WEEKLY EPIDEMIOLOGICAL REPORT

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Ministry of Health, Nutrition & Indigenous Medicine

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Combat Antimicrobial Resistance

"Antimicrobial resistance is possibly the biggest single threat facing the world in the area of infectious diseases". IHR (2005)- PHEIC

Infectious diseases still account for 45% of deaths in low-income countries and for almost one in two premature deaths worldwide. And most of these deaths (about 90%) are due to no more than six diseases: acute respiratory infections (mainly pneumonia), diarrhoeal disease, HIV/AIDS, TB, malaria and measles. Antimicrobial resistance is today challenging our ability to treat effectively at least four of these infections: acute respiratory infections, diarrhoeal disease, malaria and TB.

Antimicrobial agents are medicines used to treat infections caused by micro organisms, including bacteria, fungi, parasites and viruses. Antimicrobials include antibiotics, chemotherapeutic agents, antifungals, antiparasitic medicines and antivirals. What is antimicrobial resistance (AMR) "Ability of a parasite strain to survive and/or multiply despite the administration and absorption of a drug given in doses equal to or higher than those usually recommended but within tolerance of the subject" (WHO, 1973).

Resistant organisms (they include bacteria, viruses and some parasites) are able to withstand attack by antimicrobial medicines, so that standard treatments become ineffective and infections persist and may spread to others. Resis tance to antimicrobials is a natural biological phenomenon. All antimicrobial agents have the potential to select drug-resistance populations of microorganisms. Antimicrobial resistance is a consequence of the use, particularly the misuse, of antimicrobial medicines and develops when a microorganism mutates or acquires a resistance gene.

Drug resistance is a global problem – affecting both developing and developed countries. Its spread is helped by the enormous increase in global travel and trade.

Determinants of drug resistance?

- Characteristics of microorganism
- Over consumption of antimicrobials
- Lack of access to antimicrobials
- Inadequate dosing
- Poor adherence to treatment
- Use of inappropriate or sub-standard drugs

Why is antimicrobial resistance global concern?

AMR kills

Infections caused by resistant microorganisms often fail to respond to the standard treatment,

resulting in prolonged illness and greater risk of death.

AMR hampers the control of infectious diseases

Antimicrobial resistance reduces the effectiveness of treatment because patients remain infectious for longer, thus potentially spreading resistant microorganisms to others.

AMR threatens a return to the pre-antibiotic era

Many infectious diseases risk becoming uncontrollable and could derail the progress made towards reaching the targets of the health related United Nations Millennium Development Goals set for 2015.

AMR increases the costs of health care

When infections become resistant to first-line medicines, more expensive therapies must be used. The longer duration of illness and treatment, often in hospitals, increases healthcare costs and the financial burden to families and societies.

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AMR jeopardizes health-care gains to society

The achievements of modern medicine are put at risk by Antimicrobial resistance. Without effective antimicrobials for care and prevention of infections, the success of treatments such as organ transplantation, cancer chemotherapy and major surgery would be compromised.

AMR threatens health security, and damages trade and economies

The growth of global trade and travel allows resistant microorganisms to be spread rapidly to distant countries and continents.

Antimicrobial resistance : Diseases which are at major challenge

Tuberculosis (TB): 440,000 new multidrug resistance

(MDR) TB cases annually; extensively drug resistance

(XDR) TB cases reported in 64 countries so far

Malaria: Emergence of Artemisinin resistance linked to ongoing use of monotherapies

HIV: With expanded use of antiretrovirals (ARVs), resistance is a concern

Methicillin-resistant Staphylococcus aureus: lethal infections in hospital settings becoming increasingly frequent

Multi-drug resistant E.coli, K.pneumoniae and Enterobacter sp.: infections are on the rise and a new betalactamase, NDM-1, is causing alarm

Neisseria gonorrheae and Shigella: becoming increasingly resistant to drugs

Factors that drive antimicrobial resistance

Inappropriate and irrational use of medicines provides favorable conditions for resistant microorganisms to emerge and spread.

Underlying factors that drive Antimicrobial resistance include:

- Plans and resources not comprehensive or coherent; poor accountability
- Consumers and communities not engaged
- Surveillance systems weak or absent
- Systems for ensuring quality and supply of medicines inadequate
- Use of medicines inappropriate and irrational, including in animal husbandry
- Poor infection prevention and control
- Limited antimicrobials and diagnostics arsenal
- Insufficient research and development for diagnostics and medicines

Can antimicrobial resistance be halted?

No. But it can be contained. Antimicrobial resistance is a natural biological phenomenon – the response of microbes subjected to the selective pressure of antimicrobial drug use. The main priority should be to prevent infection in the first placeAfter that, containment of the problem is the best we can aim for. And since it is antimicrobial use that drives resistance, the focus of any containment strategy should be on minimizing any unnecessary, inappropriate or irrational use of antimicrobial drugs.

Many groups of people play a role in determining how and where antimicrobials are used:

- patients and the general public;
- all groups of prescribers and dispensers;
- hospital managers and health care professionals;
- users of antimicrobials in agriculture;
- national governments;
- pharmaceutical, diagnostic and “surveillance” industries;
- international agencies, NGOs, professional societies.

Role of the doctor in preventing or curtailing antibiotic resistance

1. Patients need to be examined completely and the exact nature of an infection needs to be established before any antibiotic is given.
2. The doctor needs to be confident about the exact dose and schedule, including the duration and possible side effects, of any medicine administered to a patient. Explaining what to expect to a patient helps prevent them from prematurely stopping antibiotic treatment.
3. It is not always beneficial (and usually unsafe) to give two or more antibiotics in combination to cure infections that can easily be cured with a single antibiotic.
4. It is important not to give antibiotics to cure upper respiratory tract infections such as colds, minor coughs, bronchitis and runny nose that are usually viral in origin.

Communication on antibiotic resistance to the public

Use of the media and responsible reporting of the possible health hazards of antibiotic misuse should be in order. It is very important to convey the effects of antibiotic misuse at a broad level. Isolated instances and cases may not have an impact unless the potential threat of such resistance to human life in hospitals and the community as a whole is emphasized. Both print and electronic media could be used for this purpose.

Sources:

- Frequently asked questions on Antimicrobial resistance. SEA-HLM-412. Regional Office for South-East Asia. World Health Organization..
- World-health-day 2011-brochure. World Health Organization.
- World Health Organization (2000). "Antimicrobial resistance: a global threat." Essential Drugs Monitor (No 28 & 29)

This article was compiled by Dr. Pubudu Chulasiri–

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Table 1: Selected notifiable diseases reported by Medical Officers of Health 19th – 25th Nov 2016 (48th Week)

RDHS Division	Dengue Fever		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Chickenpox		Meningitis		Leishmani-asis		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	160	14376	0	167	0	13	0	55	0	65	3	277	0	8	0	46	0	0	6	432	1	57	0	0	81	94
Gampaha	4	6000	0	148	0	14	0	27	1	92	0	317	0	18	0	51	0	1	1	376	0	45	0	7	13	60
Kalutara	13	3088	3	109	0	10	0	33	0	36	3	408	0	8	0	31	0	2	2	280	0	95	0	0	43	93
Kandy	22	3754	1	149	1	18	0	22	4	40	0	112	1	94	0	49	0	0	5	234	1	44	1	11	87	100
Matale	10	1011	0	63	0	1	1	16	0	4	1	86	0	20	0	24	0	1	1	37	0	57	1	23	46	92
NuwaraEliya	5	390	5	104	0	3	2	57	0	36	2	65	3	82	0	38	0	0	6	150	3	47	0	0	92	92
Galle	70	2394	2	139	0	8	0	9	0	10	7	322	0	110	0	9	0	0	1	277	0	37	0	3	75	90
Hambantota	11	738	4	80	0	1	0	5	0	61	1	100	0	64	0	99	0	0	1	216	0	15	5	339	58	100
Matara	24	1193	1	113	1	16	0	8	0	39	9	186	0	56	0	41	0	0	3	178	2	27	4	189	94	94
Jaffna	40	2026	12	351	0	10	2	84	41	119	1	21	1	610	0	9	1	1	2	167	3	63	0	1	92	100
Kilinochchi	0	76	4	47	0	2	0	36	0	76	0	14	0	26	0	2	0	0	0	10	0	11	0	0	75	100
Mannar	4	154	0	46	0	4	0	23	0	11	0	11	0	42	0	0	0	0	0	7	0	4	0	0	100	100
Vavuniya	0	235	0	15	0	5	0	97	9	44	0	15	0	11	0	6	0	0	4	33	0	10	0	7	50	100
Mullaitivu	1	170	0	28	0	5	0	19	0	41	0	24	0	6	0	2	0	1	0	24	0	11	0	6	60	100
Batticaloa	6	485	6	308	0	5	3	51	0	98	0	48	0	6	0	13	0	1	0	103	1	17	0	1	50	93
Ampara	2	229	0	50	0	2	0	1	0	21	0	26	0	0	0	10	0	0	1	168	0	5	0	8	29	71
Trincomalee	3	371	0	56	0	2	1	13	0	25	1	35	1	25	0	34	0	2	4	157	0	15	0	14	75	92
Kurunegala	20	2286	2	305	0	11	0	4	0	19	3	153	2	44	0	33	1	4	4	379	0	64	2	101	66	93
Puttalam	9	961	3	94	0	5	0	7	0	2	0	52	0	61	0	3	0	3	0	90	0	73	0	4	71	86
Anuradhapura	2	662	6	110	0	3	0	10	0	33	1	261	0	25	5	29	0	1	1	256	0	48	1	251	21	79
Polonnaruwa	6	433	4	45	0	4	0	12	0	15	0	89	0	4	1	5	0	0	4	147	0	21	3	125	71	71
Badulla	33	1032	2	129	0	13	0	13	1	31	2	129	3	113	2	121	0	1	2	242	2	199	0	3	65	94
Monaragala	8	406	3	126	0	1	0	5	0	11	0	163	0	112	0	146	0	2	3	85	0	25	1	39	82	91
Ratnapura	30	2790	3	345	1	32	1	28	0	25	9	573	1	40	4	202	0	0	5	242	0	157	0	1	61	89
Kegalle	10	1357	1	78	0	19	1	33	0	57	2	174	0	34	1	33	0	0	3	320	0	55	0	2	55	91
Kalmune	10	565	0	100	0	6	0	5	1	64	0	21	0	0	0	7	0	4	1	111	1	29	0	0	46	100
SRILANKA	501	47182	62	3305	3	213	11	673	57	1075	45	3682	12	1629	13	1043	2	24	60	4721	14	1231	18	1135	64	91

Source: Weekly Returns of Communicable Diseases (WRCD).

*T=Timeliness refers to returns received on or before 25th November, 2016 Total number of reporting units 339 Number of reporting units data provided for the current week: 313 C**-Completeness

A = Cases reported during the current week. B = Cumulative cases for the year.

Table 2: Vaccine-Preventable Diseases & AFP 19th – 25th Nov 2016 (48th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2016	Number of cases during same week in 2015	Total number of cases to date in 2016	Total number of cases to date in 2015	Difference between the number of cases to date in 2016 & 2015
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	02	00	00	00	00	00	00	00	00	02	01	62	65	-4.6%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Mumps	00	02	01	01	00	00	01	00	00	05	03	368	357	+3.0%
Measles	00	00	00	00	00	00	01	01	00	02	10	365	2522	-85.5%
Rubella	00	00	00	00	00	00	01	00	00	01	00	11	08	+37.5%
CRS**	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	10	16	-37.5%
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Japanese Encephalitis	00	00	00	00	00	00	00	00	00	00	00	18	12	+50%
Whooping Cough	00	01	00	00	00	00	00	00	00	01	03	66	96	-31%
Tuberculosis	55	26	03	08	06	20	00	11	51	180	96	8508	9006	-5.5%

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

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