WEEKLY EPIDEMIOLOGICAL REPORT

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Prevention of oncovirus-related cancers - a low-hanging fruit of oncology Part II

This is the second article of a series of 3 articles on the "Prevention of oncovirus-related cancers - a low -hanging fruit of oncology".

Epstein-Barr virus (EBV)

EBV was the first human oncogenic virus identified. It was discovered in tumour cells isolated from Burkitt's lymphoma tissue by Sir Anthony Epstein and Dr Yvonne Barr in 1964. Some years after its discovery, EBV was shown to be able to transform normal leukocytes into lymphoblastoid cell lines (LCLs). Since then, EBV is associated with many malignancies originating from lymphocytes or epithelial cells (Burkitt's lymphoma, post-transplant and HIV-associated lymphomas, Hodgkin's lymphoma, T-cell lymphoma, extra-nodal nasal-type natural killer/T-cell lymphoma, nasopharyngeal cancer, and a subset of gastric cancers), contributing to 1.5% of all cancer cases worldwide and approximately 200,000 new cases every year. However, this virus is found in more than 90% of healthy adults worldwide, indicating that EBV infection alone is not enough to cause cancer. The specific geographical distribution of some EBV-associated malignancies (such as Burkitt's lymphoma in equatorial Africa and nasopharyngeal cancer in East Asia) indicates that the development of an EBV-associated neoplasm requires different environmental and genetic co-factors, of which only some are currently known. EBV spreads most commonly through bodily fluids, especially saliva, blood and semen during sexual contact, blood transfusions, and organ transplantations. EBV can be spread by using objects, such as a toothbrush or drinking glass, that an infected person recently used. The virus probably survives on an object at least as long as the object remains moist. There is no vaccine developed yet to protect against EBV infection or no specific treatment other than conservative management[2].

Hepatitis B (HBV) and C (HCV) viruses

Dr. Baruch Blumberg discovered the hepatitis B virus in 1965 and was awarded the Nobel Prize for his achievement. Initially named the "Australia Antigen" after a reaction in an Australian aborigine's blood sample, subsequent research in 1967 confirmed its role in causing hepatitis B. Just two years later, Dr. Blumberg and Dr. Irving Millman pioneered the development of the hepatitis B vaccine, marking another remarkable chapter in medical history, but no vaccine has been developed for HCV. Hepatitis B and C usually occur as a result of parenteral contact with infected body fluids. Common modes of transmission for these viruses include receipt of contaminated blood or blood products, invasive medical procedures using contaminated equipment hepatitis B transmission from mother to baby at birth, and also by sexual contact[3][4].

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There are approximately 350–400 million people across the world infected with HBV, the majority reside in or originate from Asia. Each year HBV accounts for 749,000 new cases of HCC and 692,000 HCC-related deaths. The annual incidence of HCC is estimated to be <1% for non-cirrhotic HBV-infected patients and 2–3% for those with cirrhosis. It is estimated that over 50% of HCC cases worldwide are related to chronic HBV. Since the implementation of worldwide Hepatitis B Virus (HBV) vaccination there has been an overall decline in the burden of HBV and vaccination during infancy in regions endemic to HBV has nearly eliminated HCC in vaccinated infants and young adults. However, the HBV burden remains quite high in various parts of the world, and the burden of HBV-related HCC also varies. Asian-Pacific and sub-Saharan Africa represent the highest incidence of HCC worldwide[4][3].

Human T cell lymphotropic virus 1 (HTLV-1)

After the discovery of retroviral reverse transcriptase in 1970, there was a flurry of activity, sparked by the "War on Cancer," to identify human cancer retroviruses. After many false claims resulting from various e artefacts, most scientists abandoned the search, but the Gallo laboratory carried on, developing both specific assays and new cell culture methods that enabled them to report, the human T-cell leukaemia virus (HTLV; now known as HTLV-1) produced by a T-cell line from a lymphoma patient. Follow-up studies, including collaboration with the group that first identified a cluster of adult T-cell leukaemia (ATL) cases in Japan, provided conclusive evidence that HTLV was the cause of this disease. Since it is usually asymptomatic at the beginning of the infection and the disease typically manifests later in life, silent transmission occurs, which is associated with sexual relations, breastfeeding, and blood transfusions. There are no prospects of vaccines and screening of blood banks. Therefore, its transmission is active in many areas such as parts of Africa, South and Central America, the Caribbean region and Asia. HTLV-1 is now known to infect at least 4–10 million people worldwide, about 5% of whom will develop ATL. Despite intensive research, knowledge of viral aetiology has not led to improvement in the treatment or outcome of ATL[5].

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to be continued ...

Table 1: Selected notifiable diseases reported by Medical Officers of Health 28th– 03rd Nov 2023 (44th Week)

RDHS	Dengue Fever		Dysentery		Encephalit		Enteric Fever		Food Poi-		Leptospirosis		Typhus		Viral		Human		Chickenpox		Meningitis		Leishmania-		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	210	12392	0	15	0	14	0	2	0	12	6	309	0	0	0	6	0	0	10	324	1	42	0	7	**43**	**100**
Gampaha	163	12375	0	21	1	18	0	12	0	13	15	559	0	10	1	18	0	0	10	280	3	121	0	44	**11**	**100**
Kalutara	52	4365	0	28	0	4	0	1	0	19	23	802	0	2	0	10	0	1	14	508	0	96	0	3	**34**	**100**
Kandy	254	7083	1	40	0	3	1	11	0	23	6	287	0	64	1	5	0	2	20	304	2	30	3	34	**90**	**100**
Matale	60	1587	0	4	0	3	0	1	0	29	1	135	0	14	0	7	0	0	4	67	0	9	12	308	**27**	**100**
NuwaraEliya	15	270	4	154	0	5	0	3	1	50	6	165	3	71	0	5	0	0	6	191	1	33	0	3	**62**	**100**
Galle	83	2714	1	48	1	14	0	6	0	36	21	860	0	72	0	2	0	1	15	348	1	28	0	3	**39**	**100**
Hambantota	13	1320	0	14	1	4	0	1	0	9	8	303	0	68	0	9	0	0	0	139	0	19	33	608	**32**	**100**
Matara	47	1791	3	28	0	9	0	1	49	69	9	504	0	34	0	6	0	2	5	290	0	22	0	180	**58**	**100**
Jaffna	35	2191	8	122	0	2	1	13	0	36	1	14	6	529	0	7	0	2	4	175	0	18	0	2	**70**	**93**
Kilinochchi	1	95	0	12	0	0	0	1	0	16	0	8	1	8	0	0	0	0	0	19	0	2	0	0	**44**	**100**
Mannar	3	92	1	7	0	0	0	1	0	0	1	38	0	6	0	1	0	0	0	3	1	10	0	1	**56**	**100**
Vavuniya	4	172	0	11	0	1	0	0	0	25	1	32	1	10	0	2	0	0	0	29	0	13	0	10	**19**	**100**
Mullaitivu	1	126	0	15	0	1	1	5	0	12	1	39	0	7	0	1	0	0	0	19	0	2	0	8	**29**	**100**
Batticaloa	28	2230	9	193	1	10	0	5	0	18	5	98	1	2	0	8	0	3	3	126	3	43	0	1	**68**	**100**
Ampara	6	246	2	12	0	1	0	1	5	69	2	124	0	2	0	2	0	0	1	89	2	58	0	12	**15**	**99**
Trincomalee	14	2040	0	25	0	1	0	1	0	69	2	72	0	15	1	5	0	0	3	78	0	29	0	7	**31**	**100**
Kurunegala	2	1708	1	70	0	11	0	0	1	2	0	57	0	1	0	0	0	0	1	156	1	41	0	0	**54**	**100**
Puttalam	84	2906	9	58	0	16	0	1	0	7	23	411	1	18	1	15	0	3	9	495	8	200	19	535	**30**	**100**
Anuradhapur	46	2997	1	43	0	3	0	1	0	2	6	100	0	8	0	1	0	0	2	108	2	80	4	23	**29**	**100**
Polonnaruwa	8	712	1	16	0	1	0	1	2	11	2	260	1	33	0	4	0	2	3	226	1	46	18	632	**30**	**100**
Badulla	15	557	8	24	0	6	0	1	0	11	3	167	0	7	0	14	0	0	2	84	0	18	17	406	**38**	**100**
Monaragala	40	1135	3	43	0	5	0	0	1	45	7	324	5	60	1	91	0	0	3	181	0	48	1	41	**67**	**99**
Ratnapura	13	682	1	25	0	6	0	0	0	8	11	497	1	39	0	33	0	1	5	74	2	78	7	174	**31**	**100**
Kegalle	30	2048	5	58	1	19	0	3	3	54	27	1170	1	29	0	18	0	2	7	214	1	140	0	185	**37**	**100**
Kalmune	64	2907	1	26	0	2	0	2	2	19	20	669	1	43	0	6	0	0	7	424	2	88	2	42	**36**	**100**
SRILANKA	**1291**	**66741**	**59**	**1112**	**5**	**159**	**3**	**74**	**64**	**664**	**207**	**8004**	**22**	**1152**	**5**	**276**	**0**	**19**	**134**	**4951**	**31**	**1314**	**116**	**3269**	**44**	**99**

Source: Weekly Returns of Communicable Diseases (esurvillance.epid.gov.lk). T=Timeliness refers to returns received on or before 03rd Nov, 2023 Total number of reporting units 358 Number of reporting units data provided for the current week: 355 **C****-Completeness

Table 2: Vaccine-Preventable Diseases & AFP

28th– 03rd Nov 2023 (44th 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	01	00	00	00	00	01	02	80	69	15.9 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Mumps	00	01	00	00	01	00	00	00	00	02	02	208	77	170.1 %
Measles	08	01	02	06	00	01	01	00	01	20	00	693	20	3365 %
Rubella	01	00	00	00	00	00	00	00	00	01	00	09	00	0 %
CRS**	00	00	00	00	00	00	00	00	00	00	00	02	00	0 %
Tetanus	00	00	00	00	00	00	00	00	00	00	00	06	05	20 %
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Japanese Enceph-alitis	00	00	00	00	00	00	00	00	00	00	02	02	01	100 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	07	01	600 %
Tuberculosis	60	01	26	12	00	00	04	08	08	119	107	7844	5618	39.6%

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

Take prophylaxis medications for leptospirosis during the paddy cultivation and harvesting seasons.

It is provided free by the MOH office / Public Health Inspectors.

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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