# **Influenza Updates**

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

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### **News and Events**

#### We have moved!

The Centre and the rest of VIDRL have recently moved to the newly established Peter Doherty Institute for Infection and Immunity (pictured below), a partnership between Melbourne Health and The University of Melbourne. We are excited to have moved into our new facilities, which provide access to a wider range of resources and new collaborative opportunities with other research, public health and clinical groups.

Please take note of our new address and contact details, and address all shipments to us as listed below. Please contact us at *whoflu@influenzacentre.org* to obtain the appropriate shipping permits for our new location.

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#### Preparation for Southern Hemisphere influenza season

The onset of winter in the Southern Hemisphere marks the start of the influenza season, and we expect that the number of samples submitted to the Centre will increase in the coming months in the lead up to the next WHO Consultation on the Composition of Influenza Vaccines for the Southern Hemisphere in September.

Please send us your samples on a regular basis 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. 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*.

Circulation of Influenza Viruses, Western Pacific Region of WHO



WHO Collaborating Centre for Reference and Research on Influenza

Figure adapted from FluNet: http://www.who.int/influenza/gisrs\_laboratory/flunet/en/



## Upcoming meetings and conferences

Look out for staff from our Centre who will be attending and presenting posters and talks at the following meetings during 2014. Please contact us if you would like to meet us there.

#### Influenza and Other Respiratory Virus Infections: Advances in Clinical Management 4—6 June 2014; Tokyo, Japan

http://www.isirv.org/site/index.php/upcoming-event/11antiviral-group/204-tokyo-conference /

This conference is organised by the International Society for Influenza and Other Respiratory Virus Diseases and will focus on understanding and reducing the impact of respiratory virus infections.

## Society for Epidemiologic Research Annual Meeting

24—27 June 2014; Seattle, USA http://www.epiresearch.org/meeting This meeting will discuss emerging issues in the design and conduct of epidemiological research.

#### Summer Institute for Statistics and Modeling in Infectious Diseases

7-18 July 2014; Seattle, USA

*http://depts.washington.edu/sismid/general.html* The Institute will comprise a series of workshops that demonstrate the application of statistical analysis and mathematical modeling methods to infectious disease research.

#### 8th Meeting of National Influenza Centres and Influenza Surveillance in the Western Pacific and South-East Asia Regions

12—15 August 2014; Jakarta, Indonesia Several staff members from the Centre will participate in this meeting, which will be organised by the WHO Regional Office for South-East Asia (SEARO). We look forward to the opportunity to meet with representatives from National Influenza Centres in the Asia-Pacific region and discuss current surveillance issues.

#### 5th ESWI Influenza Conference

14—17 September; Riga, Latvia http://www.eswiconference.org/core Organised by the European Scientific Working group on Influenza (ESWI), this is the largest European conference focused entirely on influenza.

#### 4th International Influenza Meeting

21—23 September 2014; Münster, Germany http://www.zoonosen.net/Veranstaltungen/ VeranstaltungenderZoonosenplattform/4thInternationalInfluenza Meeting.aspx

General topics at this meeting include: host genetics of infections, influenza and the lung, innate immunity. pathogenesis. vaccines and antivirals, and virus-cell interaction.

### 14th National Immunisation Conference

17—19 June 2014; Melbourne, Australia http://www.phaa.net.au/14thNationalImmunisationConference.php Organised by the Public Health Association of Australia, this conference will provide an overview of the Australia's current immunisation program with the theme of "consolidating gains, identifying gaps".

#### The Australian Society for Microbiology, Annual Scientific Meeting

6—9 July 2014; Melbourne, Australia *http://asmmeeting.theasm.org.au* 

This is largest microbiology conference held in Australia each year, and is attended by approximately 600 people from both Australia and other countries.

#### Zoonoses 2014

25—26 July 2014; Brisbane, Australia http://www.asid.net.au/meetings/zoonoses-2014 The theme of this conference is "Zoonoses in a Changing World: Two Professions, One Health", and is expected to attract a broad range of professionals from the medical, public health, veterinarian, research and policy fields.

#### **Respiratory Viruses 2014**

8 September 2014; Oxford, UK http://lpmhealthcare.com/respiratory-viruses-2014/ This symposium will focus on serological techniques, sero-surveillance and control strategies for respiratory viruses.

#### Influenza 2014

9—11 September 2014; Oxford, UK http://lpmhealthcare.com/influenza-2014 This meeting will address most aspects of basic and applied research on zoonotic and human influenza viruses.

#### WHO Consultation and Information Meeting on the Composition of Influenza Virus Vaccines for the Southern Hemisphere 2015

22—24 September 2014; Geneva, Switzerland The Director and Deputy Director of the Centre will attend the Consultation.

## Workshop on Epidemiology and Control of Influenza

7—8 November 2014; New Delhi, India *http://apaci.asia/rss/160-new-delhi-india-2014* This workshop will provide an opportunity for those working on influenza in the Asia-Pacific region to meet and discuss issues related to influenza epidemiology and vaccination.



## Surveillance Update: Virus activity 1 January—30 April 2014

The data below are results for viruses collected between 1 January and 30 April 2014 that have been analysed at the Centre as of 13 May 2014.

#### Virus types/subtypes<sup>†</sup>

200

150

100

n

Australasia Australia

New Zealand

of samples

Number 50

The type and subtype/lineage of 187 viruses have been determined. The predominant type/subtype amongst viruses analysed to date is A(H1N1) pdm09 (70.6%).

#### Antigenic analysis

Haemagglutination inhibition (HI) assays indicate that most isolates are antigenically similar to current vaccine 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 (2014-2015 Northern Hemisphere).

^ A/Texas/50/2012, which is included in the most recent WHO vaccine recommendation, is an A/Victoria/361/2011-like virus.

#### Genetic analysis: focus on A(H3N2)

Sequencing and phylogenetic analysis of haemagglutinin (HA) genes indicate that the majority of A(H3N2) viruses circulating during January-April 2014 are genetically similar to A/Texas/50/2012 and A/Victoria/361/2011.



Neuraminidase inhibitor susceptibility Viral isolates are routinely tested for their antiviral susceptibility the to drugs oseltamivir (Tamiflu), zanamivir (Relenza), peramivir and laninamivir usina the neuraminidase inhibition (NAI) assav. 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

All 156 viruses tested were sensitive to all four neuraminidase inhibitors.

resistance to oseltamivir.

Viruses tested for susceptibility to neuraminidase inhibitors								
Type/subtype	No. viruses tested							
A(H1N1)pdm09	113							
A(H3N2)	21							
B/Victoria	4							
B/Yamagata	18							



## Recent activity at the Centre (1 January -30 April 2014)

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 a busy time for the Centre as the Southern Hemisphere influenza season commences.

#### Samples received

The Centre received 619 influenza samples from the laboratories listed below.

Submitting laboratories 1 January to 30 April, 2014 Austin Health (Melbourne, Australia) Canberra Hospital (Canberra, Australia) Canterbury Health Services (Christchurch, New Zealand) IMVS Pathology (Adelaide, Australia) Institut Pasteur du Cambodge (Cambodia) Institute of Environmental Science and Research (Wellington, New Zealand) John Hunter Hospital (Newcastle, Australia) National Public Health Laboratory (Singapore) Queensland Health Forensic and Scientific Services (Brisbane, Australia) Princess Margaret Hospital for Children (Perth, Australia) Public Health Laboratory (Macau SAR) Research Institute for Tropical Medicine (Philippines) Royal Darwin Hospital (Darwin, Australia) Royal Hobart Hospital (Hobart, Australia) Westmead Hospital (Sydney, Australia)

#### Antigenic analysis Genetic analysis

A total of 528 influenza isolates were analysed by HI assay (Table 1).

Sequencing was performed on 123 HA, 100 NA, 99 MP and 53 NS genes from 155 viruses (Table 2). Neuraminidase inhibitor susceptibility

A total of 625 influenza isolates were tested by neuraminidase inhibition (NAI) assay for susceptibility to the antiviral drugs oseltamivir, zanamivir, peramivir and laninamivr (Table 3).

Country of submitting laboratory	Table 1: Number of viruses analysed by HI assay <sup>*</sup>			Table 2: Number of viruses analysed by gene sequencing				Table 3: Number of viruses tested by NAI assay ^				
	A(H1N1) pdm09	A(H3N2)	B/Vic	B/Yam	A(H1N1) pdm09	A(H3N2)	B/Vic	B/Yam	A(H1N1) pdm09	A(H3N2)	B/Vic	B/Yam
Australia	123	37		56	52	19	14	12	166	38	4	85
Cambodia	28	6		36	2		2		28	6		36
Fiji	1	2		4	1	1	1		1	2		4
Macau SAR	15	14			2	1		3	15	14	10	4
Malaysia		2	4	3	1	1	1	1	1	2	4	3
New Caledonia	5				3				1			
New Zealand	17	11		3	4	6	3	1	17	11		3
Papua New Guinea					1							
Philippines	6	3	1		3	3		1	6	3	1	
Singapore	25	65	8	29	1	1	2	1	25	66	8	29
Sri Lanka	3	4		2	1	1	1		3	4		2
Thailand		14		1	1	4	3		2	14	1	5
Total	223	158	13	134	72	37	27	19	265	160	28	171

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

^ One unsubtyped A virus from Malaysia tested by NAI assay is not included in this table.

#### Isolation of viruses in eggs

The Centre undertakes primary isolation of selected viruses into eggs to obtain potential vaccine strains. From 1 January to 30 April 2014, 7 A(H3N2) and 4 B/Yamagata viruses have been successfully isolated in eggs at the Centre.