WEEKLY EPIDEMIOLOGICAL REPORT

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Chickenpox and the Varicella Vaccine (Part I)

Background

Chickenpox is a very contagious disease caused by the Varicella zoster virus (VZV). It is one of the eight herpes viruses known to infect humans and it is also known as human herpes virus type 3 (HHV-3).

Varicella zoster virus (VZV) causes chickenpox in children, teens and young adults and herpes zoster (shingles) in some patients. Once an episode of chickenpox has resolved, the virus is not eliminated from the body in some patients and the Varicella zoster virus remains latent in the nerve cells without causing symptoms. These patients can develop herpes zoster even many years after the initial infection.

Signs & Symptoms

The classic symptom of chickenpox is a rash which becomes itchy, fluid-filled blisters that eventually turn into scabs. The rash initially appears on the face, chest and back (exanthem) which then spread to the rest of the body including mucous membranes (enanthem). It usually takes about one week for all the blisters to become scabs.

Other typical symptoms that may begin to appear 1-2 days before rash include high fever, tiredness, loss of appetite and headache.

Transmission

Chickenpox is a very contagious disease where the virus spreads easily from an infected person to a non-immune individual (who has never had the disease or vaccination) via respiratory droplets. The virus can even spread by touching or breathing in the virus particles that come from chickenpox blisters. Once the person develops scabs, he is no longer contagious.

Herpes zoster or the shingles cannot be passed from one person to another. However, the VZV can spread from a person with active shingles to another non-immune person through direct contact with fluid from the blisters caused by shingles. In such cases, the exposed person might develop chickenpox. Shingles are less contagious than chickenpox and the risk of a person with shingles spreading the virus is further reduced if the rash is covered.

A person with chickenpox can spread the disease from 1 to 2 days before they get the rash until all their chickenpox blisters have formed scabs. Incubation period is from 10 to 21 days after exposure to a person with chickenpox or shingles for someone to develop chickenpox.

For most people, getting chickenpox once provides immunity for life. However, for a few people, they can get chickenpox more than once, although this is not common.

Complications of the Disease

People who are at high risk for developing severe symptoms complications include individuals at extremes of age such as infants and elderly, pregnant women and people with weakened immune systems because of illness or medications. However, complications from chickenpox are rare.

Virally mediated :

- Neurological - infection or inflammation of the brain (encephalitis, cerebellar ataxia)
- Pulmonary
- Haemorrhagic
- Congenital Infections

Bacterially mediated :

- Pneumonia
- Sepsis
- Skin and Soft tissue Infection

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However, most severe complications and deaths occur in healthy persons. Deaths can occur from pneumonia, encephalitis, secondary infections and sepsis and haemorrhagic complications.

Other serious and rare complications include post-herpetic neuralgia, zoster multiplex, corneal epithelial keratitis (herpes ophthalmicus), zoster sine herpete (severe pain without skin eruptions) and rarely an inflammation of arteries in the brain leading to stroke or myelitis. In Ramsay Hunt syndrome (herpes zoster oticus), VZV affects the geniculate ganglion giving lesions that follow specific branches of the facial nerve. Symptoms may include painful blisters on the tongue and ear along with one sided facial weakness and hearing loss.

Prevention & Treatment

Prevention: The best way to prevent chickenpox is the vaccination. Children, adolescents and non-immune adults should have two doses of chickenpox vaccine.

Chickenpox vaccine is very safe and effective at preventing the disease. Most people who get the vaccine will not get chickenpox. If a vaccinated person does get chickenpox, it is usually a mild disease with fewer blisters and low grade or no fever. The chickenpox vaccine prevents almost all cases of severe disease.

Treatment: Patients with chickenpox are treated with antiviral drugs or with Varicella zoster specific immunoglobulins depending on the patient factors. Acyclovir is an antiviral medication which is licensed for treatment of chickenpox and other antiviral medications such as valacyclovir and famciclovir have shown to be effective against chickenpox. Symptomatic treatment with anti-pyretics such as paracetamol (acetaminophen) and proper hydration is important. Calamine lotion might help to relieve itching and keeping fingernails trimmed short may help to prevent secondary skin infections.

Epidemiology and Disease pattern

In temperate climates chickenpox exhibits a strong seasonality with peak incidence in late spring. In tropical countries, it shows a seasonal distribution with peak incidence in the coolest, driest months.

Factors affecting risk of exposure include area of residence (urban or rural), childcare, school attendance etc. Because it is highly contagious, in most populations, essentially all persons acquire chickenpox during their lifetime, most commonly during childhood. In temperate climates, most cases of chickenpox occur before 10 years and the great majority of adults are seropositive whereas a larger proportion of adults in tropical countries are seronegative.

Disease Burden

Disease burden depends on age-specific severe morbidity and mortality and risk factors for severe disease in the population. It causes higher morbidity and mortality in immunocompromised populations.

Information on burden of varicella is available primarily from industrialized countries and it is likely that the burden in low and middle income countries is higher than in industrialized countries. In countries where burden is well described, it is much lower than for measles, rotavirus or pneumococcal disease.

Varicella Vaccine

The Varicella Vaccine is a live attenuated vaccine developed in Japan in the 1970's and is licensed for use in the United States since 1995. The vaccine is effective and safe and results in substantial declines in morbidity and mortality in countries that have introduced vaccination

The currently marketed Varicella vaccines are based on the Oka strain of VZV, which has been modified through sequential propagation in different cell cultures. Various formulations of such live, attenuated vaccines have been tested extensively and are approved for use in many countries including Japan, United States and several countries in Europe.

There are two chickenpox vaccines that are licensed in the United States—Varivax® and ProQuad®. Varivax® contains only chickenpox vaccine and the other (ProQuad®) contains a combination of measles, mumps, rubella, and varicella vaccines, which is also called MMRV.

However, in order to induce the same immune response as the monovalent varicella vaccine, the dose of the varicella component had to be increased when included in a tetravalent vaccine with the combined measles, mumps, rubella and varicella (MMRV) vaccine.

Following a single dose of the vaccine, seroconversion is seen in about 95% of healthy children. From a logistic as well as an epidemiological point of view, the optimal age for varicella vaccination is 12–24 months.

Two doses, given four to eight weeks apart are recommended for adolescents and adults, in whom 78% were found to have seroconverted after the first dose, and 99% after the second dose of the vaccine.

Studies have shown that when the vaccine is administered within three days after exposure to VZV, a post-exposure protective efficacy of at least 90% may be expected. Chickenpox in persons who have received the vaccine ("break-through varicella") is substantially less severe than the disease in unvaccinated individuals.

Varicella vaccination has raised concerns that the immunity induced by the vaccine may not be lifelong, possibly leaving adults vulnerable to more severe disease as the immunity from their childhood vaccination wanes. In the United States, childhood vaccination against varicella provides 70%–90% protection against infection, and more than 95% protection against severe disease 7–10 years after immunization.

Vaccine-associated adverse events

In healthy children, the adverse effects of the vaccination are limited to local swelling and redness at the site of injection during the first hours following vaccination (27%), and in a few cases (fewer than 5%) the child experiences a mild chickenpox-like disease with rash within four weeks. Rare occasions of mild zoster following vaccination show that the currently used vaccine strains may induce latency, with the subsequent risk of reactivation.

Compiled by Dr. H. A. Shanika Rasanjalee of the Epidemiology Unit

to be continued

Table 1: Selected notifiable diseases reported by Medical Officers of Health 01st – 07th March 2014 (10th Week)

RDHS Division	Dengue Fever		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Chickenpox		Meningitis		Leishman-iasis		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	144	2110	1	29	0	2	4	21	7	142	1	23	0	0	1	7	0	0	24	103	1	11	0	3	**75**	**25**
Gampaha	46	930	8	39	1	2	2	12	0	7	8	53	1	4	5	23	0	2	14	118	1	18	1	2	**67**	**33**
Kalutara	32	463	1	31	0	2	2	13	0	41	9	72	0	0	1	5	0	0	11	68	2	18	0	0	**69**	**31**
Kandy	4	138	3	29	0	1	0	4	0	0	0	8	0	16	1	21	0	0	8	49	1	9	0	1	**87**	**13**
Matale	2	68	0	19	0	1	0	3	0	0	1	12	0	2	6	27	0	0	2	8	0	3	1	3	**85**	**15**
NuwaraEliya	1	40	3	44	0	1	0	8	0	6	0	0	2	18	1	8	0	0	4	23	0	4	0	0	**85**	**15**
Galle	3	155	0	19	0	3	0	0	0	3	0	31	0	12	0	0	0	0	3	54	0	10	0	1	**15**	**85**
Hambantota	3	77	0	11	0	3	0	6	0	0	1	27	2	28	0	4	0	0	5	50	0	13	8	64	**83**	**17**
0Matara	6	87	2	18	0	1	1	17	0	5	4	15	2	18	1	7	0	0	7	52	0	17	3	19	**100**	**0**
Jaffna	4	244	1	97	0	1	2	62	0	25	0	4	2	193	0	5	0	0	0	34	0	9	0	0	**8**	**92**
Kilinochchi	1	19	0	46	0	0	0	8	0	0	0	0	0	11	0	0	0	0	0	2	0	3	0	4	**75**	**25**
Mannar	0	3	0	10	0	7	1	19	0	0	0	3	1	14	0	1	0	0	0	1	0	1	0	1	**80**	**20**
Vavuniya	2	20	1	14	0	0	0	2	1	3	0	3	0	3	0	0	0	0	0	4	0	2	0	0	**75**	**25**
Mullaitivu	0	32	2	12	0	0	1	6	0	7	1	6	0	3	0	0	0	0	0	2	0	2	0	4	**40**	**60**
Batticaloa	22	130	6	72	0	1	0	14	0	11	0	3	0	1	0	4	0	0	2	11	0	1	0	0	**86**	**14**
Ampara	1	38	0	17	0	0	0	0	0	4	1	7	0	4	0	1	0	1	3	22	0	1	0	2	**57**	**43**
Trincomalee	24	114	2	8	0	1	0	0	0	0	0	4	3	5	0	0	0	0	4	13	0	1	0	0	**83**	**17**
Kurunegala	20	274	0	17	0	9	2	7	1	2	4	28	3	27	0	6	0	0	17	102	2	18	3	35	**78**	**22**
Puttalam	5	140	0	8	0	0	0	2	0	9	3	37	0	15	0	1	0	0	2	29	0	1	0	1	**62**	**38**
Anuradhapura	8	120	4	31	0	0	0	0	0	2	4	27	3	20	0	1	0	0	6	64	3	17	4	77	**95**	**5**
Polonnaruwa	0	60	0	10	0	1	0	0	0	0	0	8	0	0	0	1	0	0	0	17	0	1	0	15	**0**	**100**
Badulla	16	115	3	24	1	2	0	1	2	2	1	12	3	15	0	11	0	0	1	24	2	18	0	0	**88**	**12**
Monaragala	4	50	0	19	0	0	1	1	0	27	3	27	7	30	1	28	0	0	2	20	0	5	0	2	**82**	**18**
Ratnapura	11	144	3	44	1	7	0	3	1	5	9	67	2	25	12	88	0	0	5	40	2	7	0	8	**78**	**22**
Kegalle	9	150	2	31	0	2	0	9	0	1	3	33	0	15	0	20	0	0	8	67	1	16	0	1	**73**	**27**
Kalmune	1	25	4	34	0	0	0	3	0	8	0	1	0	0	0	0	0	0	4	34	0	1	0	0	**62**	**38**
SRILANKA	**369**	**5746**	**46**	**733**	**3**	**47**	**16**	**221**	**12**	**310**	**53**	**511**	**31**	**479**	**29**	**269**	**0**	**3**	**132**	**1011**	**15**	**207**	**20**	**243**	**71**	**29**

Source: Weekly Returns of Communicable Diseases (WRCD).

*T=Timeliness refers to returns received on or before 07th March , 2014 Total number of reporting units 337 Number of reporting units data provided for the current week: 243 C**-Completeness

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

Table 2: Vaccine-Preventable Diseases & AFP

01st – 07th March 2014 (10th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2014	Number of cases during same week in 2013	Total number of cases to date in 2014	Total number of cases to date in 2013	Difference between the number of cases to date in 2013& 2014
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	01	00	00	00	00	00	00	00	00	01	00	17	10	+70%
Diphtheria	00	00	00	00	00	00	00	00	00	00	-	00	-	%
Mumps	03	01	01	00	01	01	00	00	2	09	13	162	287	-43.6%
Measles	31	03	23	00	03	14	06	01	02	83	12	920	69	+1233.3%
Rubella	00	00	00	00	00	00	00	00	00	00	-	01	-	%
CRS**	00	00	00	00	01	00	00	00	00	01	-	01	-	%
Tetanus	01	00	00	00	00	00	00	00	00	01	02	03	06	-50%
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	-	00	-	%
Japanese Encephalitis	00	00	00	00	00	00	00	00	00	00	-	16	-	%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	06	10	17	-41.2%
Tuberculosis	30	15	12	00	07	25	10	11	24	134	153	2186	1754	+24.6%

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

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**

ON STATE SERVICE

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