

# Influenza Updates

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

Volume 2, Issue 3, August 2013

## News and Events

### Receipt of influenza samples

The WHO Consultation on the Composition of Influenza Vaccines for the Southern Hemisphere 2014 will be held in Geneva in the last week of September. Thank you to all of the laboratories who have sent us influenza samples in recent weeks, as you will read in the following pages, we have been busy processing these samples. If you still have samples to send, please send them immediately. Analysis of viruses may take a few weeks and samples are most useful to WHO if they can be analysed before the Consultation.

If possible we prefer to receive viral isolates. However, we will also accept original clinical specimens in a timely manner prior to the Consultation. Please contact us at [whoflu@influenzacentre.org](mailto:whoflu@influenzacentre.org) if you have any questions about shipping samples.

### Australian Influenza Symposium

The 9th Australian Influenza Symposium will be held on 3–4 October 2013 at The University of Sydney. We are pleased to confirm an exciting and diverse line-up of international speakers, including:

**Dr Peter Horby**, Oxford University Clinical Research Unit, Hanoi & Singapore

**Dr Richard Pebody**, Public Health England, Colindale, London, UK

**Dr Colin Russell**, Cambridge University, UK

**Dr Fan Wu**, Shanghai Municipal Center for Disease Control and Prevention, PR China

**Dr Jean-Francois Rossignol**, Romark Laboratories, USA

**Dr John Tamerius**, Quidel Corporation, USA

Registrations for the 2013 Symposium are now closed. We look forward to a vibrant meeting with record attendance.

Please contact us by email at [whoflu@influenzacentre.org](mailto:whoflu@influenzacentre.org) if you have any questions about the 2013 Symposium.

### Recent training activities

Centre staff members have been pleased to be involved in the following training activities during recent months:

- Dr Darmaa Badarch (*pictured right, standing*) and Dr Bayasgalan Namuutsetseg (*picture right, seated*), from the National Influenza Center of Mongolia, spent one week at the Centre, 6–10 May, during which they undertook training in phenotypic NAI susceptibility assays, RT-PCR techniques for H275Y and other drug resistance markers, sequencing techniques and phylogenetic analysis, and methods of quality assurance and quality control.



- Dr Patrick Reading visited the National Institute of Health Research and Development in Jakarta, Indonesia, 20–31 May. He assisted in further development of laboratory programs and procedures in virus isolation and serology, molecular genetic techniques and NAI assays
- Dr Sheena Sullivan participated as a facilitator in the Influenza Data Management and Epidemiological Analysis Workshop, held in Phnom Penh, Cambodia, 27 July–2 August.



## Reagents for analysis of influenza isolates

Each year the Centre provides a kit of influenza reagents for 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 (B/Victoria and B/Yamagata lineages) using the haemagglutination inhibition (HI) assay. The 2013 kits are currently available from the Centre. There is no charge for the kit although there may be some charge for transportation.

The Centre also continues to offer assistance in the detection of avian influenza A(H7N9). We can provide avian influenza A(H7N9) RNA and relevant primer sequences on request. Influenza samples that are unsubtypeable in your own laboratory but with a strong suspicion of being avian influenza A(H7N9) viruses can be sent to the Centre for confirmation.

Please contact us at [whoflu@influenzacentre.org](mailto:whoflu@influenzacentre.org) if you wish to receive the 2013 HI typing kit or if you have any questions about avian influenza A(H7N9).

## Upcoming meetings and conferences

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Look out for staff from our Centre who will be attending and presenting posters and talks at the following meetings. Please contact us if you would like to meet us there.

### International Congress of Immunology

22—27 August 2013; Milan, Italy

<http://www.ici2013.org/home/>

Large immunology meeting covering a broad range of topics, with emphasis on human immunology, translational and clinical immunology, and immune intervention.

### Options for the Control of Influenza VIII

5—9 September 2013; Cape Town, South Africa

<http://optionsviii.controlinfluenza.com>

The largest international conference focused solely on influenza, held every 3 years and attended by approximately 800 people. Presentations will encompass recent advances in the basic science and control and prevention of influenza in a broad range of topics, including virology, veterinary medicine, human medicine, public health policy, industry and journalism. Several staff members from the Centre will be attending and presenting at this conference.

**CONSISE**, the Consortium for the Standardization of Influenza Seroepidemiology, will also hold its 4th international meeting immediately preceding Options, 3—4 September 2013.

### WHO Consultation and Information Meeting on the Composition of Influenza Virus Vaccines for the Southern Hemisphere 2014

23—26 September 2013; Geneva, Switzerland

The Director and Deputy Director of the Centre will attend the Consultation.

### 7th Meeting of National Influenza Centres and Influenza Surveillance in the Western Pacific and South-East Asia Regions

12—15 November 2013; Beijing, China

Several staff members from the Centre will participate in this meeting, which is organised by the WHO Regional Office for the Western Pacific (WPRO). We look forward to the opportunity to meet with representatives from National Influenza Centres in the Asia-Pacific region and discuss current surveillance issues.

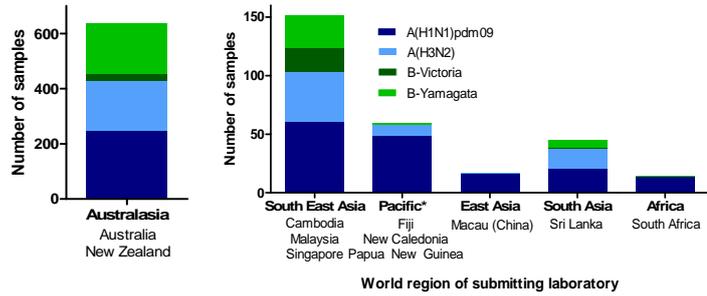


# Surveillance Update: Virus activity 1 January—31 July 2013

The data below are results for viruses collected between 1 January and 31 July 2013 that have been analysed at the Centre as of 20 August 2013.

## Virus types/subtypes<sup>†</sup>

The type and subtype/lineage of 924 viruses have been determined. The predominant type/subtype amongst viruses analysed to date is A(H1N1) pdm09 (43.7%), followed by A(H3N2) (27.2%) and B/Yamagata lineage viruses (24.2%).

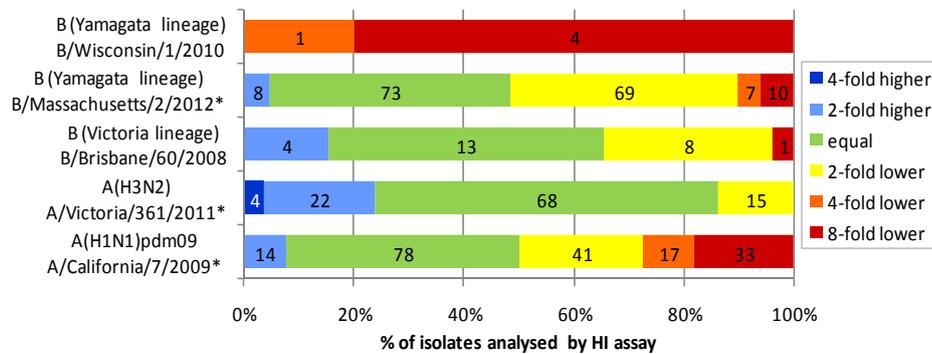


<sup>†</sup> Subtypes and lineages are based on analysis of the HA and in some cases confirmed by genetic analysis of NA.

\* The Pacific region comprises countries in Polynesia, Melanesia and Micronesia.

## Antigenic analysis

Haemagglutination inhibition (HI) assays indicate that most isolates are antigenically similar to current vaccine strains<sup>‡</sup>, with a minority of low reactors (8-fold lower HI titres compared to reference strains). Detection of low reactors with specific antisera may be due to several different factors, so further analyses are performed to determine whether antigenic drift has occurred.

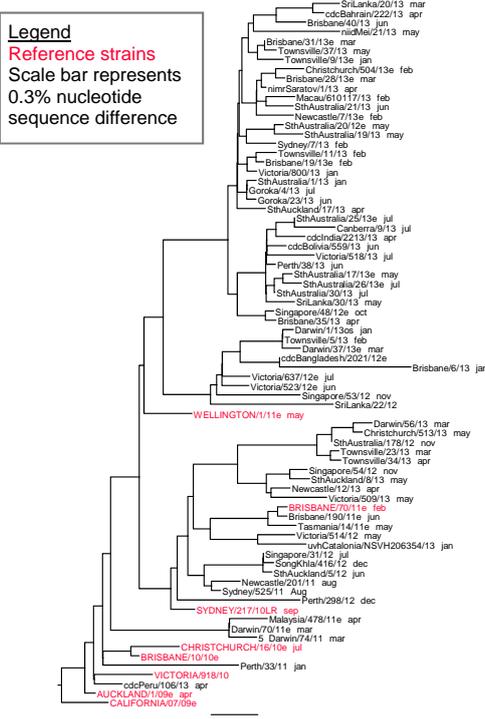


\* indicates strains included in the most recent WHO vaccine recommendation (2013-2014 Northern Hemisphere)

<sup>‡</sup> A small number of viruses have been analysed in comparison to the previous vaccine strain B/Wisconsin/1/2010. Following the WHO recommendations in February 2013, B/Yamagata viruses are now analysed in comparison to the vaccine strain B/Massachusetts/2/2012.

## Genetic analysis: focus on A(H1N1)pdm09

Sequencing and phylogenetic analysis of haemagglutinin (HA) genes indicate that the majority of A(H1N1)pdm09 viruses circulating during January-July 2013 are genetically similar to A/California/7/2009.



## Neuraminidase inhibitor susceptibility

Viral isolates are now routinely tested for their susceptibility to the antiviral drugs oseltamivir (Tamiflu), zanamivir (Relenza), peramivir and laninamivir using the neuraminidase inhibition (NAI) assay. Selected viruses that do not yield an isolate when cultured are analysed by pyrosequencing to detect the histidine to tyrosine mutation at position 275 (H275Y) in the N1 neuraminidase that confers resistance to oseltamivir.

Of 651 viruses tested, one virus from Brisbane and one virus from Perth had highly reduced sensitivity to oseltamivir and peramivir. Additionally, two influenza B viruses from Malaysia had highly reduced sensitivity to peramivir. All tested viruses were sensitive to zanamivir and laninamivir (data not shown).

Viruses tested for susceptibility to neuraminidase inhibitors			
Type/subtype	No. viruses tested	No. viruses with highly reduced sensitivity to oseltamivir	No. viruses with highly reduced sensitivity to peramivir
A(H1N1) pdm09	251	2 (0.8%)	2 (0.8%)
A(H3N2)	154	0	0
B	246	0	2 (0.8%)



## Recent activity at the Centre (1 May–31 July 2013)

As usual, the onset of winter in the southern hemisphere brings about a busy period the Centre. Below is a summary of surveillance activities at the Centre from 1 May to 31 July.

### Samples received

The Centre received 804 influenza samples from the laboratories listed below.

#### Submitting laboratories 1 May to 31 July, 2013

Auckland Hospital (Auckland, New Zealand)  
 Austin Health (Melbourne, Australia)  
 Canberra Hospital (Canberra, Australia)  
 Canterbury Health Services (Christchurch, New Zealand)  
 Dorevitch Pathology (Melbourne, Australia)  
 Fiji Centre for Communicable Disease Control (Suva, Fiji)  
 Gippsland Pathology (Traralgon, Australia)  
 IMVS Pathology (Adelaide, Australia)  
 Institute of Environmental Science and Research (Wellington, New Zealand)  
 Institute for Medical Research (Kuala Lumpur, Malaysia)  
 Institute of Medical Research (Goroka, Papua New Guinea)  
 John Hunter Hospital (Newcastle, Australia)  
 Medical Research Institute (Colombo, Sri Lanka)  
 Monash Medical Centre (Melbourne, Australia)  
 Queensland Health Forensic and Scientific Services (Brisbane, Australia)  
 Pathwest QEII Medical Centre (Perth, Australia)  
 Royal Darwin Hospital (Darwin, Australia)  
 Royal Hobart Hospital (Hobart, Australia)  
 Victorian Infectious Diseases Reference Laboratory (Melbourne, Australia)  
 Westmead Hospital (Sydney, Australia)

### Antigenic analysis

A total of 348 influenza isolates from contributing laboratories were analysed by HI assay (Table 1).

### Genetic analysis

Sequencing was performed on 136 HA, 110 NA, 67 MP and 62 NS genes. A total of 195 gene sequences from 57 human viruses were deposited with the GISAID database (<http://www.gisaid.org>) by the Centre (Table 2).

### Neuraminidase inhibitor susceptibility

A total of 353 influenza isolates were tested by neuraminidase inhibition (NAI) assay for susceptibility to the antiviral drugs oseltamivir, zanamivir, peramivir and laninamivir (Table 3).

Country of submitting laboratory	Table 1: Number of viruses analysed by HI assay*				Table 2: Number of viruses with gene sequences deposited with GISAID				Table 3: Number of viruses tested by NAI assay		
	A(H1N1) pdm09	A (H3N2)	B/ Victoria	B/ Yamagata	A(H1N1) pdm09	A (H3N2)	B/ Victoria	B/ Yamagata	A(H1N1) pdm09	A(H3N2)	B
Australia	82	32	12	94	11	7	9	13	77	40	106
Fiji			1	1							2
Macau SAR	1				2						
Malaysia		1	4	16	1	1		1		3	20
New Zealand	13	28	3	36	1	1		1	15	29	37
Papua New Guinea	13								13		
Philippines							1				
Singapore						1	1				
Sri Lanka	4	3	1	3					4	3	4
Thailand					1	2		3			
<b>Total</b>	<b>113</b>	<b>64</b>	<b>21</b>	<b>150</b>	<b>16</b>	<b>12</b>	<b>11</b>	<b>18</b>	<b>109</b>	<b>75</b>	<b>169</b>

\* 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 into eggs to obtain potential vaccine strains. From 1 May to 31 July, 2013, 7 A(H1N1)pdm09, 3 A(H3N2) and 3 B viruses have been successfully isolated in eggs at the Centre.