WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit
Ministry of Health, Nutrition & Indigenous Medicine

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

WER SRI LANKA 2019

Vol. 46 No. 33 **10th– 16th August 2019**

Human Papillomavirus (HPV) and Cervical Cancer Part I

This is the first in a series of two articles on Human papillomavirus (HPV)

Human papillomavirus (HPV) is the most common viral infection in the genital tract. Most sexually active women and men will be infected at some stage of their life while repeated infection also may occur. Skin to skin genital contact or sexual transmission is identified as modes of transmission. Both men and women are at the risk of acquiring infection shortly after becoming sexually active.

Historical Information

HPV was discovered in 1956 by a group of scientists. In 1984 Harald Zur Hausen discovered, cloned, and attributed cervical cancer to HPV 16 and 18. Through his research, he contributed to the production of the vaccines. As certain strain causes papilloma or viral warts thereby attributing virus was named as "HPV".

Natural History of HPV

HPV is a small DNA virus belonging to "Family Papillomaviridae". It consists of a genome of approximately 8000 base pairs. HPV targets the basal cells in the stratified squamous epithelium and the metaplastic cells at the squamocolumnar junction of the cervix. HPV may also infect the glandular epithelium of the endocervix thus resulting in glandular neoplasms as adenocarcinoma in situ or invasive adenocarcinoma. E6 and E 7 are the high-risk HPV types of two primary oncogenes. These two genes expressed early in the HPV life cycle is being indicated by the use of "E" designation. The products of the two genes amend the host-cell metabolism to support neoplastic development. E6 binds to host cell protein p53 which demeans it. Thereby it prevents the apoptosis of the infected host epithelial cells. As telomerase is also activated it further augments oncogenic changes. E7 protein too has a similar effect on cell metabolism which binds to retinoblastoma protein thus inhibiting its function. This disrupts the cell cycle. E6 and E7 proteins may cause chromosomal destabilization. It also inhibits cyclin-dependent kinase inhibitors and host interferons. Expression of HPV E6 and E7 is highly correlated with the type of cervical lesion. In low-grade lesions, E6 and E7 are expressed at low levels in the basal cells while higher levels in the upper layers of the epithelium. High-grade lesions E6 and E7 are expressed at high levels throughout the epithelium. HPV is in an episomal form in low-grade lesions while in higher grade lesions and cancer, the HPV DNA is more likely to be integrated into the host cell chromosome. Integration of HPV DNA into the host DNA boosts the cellular proliferation and the chance of malignancy.

Before cervical cancer occurs, an area on the cervix would have been abnormal for ten to fifteen years. The abnormal area is referred to as a precursor of cervical cancer or "precancer." Precancerous lesions are indicated as cervical intraepithelial neoplasia (CIN) and grade it as

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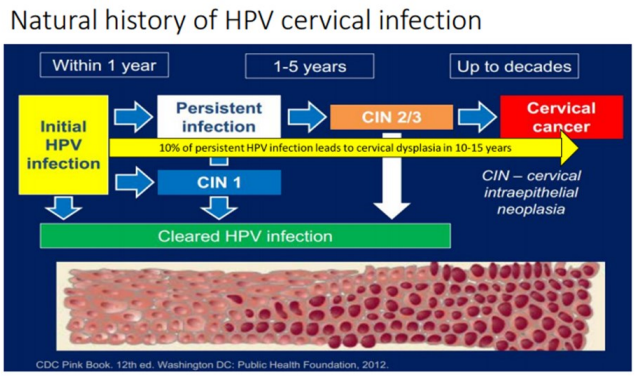
mild, moderate, or severe (CIN 1, 2, or 3). Screening tests such as the Pap smear and visual inspection with acetic acid were designed to detect CIN.

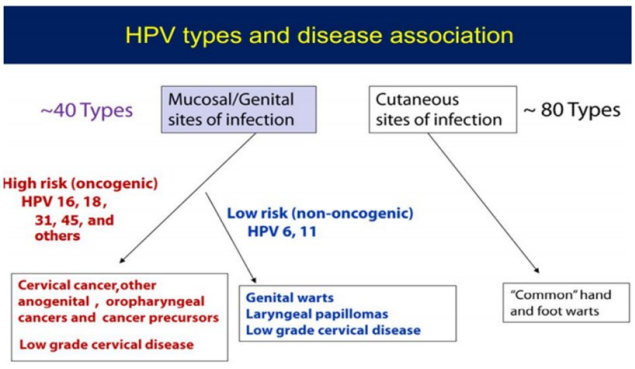


Types of HPV

There are more than 100 types of HPV. Most of them do not cause problems. HPV infections generally resolve within a few months of acquisition without any intervention while around 90% of the time it clears within 2 years.

Around 60 to 80 HPV types cause warts on the skin surface such as the hands or feet. Other 40 HPV types are contracted during sexual contact. The virus transmits to mucous membranes, mainly in moist layers around the mouth, throat, anus and genitals. All of these HPV viruses do not cause serious health implications. HPV 16 and 18 are high risk as they cause about 70% of cervical cancers. Other high-risk HPV viruses include 31, 33, 45, 52, 58, and a few others.

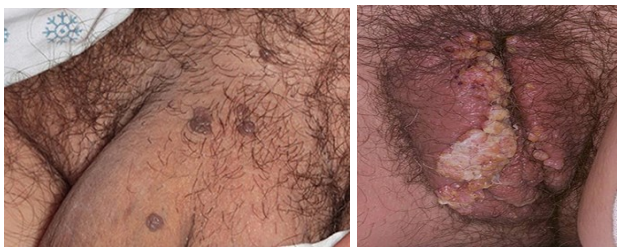
HPV strains 6 and 11 are low risk as 90% of genital warts are caused by them. These viral wart growths appear as bumps or as cauliflower shapes



Symptoms

Frequently there are no symptoms of HPV infection once the virus stays on mucus membrane. The body immune system clears the infection on its own while people never know they were infected.

Genital warts



These appear as flat lesions, small cauliflower-like bumps or tiny stem like protrusions. In women it appear frequently on the vulva but may occur near the anus, on the cervix or in the vagina.

In men it appears on the penis and scrotum or around the anus. Genital warts rarely cause discomfort or pain. There may be itch or tender and may hamper sexual life.

Cervical cancer

The high-risk types of HPV persist after acquiring on the surfaces or mucous membranes. It causes changes in the cells of the cervix which could lead to cancer. Thus Cervical cancer is the most common HPV related disease and almost 99% of cervical cancers can be attributed to any genotype of HPV.

There is a risk for women that HPV infection may become chronic. Several years with persistent HR-HPV develop as pre-cancerous lesions. The proportion of precancerous lesions can progress into invasive cervical cancer. In women with normal immune systems, the development of cervical cancer will take 15-20 years while in women with the weakened immune system it will take in 5-10 years.

HR-HPV can cause other cancers.

The genotypes causing cervical cancer may also contribute to cancers of the genitals as vulva, vagina or penis, anus, oral and upper respiratory tract

Compiled By : **Dr.T.D.Haputhanthri**

Medical officer- Epidemiology Unit,
Ministry of Health

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 to be continued ...

Table 1: Selected notifiable diseases reported by Medical Officers of Health 03rd – 09th Aug 2019 (32nd 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	391	8052	0	34	0	8	1	15	3	50	6	144	0	8	1	7	0	0	5	324	1	35	1	4	**47**	**100**
Gampaha	372	5954	0	25	0	5	0	3	0	25	2	67	0	3	1	7	0	1	3	297	0	15	8	133	**51**	**98**
Kalutara	234	3865	2	53	0	6	0	15	0	56	10	358	0	4	0	4	0	1	8	472	1	75	0	3	**62**	**100**
Kandy	134	2328	3	75	0	10	0	3	0	14	4	51	3	69	0	3	0	2	4	189	1	46	1	35	**63**	**100**
Matale	15	368	1	20	0	3	0	0	0	6	1	39	0	5	0	6	0	2	0	63	0	4	2	156	**56**	**100**
NuwaraEliya	3	146	1	90	0	2	0	7	0	2	0	35	1	55	0	7	0	0	2	88	0	29	0	0	**26**	**100**
Galle	253	4101	3	35	0	7	0	3	0	5	6	283	0	31	1	37	0	0	10	310	2	36	0	3	**60**	**100**
Hambantota	94	1044	0	9	0	3	0	1	0	5	7	86	3	87	0	3	0	1	3	230	2	29	3	555	**73**	**100**
Matara	130	1916	1	16	0	4	0	2	0	13	9	256	2	28	0	16	0	0	5	210	2	14	13	374	**59**	**100**
Jaffna	23	2098	8	155	0	13	0	20	0	44	0	23	1	264	0	4	0	0	2	221	0	15	0	0	**24**	**93**
Kilinochchi	1	119	2	17	0	1	1	10	0	0	0	18	0	25	0	1	0	0	1	7	0	7	2	11	**49**	**100**
Mannar	0	78	0	3	0	1	0	8	0	1	0	1	0	8	0	0	0	0	0	0	0	1	0	1	**56**	**100**
Vavuniya	2	207	0	15	0	10	1	24	2	13	0	49	0	4	0	0	0	0	1	64	0	9	0	1	**55**	**100**
Mullaitivu	1	108	0	6	0	0	1	11	0	2	0	20	0	6	0	0	0	0	3	8	0	6	0	4	**31**	**87**
Batticaloa	15	1025	9	100	0	2	0	12	7	29	0	41	0	1	0	0	0	1	2	196	1	22	0	0	**51**	**100**
Ampara	8	164	1	50	0	2	0	0	0	8	1	32	0	1	0	10	0	0	6	208	0	7	0	4	**58**	**100**
Trincomalee	12	914	7	18	0	0	0	0	0	55	0	10	0	18	0	3	0	1	4	189	1	7	0	1	**30**	**100**
Kurunegala	63	1255	0	52	0	15	0	6	0	30	2	118	2	16	0	20	0	2	5	447	2	72	11	538	**59**	**100**
Puttalam	30	544	0	20	0	2	0	1	0	6	0	29	0	10	0	1	0	0	2	115	1	40	0	8	**61**	**100**
Anuradhapura	26	416	1	35	0	8	0	4	3	10	1	95	0	31	1	20	0	2	6	400	2	65	10	361	**42**	**100**
Polonnaruwa	6	231	0	21	0	2	0	1	0	1	1	60	0	4	0	16	0	2	1	235	0	14	3	196	**61**	**100**
Badulla	20	563	2	54	1	6	0	8	0	73	4	146	3	89	0	13	0	0	8	220	7	143	0	12	**63**	**100**
Monaragala	0	333	0	36	0	4	0	0	0	79	0	189	0	82	0	41	0	0	0	212	0	112	0	22	**60**	**97**
Ratnapura	95	1852	1	72	0	25	0	8	0	13	25	622	1	29	0	20	0	4	7	262	4	118	1	111	**45**	**100**
Kegalle	65	1060	0	31	1	17	0	2	0	27	4	155	1	40	0	84	0	0	9	334	1	39	2	29	**67**	**100**
Kalmune	11	569	3	54	0	1	0	1	0	38	0	25	0	3	0	4	0	0	4	173	0	16	0	0	**63**	**100**
SRILANKA	**2004**	**39310**	**45**	**1096**	**2**	**157**	**4**	**165**	**15**	**605**	**83**	**2952**	**17**	**921**	**4**	**327**	**0**	**19**	**101**	**5474**	**28**	**976**	**57**	**2562**	**54**	**99**

Source: Weekly Returns of Communicable Diseases (WRCD).

*T=Timeliness refers to returns received on or before 09th August , 2019 Total number of reporting units 353 Number of reporting units data provided for the current week: 331 C**-Completeness

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

Table 2: Vaccine-Preventable Diseases & AFP

03rd – 09th Aug 2019 (32nd Week)

Disease	No. of Cases by Province									Number of cases during current week in 2019	Number of cases during same week in 2018	Total number of cases to date in 2019	Total number of cases to date in 2018	Difference between the number of cases to date in 2019 & 2018
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	00	00	00	00	00	00	00	00	00	00	47	38	23.6 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Mumps	00	02	00	00	01	00	00	00	00	03	11	222	224	- 0.8 %
Measles	00	03	00	00	01	01	01	00	02	08	00	223	81	175.3 %
Rubella	00	00	00	00	00	00	00	00	00	00	00	00	04	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	00	13	15	- 13.3 %
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	09	19	- 52.6 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	01	36	35	2.8 %
Tuberculosis	45	04	18	07	17	20	11	13	03	138	144	5255	5175	1.5 %

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

NA = Not Available

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.

PRINTING OF THIS PUBLICATION IS FUNDED BY THE WORLD HEALTH ORGANIZATION (WHO).

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
DEPUTY EPIDEMIOLOGIST
EPIDEMIOLOGY UNIT
231, DE SARAM PLACE
COLOMBO 10