WER SRI LANKA 2023

Vol. 50 No. 04   **21st– 27th Jan 2023**

Antimicrobial Resistance Part I

This is the first article of series of two articles.

Antimicrobial resistance (AMR) is one of the top 10 global public health threats faced by humans in the world. It requires urgent multi-sectoral action to achieve sustainable development goals. Misuse and overuse are the main drivers that lead to AMR.

What are the antimicrobials?

They are antibiotics, antivirals, antifungals, and anti-parasitic which are used to prevent and treat infections, not only in humans but also in animals and plants.

What is antimicrobial resistance (AMR)?

Antimicrobial resistance occurs when bacteria, viruses, fungi, and parasites develop the ability over time to defeat the drugs designed to destroy them. It makes infections harder to treat and increases the risk of disease spread, severe illness, and death. As a result, some infections can become a serious public health issue in the community.

Why is AMR a global concern?

The Spread of a pathogen that became drug-resistant from an acquired new re-sistant mechanism leading to AMR is a threat and it averts our ability to treat the common infection. Bacteria and fungi do not have to be resistant to every antibiotic or antifungal to be dangerous. Resistance to even one antibiotic can be very harmful. When a pathogen becomes resistant to one antibiotic or one antifungal, a second line of drugs has to be used that can cause more serious side effects. And they may not be as effective as the first line. At least 1.27 million people are killed due to AMR worldwide each year. In 2019 WHO identified 32 antibiotics in clinical development that address the WHO list of priority pathogens, of which only six were classified as innovative. And also, accessibility to some antibiotics is low and antibiotics shortage is a major problem in the healthcare systems of many countries.

It is very important to invent new anti-bacterial drugs as they become increasingly ineffective due to fast-emerging drug-resistant pathogens. For example, new anti-bacterial drugs are severely needed to treat carbapenem-resistant gram-negative bacterial infections. Even those new drugs have to be used properly not to become ineffective.

AMR can cause some bad impacts on national economies and their health systems as it reduces the productivity of patients and their caretakers through prolonged hospital stays and more expensive care. So, prevention and adequate treatment of drug-resistant infections, and improved access to existing and new quality assured antimicrobials are the keys to decreasing the number of people who face treatment failure and death. Further, medical procedures such as surgery, C- section, hip replacement, cancer chemotherapy, and organ transplant will become riskier if no effective antibiotics are available to treat drug

-resistant infections.

What accelerates the emergence and spread of antimicrobial resistance?

Antimicrobial resistance is accelerated when the presence of antibiotics and antifungals pressure bacteria and fungi to adapt. The pathogens that can survive have resistance trials in their DNA that are acquired naturally over time. But the main drivers of antimicrobial resistance include,

- The misuse and overuse of antimicrobials
- Lack of access to clean water, sanitation, and hygiene for both humans and animals
- Poor infection prevention measures in healthcare facilities and farms
- Poor access to quality, affordable medicines, vaccines, and diagnostics.
- Lack of awareness and knowledge
- Lack of enforcement of legislation

Pathogens develop defence strategies against antimicrobials called resistance mechanisms. For that, the DNA of pathogens guide them to produce specific proteins which help them in those mechanisms. When already hard-to-treat germs have the right combination of resistance mechanisms, it can make all antibiotics or antifungals ineffective, resulting in untreatable infections. And also, these resistant pathogens can share their resistance mechanisms with other pathogens that are not exposed to antibiotics.

These resistant microbes can spread from human to human, from animal to human, and also from food sources of animal origin.
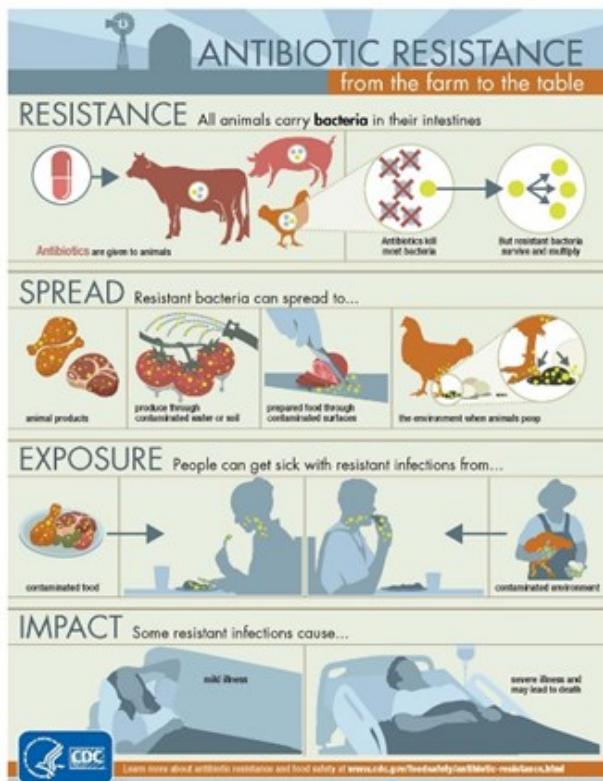
Compiled by:

Dr.V.U. Jayasinghe
MBBS
Diploma in Tuberculosis and chest diseases

Table 1 : Water Quality Surveillance Number of microbiological water samples December 2022			
District	**MOH areas**	**No: Expected ***	**No: Received**
Colombo	15	90	NR
Gampaha	15	90	NR
Kalutara	12	72	NR
Kalutara NIHS	2	12	NR
Kandy	23	138	NR
Matale	13	78	0
Nuwara Eliya	13	78	NR
Galle	20	120	NR
Matara	17	102	107
Hambantota	12	72	NR
Jaffna	12	72	NR
Kilinochchi	4	24	NR
Manner	5	30	0
Vavuniya	4	24	NR
Mullatvu	5	30	47
Batticaloa	14	84	NR
Ampara	7	42	40
Trincomalee	11	66	NR
Kurunegala	29	174	44
Puttalam	13	78	NR
Anuradhapura	19	114	NR
Polonnaruwa	7	42	165
Badulla	16	96	NR
Moneragala	11	66	NR
Rathnapura	18	108	NR
Kegalle	11	66	14
Kalmunai	13	78	0
* No of samples expected (6 / MOH area / Month) **NR** = Return not received			

Table 1: Selected notifiable diseases reported by Medical Officers of Health   14th–20th Jan 2023(3rd Week)

RDHS	Dengue Fever A	Dengue Fever B	Dysentery A	Dysentery B	Encephaliti A	Encephaliti B	Enteric Fever A	Enteric Fever B	Food Poi- A	Food Poi- B	Leptospirosis A	Leptospirosis B	Typhus A	Typhus B	Viral Hep- A	Viral Hep- B	Human A	Human B	Chickenpox A	Chickenpox B	Meningitis A	Meningitis B	Leishmania- A	Leishmania- B	WRCD T*	WRCD C**
Colombo	204	766	0	0	1	1	0	0	0	1	3	6	0	0	0	0	0	0	5	13	0	0	2	3	24	72
Gampaha	196	715	0	0	0	2	0	0	0	0	2	10	0	0	0	0	0	0	0	4	3	7	0	1	0	69
Kalutara	81	271	0	1	0	0	0	0	2	2	5	29	0	0	0	1	1	0	7	19	5	8	0	0	4	70
Kandy	65	224	3	3	0	0	0	0	1	1	7	12	5	9	0	0	0	0	10	18	1	1	0	2	20	100
Matale	25	101	0	0	0	0	0	1	0	0	5	7	0	1	0	2	0	0	0	2	1	1	15	21	31	100
NuwaraEliya	3	13	0	3	0	0	0	0	0	3	2	5	3	6	0	0	0	0	1	3	0	0	0	0	50	72
Galle	40	118	1	2	0	1	0	0	1	3	14	35	2	3	0	0	0	0	8	17	1	1	0	0	22	97
Hambantota	24	57	0	0	0	0	0	0	0	0	4	11	3	6	1	4	0	0	7	13	0	0	9	19	28	100
Matara	39	119	0	1	0	0	0	0	0	3	11	29	3	4	1	1	0	0	4	10	2	2	2	7	56	94
Jaffna	89	351	2	4	0	0	1	1	0	3	1	3	28	129	0	0	0	0	4	11	0	0	0	0	92	84
Kilinochchi	6	14	1	2	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	8%	100
Mannar	4	14	0	3	0	0	0	0	0	0	1	5	1	1	0	0	0	0	0	0	1	1	0	0	25	80
Vavuniya	4	6	0	3	0	0	0	0	0	0	1	2	1	2	0	0	0	0	0	0	0	1	0	0	0	75
Mullaitivu	1	3	1	3	0	0	0	0	0	0	0	1	1	3	0	0	0	0	1	1	0	0	0	0	14	78
Batticaloa	41	104	8	17	0	3	0	0	0	0	1	9	0	0	0	0	0	0	3	5	0	2	0	0	43	95
Ampara	8	21	0	1	0	0	0	0	0	0	2	7	0	0	0	1	0	0	2	5	1	2	0	0	20	95
Trincomalee	41	91	0	0	0	1	0	0	0	0	1	6	0	1	0	0	0	0	2	4	2	3	0	0	14	100
Kurunegala	79	210	1	2	0	1	0	0	0	0	9	23	1	1	1	1	0	0	6	26	2	10	11	31	24	94
Puttalam	212	631	0	0	0	0	0	0	0	0	1	2	0	3	0	0	0	0	3	6	1	6	0	0	12	85
Anuradhapur	15	39	0	0	0	0	0	0	0	0	7	24	4	7	2	2	0	0	2	10	1	1	9	29	19	90
Polonnaruwa	22	63	0	0	1	2	0	0	0	0	1	14	0	1	0	1	0	0	1	4	2	7	10	28	21	79
Badulla	26	118	1	4	0	0	0	0	0	4	6	14	1	2	2	7	0	0	1	10	1	3	1	5	33	100
Monaragala	6	21	1	1	0	0	0	0	0	0	3	39	1	5	0	0	0	0	1	1	2	7	10	14	13	97
Ratnapura	45	124	3	4	0	0	0	0	0	4	24	55	5	6	0	0	0	0	1	2	6	9	4	14	29	97
Kegalle	51	144	0	0	0	0	0	0	0	0	5	13	0	1	0	1	0	0	1	13	0	3	0	1	19	82
Kalmune	138	397	2	8	0	0	0	0	0	0	2	5	0	0	0	0	0	0	1	1	0	1	0	0	51	95
SRILANKA	146	4735	24	62	2	10	1	2	4	26	11	367	60	193	5	20	0	0	71	198	30	76	73	175	28	90

Table 2: Vaccine-Preventable Diseases & AFP   **14ᵗʰ– 20ᵗʰ Jan 2023 (3ʳᵈ Week)**

Disease	No. of Cases by Province									Number of cases during current week in 2023	Number of cases during same week in 2022	Total number of cases to date in 2023	Total number of cases to date in 2022	Difference between the number of cases to date in 2023 & 2022
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	00	00	00	00	00	01	00	00	01	00	06	72	- 91.6
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Mumps	00	00	00	00	00	01	00	00	01	02	01	06	01	300 %
Measles	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Rubella	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
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	01	01	01	0 %
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	01	00	01	- 100 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Tuberculosis	106	11	39	23	16	02	00	03	04	204	55	367	276	32.9 %

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
NA = Not Available

Influenza Surveillance in Sentinel Hospitals - ILI & SARI							
Month	Human				Animal		
	No Total	No Positive	Infl A	Infl B	Pooled samples	Serum Samples	Positives
January							

Source: Medical Research Institute & Veterinary Research Institute

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**

ON STATE SERVICE

Dr. Samitha Ginige
Actg. CHIEF EPIDEMIOLOGIST
EPIDEMIOLOGY UNIT
231, DE SARAM PLACE
COLOMBO 10