WEEKLY EPIDEMIOLOGICAL REPORT

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HPV Vaccine introduction into National Immunization Programme

Human Papillomavirus (HPV) vaccine is introduced in to the National Immunization Programme from July 2017, aiming for primary prevention of cervical cancers in Sri Lanka. Cervical cancer is a preventable non-communicable disease by early intervention by vaccination in preventing entry of HPV to the cervical epithelium to cause oncogenic cellular changes at the transformation zone of the endo and ecto cervix.

Globally, most affected women age group for cervical cancer is around 30-55 years. The cervical cancer causes high morbidity and mortality to women as it is a hidden disease till late advanced stages. Over 80% of these newly diagnosed cases are from developing countries. Nearly 12% of all female cancers are cervical cancers. Global cervical cancer cases accounts for 266,000 deaths annually and 85% of cervical cancer deaths are from developing countries. Without an organized cervical cancer preventive programmes and urgent attention in preventing deaths, it is projected that cervical cancer deaths would rise by almost 25% over the next 10 years due to increasing trend of elderly population in developing countries.

In Sri Lanka, it is estimated that 7.52 million women are at risk of developing cervical cancers, 1395 cases and 814 deaths (according to international estimates, IARC). According to National Cervical Cancer Control Programme data, a total of 850 - 950 cases of cervical cancers have been identified and admitted to hospitals annually. Cervical cancer is the 2nd most common female cancers accounting for 10% of all female cancers in Sri Lanka.

Human papillomaviruses (HPV) are widespread throughout the general population and is known to produce epithelial tumours of the skin and mucous membranes. HPV genital infection is common but asymptomatic and sub clinical.

HPVs are non-enveloped, double-stranded deoxyribonucleic acid (DNA) viruses in the family of Papilloma-viridae. The HPV genome is enclosed in a capsid shell comprising major (L1) and minor (L2) structural proteins. There are more than 100 HPV genotypes and nearly 40 genotypes cause genital infections. This common viral infection in the genital tract causes genital warts, precancerous lesions and genital cancers. Genital warts which are caused by HPV is non-oncogenic (low risk) and will not be progressing to cancers. Most of these HPV infections are transient and asymptomatic but persistent genital HPV infection with different oncogenic HPV genotypes (high risk) can lead to develop anogenital precancers and cancers.

Out of sexually transmitted HPV genotypes, non-oncogenic (low risk) genotypes of 6 and 11 cause majority of the genital warts (90%) and Recurrent Respiratory Papillomatosis. But oncogenic (high risk) genotypes of 16 and 18 cause most of the cervical precancerous lesions , cervical, anal, vulval, vaginal and penile cancers. High-risk HPV types are attributed for 99% of cervical cancers but genotypes 16 and 18 are attributed for about 70% of cervical cancers.

A prophylactic HPV vaccines aiming for primary prevention of this major proportion

Contents	*Page*

of cervical cancers due to high risk HPV genotypes 16 and 18 are available to use since 2006 globally.

There are three types of prophylactic vaccines available to use for the prevention of HPV-related diseases mainly for prevention of cervical cancers.

Bivalent HPV vaccine : for 2 - HPV genotypes 16 and 18, licensed and recommend for girls aged 9-14 years, as 2-doses (at 0 and 6 months) but if age is 15 years and above, given as 3 doses

Quadrivalent HPV vaccine: for 4-HPV genotypes 6, 11, 16 and 18, licensed and recommend for girls and boys aged 9-13 years, as 2-doses (at 0 and 6 months) but if age is 14 years and above, given as 3-doses

Nonavalent HPV vaccine : for 9- HPV types 6, 11, 16, 18, 31, 33, 45, 52 and 58, licensed and recommends for girls and boys aged 9-14 years, as 2-doses (at 0 and 6 months) but if age is 15 years and above, given as 3 doses

HPV vaccination was available in Sri Lanka in the private sector since 2010 (bivalent HPV vaccine was registered in 2010 and quadrivalent HPV vaccine was registered in 2012). But the quadrivalent HPV vaccine is introduced in to the National Immunization Programme for the prevention of cervical cancer since July 2017. Ministry of Health has incorporated Quadrivalent HPV vaccine in to National immunization schedule at completion of 10 years to girls in Grade 6 through the school immunization programme. All girls in Grade 6 are provided with 2 doses of quadrivalent HPV vaccine every year as 2-dose schedule with a minimum interval of 6 months between 2 doses.

This quadrivalent HPV vaccine is consistant of HPV geno type specific L1 virus like particles (VLP) of geno type 6, 11, 16 and 18. The substrate of the vaccine is based on recombinant yeast technology (*Saccharomyces cerevisiae).* Each 0.5 ml dose of quadrivalent vaccine (Gardasil) contains 20µg HPV 6 L1 protein, 40 µg HPV 11 L1 protein, 40 µg HPV 16 L1 protein and 20 µg HPV 18 L1 protein with 225 µg Aluminum hydroxyl phosphate sulfate as an adjuvant. This prophylactic vaccine .prevents cervical cancers by preventing HPV genotype 16 and 18 but it has an additional benefit for prevention of non-cancerous HPV genotypes of 6 and 11 for prevention of genital warts.

Overall sero conversion is observed as 99-100%. Exact duration of immunity after vaccination is has observed for 8-10 years with minimum decline of protective levels. . Trial showed efficacy of 100% against HPV type 16/18 related persistent infection and CIN 2/3. Quadrivalent HPV vaccine is recommended to store at $+2^0$C to $+8^0$C,and should not freeze. The HPV vaccines should not be given to girls who have experienced severe allergic reactions after a previous vaccine dose or to a component of the vaccine and recommend to delay for individuals who have severe acute illness. Mild and transient local reactions at the site of injection (erythema, pain or swelling) were reported following HPV vaccination and usually resolve within 3-4 days. Systemic adverse events (fatigue, headache, and myalgia) are other symptoms observed. Severe reactions are rare with the vaccination. Global advisory committee for vaccine safety (GACVS) is regularly vigilant on HPV vaccine safety and reviews evidence in countries introduced HPV vaccination. In January 2016, this committee re-assured and concluded that HPV vaccine is a very safe vaccine based on post marketing surveillance of country evidences.

The strategy of early detection of cervical cancer by Pap smear screening or HPV-DNA detection to identify early stages of cervical pre-cancers are accepted methods to be continued even though primary preventive strategy of HPV vaccination is implemented.

References:

Human papillomavirus vaccines: WHO position paper, May 2017, Weekly epidemiological record, WHO, No 19, 2017, 92, 241–268 http://www.who.int/wer

Global Advisory Committee on Vaccine Safety, 30 November – 1 December 2016, Weekly epidemiological record, WHO, No 2, 2017, 92, 13–20 http://www.who.int/wer

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Table 1: Selected notifiable diseases reported by Medical Officers of Health 14th- 20th Oct 2017 (42nd Week)

RDHS Division	Dengue Fever		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Chickenpox		Meningitis		Leishmania-sis		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	161	31320	1	52	0	3	1	28	2	34	10	128	0	3	0	14	0	0	2	316	0	27	0	1	**21**	**84**
Gampaha	155	29112	3	32	0	13	1	17	0	8	4	59	0	12	0	14	0	1	4	246	1	28	0	3	**7**	**100**
Kalutara	80	9788	1	52	1	4	0	17	1	53	5	307	0	7	4	15	0	1	1	460	4	136	0	1	**2**	**94**
Kandy	203	12371	1	64	0	5	0	7	0	10	0	44	1	119	1	13	0	2	5	222	1	35	0	12	**14**	**100**
Matale	52	2682	1	21	0	4	0	1	0	10	0	30	0	2	0	9	0	0	2	46	3	58	0	6	**13**	**100**
NuwaraEliya	7	823	2	26	0	8	0	31	0	53	1	50	10	171	1	19	0	0	3	276	1	40	0	0	**60**	**100**
Galle	28	5567	0	46	0	13	0	19	0	16	20	348	0	64	0	5	0	1	3	347	1	62	0	1	**17**	**99**
Hambantota	50	3117	1	22	0	7	0	7	0	25	2	46	0	64	0	9	0	1	1	178	0	19	14	330	**10**	**100**
Matara	43	5930	0	35	0	8	0	3	0	14	7	190	0	23	1	10	0	1	6	212	4	12	7	140	**11**	**100**
Jaffna	153	4471	21	334	0	21	2	36	1	57	0	28	7	424	0	3	0	0	7	178	0	34	0	0	**42**	**87**
Kilinochchi	3	454	3	27	0	1	0	11	0	1	0	4	0	15	0	2	0	0	0	3	0	10	0	3	**24**	**100**
Mannar	3	512	2	10	0	0	0	2	0	1	0	2	0	3	0	0	0	0	0	14	0	0	0	0	**15**	**100**
Vavuniya	15	818	1	21	0	0	2	70	1	7	1	27	1	10	0	7	0	0	1	34	0	3	0	9	**13**	**100**
Mullaitivu	1	324	0	15	0	4	1	5	0	5	0	19	0	4	0	1	0	1	0	16	0	5	0	2	**8**	**100**
Batticaloa	45	4744	4	135	0	9	0	15	9	37	1	23	0	1	0	5	0	1	4	162	1	28	0	1	**23**	**100**
Ampara	12	831	1	39	0	2	0	1	0	1	0	18	0	1	0	4	0	0	3	172	1	41	1	5	**32**	**100**
Trincomalee	14	4762	3	36	0	2	0	12	0	21	1	24	0	13	0	17	0	0	1	142	0	23	0	10	**19**	**100**
Kurunegala	71	9822	1	79	0	10	0	3	0	54	2	67	0	26	0	19	0	3	4	441	0	68	2	136	**11**	**100**
Puttalam	128	5526	0	49	0	2	0	2	0	9	0	26	0	11	0	1	0	0	6	143	1	44	0	3	**12**	**100**
Anuradhapur	20	2546	4	39	0	3	0	1	0	16	1	64	0	19	0	13	1	2	2	342	2	69	11	224	**7**	**95**
Polonnaruwa	11	1256	1	18	0	5	0	9	0	8	2	40	0	7	0	8	0	0	0	204	1	20	0	121	**4**	**100**
Badulla	45	3354	3	100	1	9	0	10	0	5	6	122	4	110	1	55	0	1	4	338	12	198	0	13	**7**	**100**
Monaragala	85	2472	3	66	0	3	0	1	0	9	2	118	2	119	0	19	0	1	2	92	0	64	2	24	**30**	**100**
Ratnapura	58	10685	1	146	1	80	0	13	0	8	6	529	0	28	1	73	0	0	1	260	1	140	0	21	**11**	**100**
Kegalle	48	8976	0	33	0	12	0	5	1	29	9	102	4	73	1	13	0	0	12	269	1	65	0	10	**10**	**100**
Kalmune	35	2314	1	95	0	7	0	4	0	284	0	9	0	0	0	3	0	0	2	136	0	29	0	0	**13**	**100**
SRILANKA	**1526**	**164577**	**59**	**1592**	**3**	**235**	**7**	**330**	**15**	**775**	**80**	**2424**	**29**	**1329**	**1**	**351**	**1**	**16**	**76**	**5249**	**35**	**1258**	**37**	**1076**	**16**	**98**

Source: esurveillance.epid.gov.lk

*T=Timeliness refers to returns received on or before 20thOctober , 2017 Total number of reporting units 344 Number of reporting units data provided for the current week: 341 C**-Completeness

Table 2: Vaccine-Preventable Diseases & AFP

14th– 20th Oct 2017 (42nd Week)

Disease	No. of Cases by Province									Number of cases during current week in 2017	Number of cases during same week in 2016	Total number of cases to date in 2017	Total number of cases to date in 2016	Difference between the number of cases to date in 2017 & 2016
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	00	00	01	00	00	00	01	01	03	02	59	57	3.5%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Mumps	00	00	01	03	00	00	01	00	01	06	05	256	328	- 21.9%
Measles	00	01	01	00	00	00	00	00	00	02	00	177	343	- 48.3%
Rubella	00	00	00	00	00	00	00	00	00	00	01	10	09	11.12%
CRS**	00	00	00	00	00	00	00	00	00	00	00	01	00	0%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	16	08	100%
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	21	15	40%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	01	19	58	- 67.2%
Tuberculosis	56	32	08	16	07	16	08	13	18	174	174	6877	7489	-8.1%

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

Dengue Prevention and Control Health Messages

Look for plants such as bamboo, bohemia, rampe and banana in your surroundings and maintain them free of water collection.

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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**

ON STATE SERVICE

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