Tuberculosis and Mumps should be investigated by the MOH

Dengue Prevention and Control Health Messages

Look for plants such as bamboo, bohemia, rampe and banana in your surroundings and maintain them

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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@slt.net.lk. Prior approval should be obtained from the Epidemiology Unit before publishing data in this publication

ON STATE SERVICE

Dr. P. PALIHAWADANA
 CHIEF EPIDEMIOLOGIST
 EPIDEMIOLOGY UNIT
 231, DE SARAM PLACE
 COLOMBO 10