

Influenza Updates

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

Volume 4, Issue 2, September 2015

Thank you for your influenza samples

Thank you to all of the laboratories who have sent us influenza samples in recent weeks. We are extremely grateful to have these samples in time for the WHO Consultation on the Composition of Influenza Vaccines for the Southern Hemisphere 2016 which will be held in Memphis TN, USA later this month (September).

National Influenza Centres meeting in Phnom Penh

Six staff members from the Centre recently attended the 9th Meeting of National Influenza Centres and Influenza Surveillance in the Western Pacific and South-East Asia Regions, held in Phnom Penh, Cambodia (*pictured at right, above*). Topics discussed included global and regional updates on circulating influenza strains, strengthening national influenza surveillance systems, implementation of the PIP Framework, and processes for influenza vaccine selection and application. Delegates also visited the Cambodian National Influenza Centre at Institut Pasteur du Cambodge (*pictured at right, below*), and the Cambodia National Public Health Laboratory. We were pleased to catch up with many of you there and express our thanks to WPRO for organising an excellent meeting.

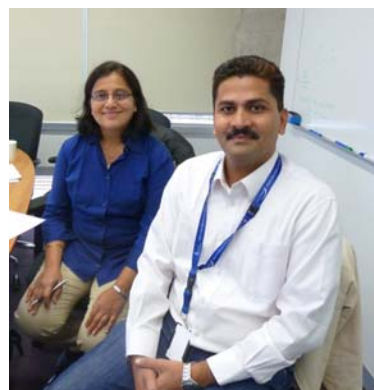


(Photos courtesy of WPRO)

Visitors to the Centre



Ms Debbie Kisa (left) and Dr Amanda Lang (right), from Institute of Medical Research, Goroka, Papua New Guinea, visited the Centre 15-24 June 2015. They undertook training in molecular detection of influenza viruses, cell culture, virus isolation and antiviral resistance testing.



Ms Sadhana Kode (left) and Dr Shailesh Pawar (right), from the National Institute of Virology, Pune, India, undertook training in antiviral resistance testing at the Centre, 13-24 July 2015.



Australian Influenza Symposium

Registrations for the 11th Australian Influenza Symposium are now closed as we have reached full capacity. The Symposium will be held on Monday 12 October and Tuesday 13 October 2015 at Deakin University Geelong Waterfront Campus, Geelong, Victoria. This year's symposium will have a major theme of avian-animal influenza viruses and zoonotic infections, but will also include talks on recent developments in human influenza, vaccines, treatments and research in the Asia-Pacific region.

International speakers at the 2015 Symposium include:

David Salisbury, Ex-Department of Health, London, United Kingdom
Eduardo Azziz-Baumgartner, Centers for Disease Control and Prevention, Atlanta, GA, USA
Erica Spackman, U.S. National Poultry Research Center, Athens, GA, USA
Philippe Buchy, GlaxoSmithKline, Singapore
Filip Claes, Food and Agriculture Organization of the United Nations (FAO), Regional Office for Asia and the Pacific, Bangkok, Thailand
Vijay Dhanasekaran, Duke-NUS Graduate Medical School, Singapore
Sue Huang, Institute of Environmental Science and Research, Wellington, New Zealand

More information about the Symposium can be found at http://www.influenzacentre.org/news_symposium.org. Please contact us by email at symposium@influenzacentre.org if you would like to be placed on a waiting list or have any questions about the 2015 Symposium.

Recent activity at the Centre (1 May – 31 July 2015)

Following is a summary of samples processed at the Centre from 1 May to 31 July. The number of samples received increased dramatically towards the end of this period as the Southern Hemisphere influenza season reaches its peak, and we are currently very busy analysing these samples.

Samples received

The Centre received 1675 influenza samples from the laboratories and institutions listed below during the period 1 January—31 July, 2015.

AUSTRALIA: Canberra Hospital, John Hunter Hospital, Westmead Hospital, Royal Darwin Hospital, Queensland Health Forensic and Scientific Services, SA Pathology, Royal Hobart Hospital, Melbourne Pathology, Austin Health, Monash Medical Centre, Alfred Hospital, Royal Children's Hospital (Molecular Microbiology Department (Bio21)), Royal Children's Hospital, Royal Melbourne Hospital, VIDRL, PathWest QEII Medical Centre

CAMBODIA: Institut Pasteur du Cambodge

MALAYSIA: Institute for Medical Research

NEW ZEALAND: Institute of Environmental Science and Research, Canterbury Health Services

NEW CALEDONIA: Institut Pasteur

PHILIPPINES: Research Institute for Tropical Medicine

SINGAPORE: National Public Health Laboratory

THAILAND: Thai National Influenza Center

Country of submitting laboratory	Genetic analysis: Sanger sequencing was performed on 116 HA, 114 NA, 45 MP and 58 NS genes from 265 viruses. The HA, NA and MP genes of 103 viruses were also analysed by next generation sequencing (NGS) techniques.				No. of viruses analysed by NGS techniques			
	No. of viruses analysed by Sanger sequencing							
	A(H1N1)pdm9	A(H3N2)	B/Vic	B/Yam	A(H1N1)pdm9	A(H3N2)	B/Vic	B/Yam
Australia	25	88	42	49	4	85	1	4
Fiji		9				2		
Malaysia	5	3		2				
New Caledonia			4	4		2		
New Zealand		8	2	6				
Singapore	2	2	2	2			1	
Thailand	6		2	2		4		
Total	38	110	52	65	4	93	2	4



Recent activity at the Centre (1 May – 31 July 2015) (continued)

Country of submitting laboratory	Antigenic analysis: A total of 489 influenza isolates were analysed by HI assay.				Neuraminidase inhibitor susceptibility: A total of 613 influenza isolates were tested by neuraminidase inhibition (NAI) assay for susceptibility to oseltamivir, zanamivir, peramivir and laninamivir.				
	No. of viruses analysed by HI assay*				No. of viruses tested by NAI assay*				
	A(H1N1) pdm9	A(H3N2)	B/Vic	B/Yam	A(H1N1) pdm9	A(H3N2)	B/Vic	B/Yam	Mixed
Australia	44	70	63	192	37	192	57	182	1
Fiji		4				4			
Macau SAR		1		7		7		4	
Malaysia	16	8		13	16	15		13	
New Caledonia	1		11	22	1	2	11	22	
New Zealand	2	9	2	11	2	19	2	11	
Thailand	5	2	3	3	5	4	3	3	
Total	68	94	79	248	61	243	73	235	1

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

Isolation of viruses in eggs

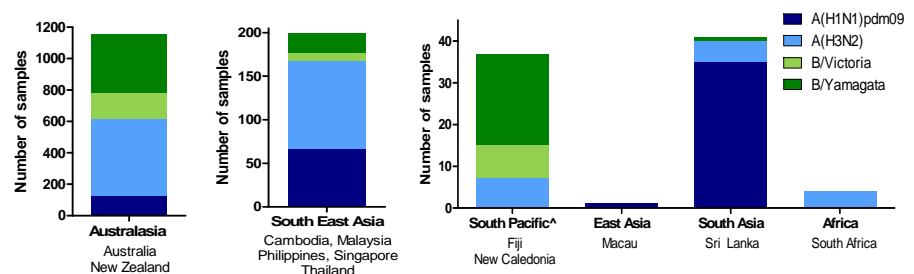
The Centre undertakes primary isolation of selected viruses in eggs to obtain potential vaccine strains. From 1 May to 31 July 2015, 2 A(H1N1)pdm9, 5 A(H3N2), 3 B/Victoria and 1 B/Yamagata viruses have been successfully isolated in eggs at the Centre.

The year to date: surveillance results 1 January–31 July 2015

The results reported below are for viruses collected between 1 January and 31 July 2015 that have been analysed at the Centre as of 25 August 2015.

Virus types/subtypes[†]

The type and subtype/lineage of 1439 viruses have been determined. Amongst viruses analysed to date, the highest proportion were A(H3N2) (42.5%).

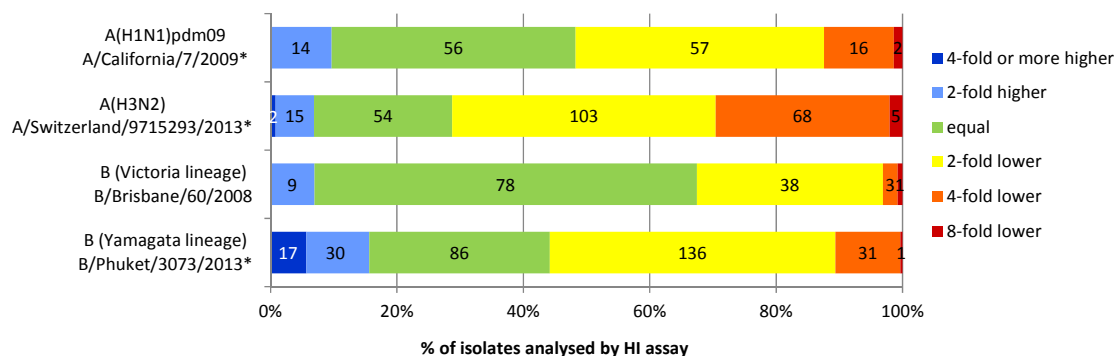


[†] Subtypes and lineages are based on analysis of the HA and in some cases confirmed by genetic analysis of NA.

[^] The Pacific region comprises countries in Polynesia, Melanesia and Micronesia.

Antigenic analysis

Haemagglutination inhibition (HI) assays indicate that almost all A(H1N1)pdm9, A(H3N2), B/Victoria and B/Yamagata isolates were antigenically similar to the viruses recommended for the 2015 Southern Hemisphere vaccine.



* indicates strains included in the 2015 Southern Hemisphere WHO vaccine recommendation.

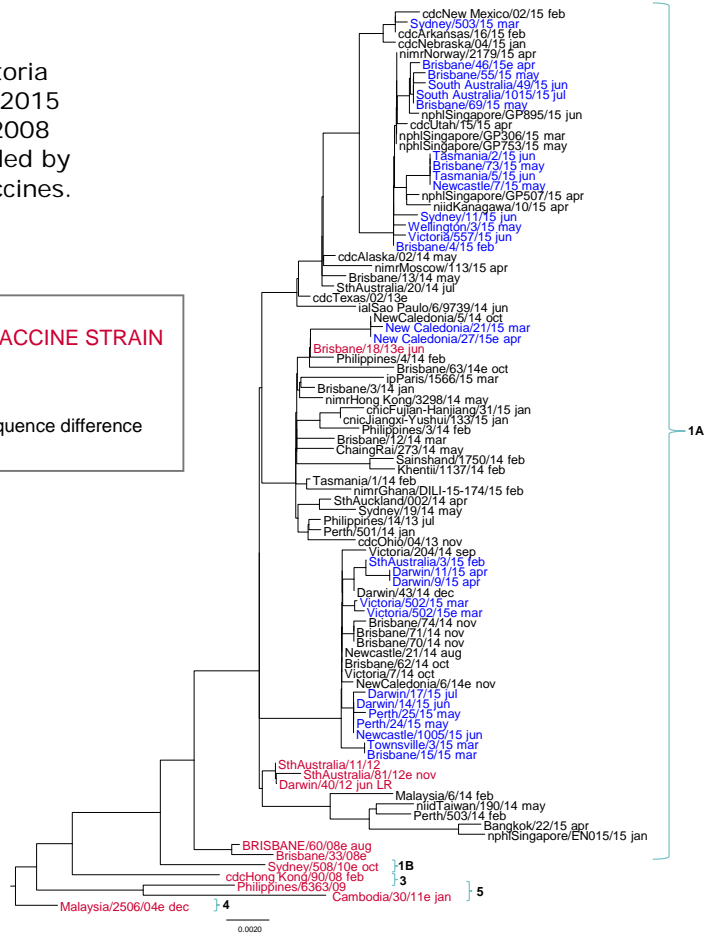


The year to date: surveillance results 1 January—31 July 2015 (continued)

Genetic analysis: focus on B/Victoria

Sequencing and phylogenetic analysis of haemagglutinin (HA) genes indicate that B/Victoria lineage viruses circulating during January–July 2015 were genetically similar to the B/Brisbane/60/2008 reference strain, which is currently recommended by WHO for inclusion in quadrivalent influenza vaccines.

Legend
 2015 SOUTHERN HEMISPHERE VACCINE STRAIN
 Reference Strains
 Viruses collected in 2015
 } Brackets indicate clades
 Scale bar represents 0.2% nucleotide sequence difference between viruses



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 1047 viruses tested, only one virus—from Brisbane—showed highly reduced inhibition to peramivir.

Viruses that demonstrate reduced inhibition by antiviral drugs in the NAI assay undergo genetic analysis of the neuraminidase gene to detect known or novel 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.

Type/subtype	A(H1N1)pdm9	A(H3N2)	B/Victoria	B/Yamagata	Mixed
No. viruses tested	140	453	139	314	1
Number of viruses with highly reduced inhibition					
Oseltamivir	0	0	0	0	0
Peramivir	0	0	0	1 (0.1%)	0
Zanamivir	0	0	0	0	0
Laninamivir	0	0	0	0	0