Influenza Updates

The newsletter of the WHO Collaborating Centre for Reference and Research on Influenza in Melbourne

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Preparation for the Southern Hemisphere influenza season

As winter and the influenza season approach in many countries in the southern hemisphere, we expect that the number of samples submitted to the Centre will increase leading up to the next WHO Consultation on the Composition of Influenza Vaccines for the Southern Hemisphere in September 2017.

Please send us your samples as soon as possible after collection, as they are most useful when they have been collected recently—we accept both viral isolates and/or original clinical specimens. We need to receive samples by the end of August in order to process them in time for the Consultation. See below for information about the WHO Shipping Fund to assist with shipping of samples.

Timing for sending samples to a WHO Collaborating Centre

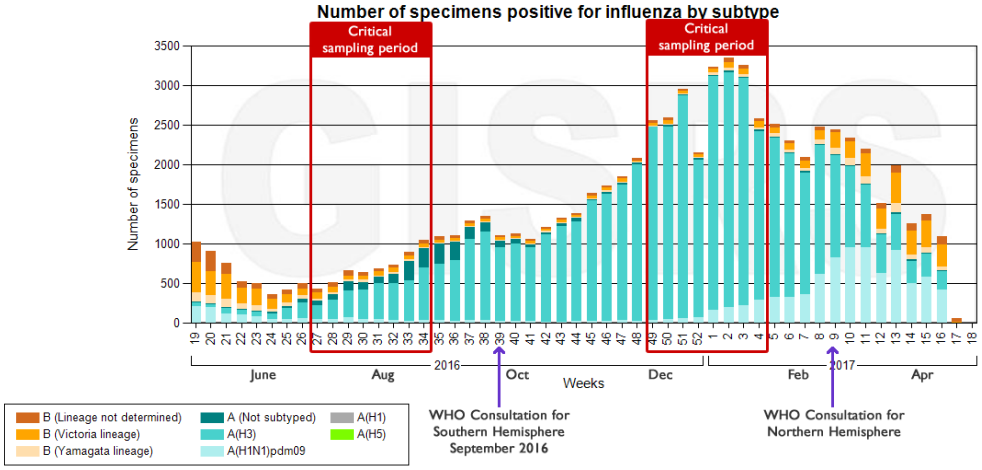


Figure adapted from FluNet: http://www.who.int/influenza/gisrs_laboratory/flunet/en/; circulation of influenza viruses, Western Pacific Region of WHO

WHO Shipping Fund Project reminder

The WHO Shipping Fund Project (SFP) is available to assist National Influenza Centres in covering the cost of shipping samples to WHO Collaborating Centres up to four times per year. The recommended timing of the four shipments is: 1) December to mid-January; 2) July to mid-August, to support the WHO vaccine composition recommendation; 3) and 4) early or late in the influenza season, or after unusual events, at your own discretion.

If you have any questions about shipping samples or would like information about accessing the WHO Shipping Fund, please contact us at *whoflu@influenzacentre.org*.

WHO Collaborating Centre for Reference and Research on Influenza
VIDRL

Doherty Institute
A joint venture between the University of Melbourne and the Royal Melbourne Hospital

HI typing assay: Reagents for typing influenza isolates

The Centre provides a kit of influenza reagents so that National Influenza Centres and other laboratories may conduct their own preliminary identification tests on samples. The kits contain reagents which are appropriate for the identification of isolates obtained from recently circulating viruses of influenza types A(H1N1)pdm09, A(H3N2) and B viruses (both lineages) using the haemagglutination inhibition (HI) assay.

Kits containing reagents for 2017 are currently available from the Centre. More information can be found on our website:
http://www.influenzacentre.org/flucentres_HIassay.htm

If you are a laboratory performing influenza diagnosis and wish to receive the HI typing kit please email us at whoflu@influenzacentre.org. There is no charge for the kit although there may be some charge for transportation.

National Influenza Centres meeting in Kuala Lumpur

Six staff members from the Centre attended the 11th Bio-Regional Meeting of National Influenza Centres in the South-East Asia and Western Pacific Regions, held in Kuala Lumpur, Malaysia on April 25 –27. Topics discussed included recent influenza activity in global and regional contexts; laboratory quality systems for the detection and characterization of influenza; risk assessments of novel influenza viruses, hospital-based surveillance to inform vaccine and control policies; formulation and implementation of national policies for influenza vaccines; public health research and development; and future priorities related to influenza surveillance, vaccination and epidemiology. We were pleased to catch up with many of you there and thank WPRO for organising the meeting.

Image courtesy of WPRO

Australian Influenza Symposium

The 12th Australian Influenza Symposium will be held at the Peter Doherty Institute for Infection and Immunity in Melbourne on Wednesday 1st November and Thursday 2nd November. After a hiatus in 2016 we are looking forward to once again hosting delegates drawn from the global influenza surveillance and research communities at the Symposium. Please contact us at *symposium@influenzacentre.org* if you would like to stay informed about the Australian Influenza Symposium.

Recent activity at the Centre (1 January — 30 April 2017)

Below is a summary of surveillance activities at the Centre from 1 January to 30 April. We anticipate that the next few months will be an increasingly busy time for the Centre as the Southern Hemisphere influenza season commences.

Samples received

The Centre received 967 influenza samples from the laboratories and institutions listed below during the period 1 January—30 April, 2017.

AUSTRALIA: Royal Darwin Hospital, John Hunter Hospital; Douglass Hanly Moir Pathology, Prince of Wales Hospital, Westmead Hospital, Queensland Health Forensic and Scientific Services, SA Pathology, Hobart Pathology, Alfred Hospital, VIDRL, Pathwest QEII Medical Centre

CAMBODIA: Institut Pasteur du Cambodge

NEW ZEALAND: Canterbury Health Services

PHILIPPINES: Research Institute for Tropical Medicine

SINGAPORE: National Public Health Laboratory

SRI LANKA: Medical Research Institute

THAILAND: Thai National Influenza Center

	Antigenic analysis: A total of 357 influenza isolates were analysed by HI assay.				**Neuraminidase inhibitor susceptibility:** A total of 716 influenza isolates were tested by neuraminidase inhibition (NAI) assay for susceptibility to oseltamivir, zanamivir, peramivir and laninamivr.					**Genetic analysis:** Sequencing was performed on 44 HA, 44 NA, 23 MP and 19 NS genes from 44 viruses by Sanger sequencing. No viruses were sequenced using Next Generation Sequencing (NGS) techniques during this period.			
Country of submitting laboratory	**No. of viruses analysed by HI assay***				**No. of viruses tested by NAI assay***					**No. of viruses with individual genes (HA/NA/MP/NS) analysed by Sanger sequencing**			
	A(H1N1)pdm09	A(H3N2)	B/Victoria	B/Yamagata	A(H1N1)pdm09	A(H3N2)	B/Victoria	B/Yamagata	Miexd type	A(H1N1)pdm09	A(H3N2)	B/Vic	B/Yam
Australia	7	97	7	64	19	302	10	68			3	1	5
Cambodia	15		17	1	15	17	17	1		4	2	5	1
Fiji	4	2	1	2	4	37	1	2					
New Zealand		10		3	12	12		11					
Papua New Guinea	29			22	29			23		7			3
Philippines		1	2	2		3	2	2			2	2	1
Singapore	12	7	11	11	12	44	11	11					
Sri Lanka	2	4	2	1	2	15	2	1	1	1	5	1	1
Thailand	8	8	4	1	8	16	5	1					
Total	**77**	**129**	**44**	**107**	**101**	**446**	**48**	**120**	**1**	**12**	**12**	**9**	**11**

* *Subtypes and lineages are based on analysis of HA and in some cases confirmed by genetic analysis of NA.*

Isolation of viruses in eggs

The Centre undertakes primary isolation of selected viruses in eggs to obtain potential vaccine strains. From 1 January to 30 April 2017, 12 A(H3N2) viruses were successfully isolated in eggs at the Centre.

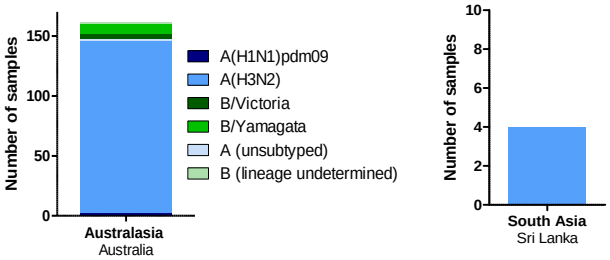
Surveillance update: Virus activity 1 January—30 April 2016

The data below are results for viruses collected between 1 January and 28 April 2017 that have been analysed at the Centre as of 10 May 2017.

Virus types/subtypes†

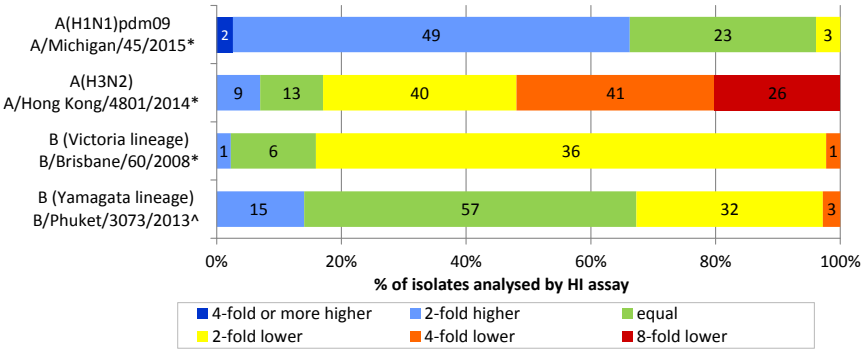
The type and subtype/lineage of 165 viruses have been determined. The predominant type/subtype amongst viruses analysed to date was A(H3N2) (89.7%).

† *Subtypes and lineages are based on analysis of the HA and in some cases confirmed by genetic analysis of NA.*



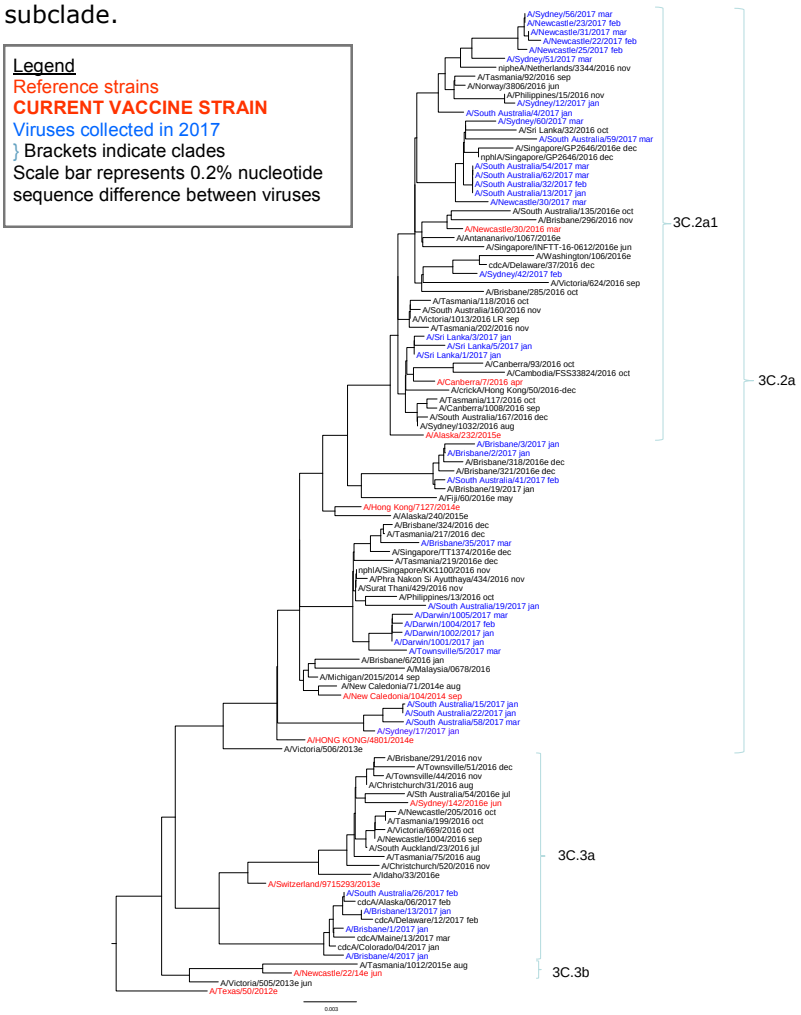
Antigenic analysis

Haemagglutination inhibition (HI) assays indicate that with the exception of a small number of A(H3N2) viruses, all isolates were antigenically similar to the 2017 Southern Hemisphere and 2017-2018 Northern Hemisphere vaccine strains.



Genetic analysis: focus on A(H3N2)

Sequencing and phylogenetic analysis of haemagglutinin (HA) genes show increased diversification of viruses circulating during January–April 2017, with decreasing dominance of the 3C.2a1 subclade.



Neuraminidase inhibitor susceptibility

Viral isolates are routinely tested for their susceptibility to the antiviral drugs oseltamivir (Tamiflu), zanamivir (Relenza), peramivir and laninamivir using the neuraminidase inhibition (NAI) assay. Of 258 viruses tested, none showed highly reduced inhibition to any of the neuraminidase inhibitors.

Type/subtype	No. viruses tested
A(H1N1)pdm09	19
A(H3N2)	213
B/Victoria	6
B/Yamagata	20

Viruses with reduced inhibition by antiviral drugs in the NAI assay undergo genetic analysis of the neuraminidase gene to detect mutations associated with the functional change. The relationship between reduced inhibition and the clinical effectiveness of a neuraminidase inhibitor is not well understood. Further studies would be required to determine whether a virus with reduced inhibition in the NAI assay is clinically resistant.

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