

Review of the 2018 influenza season in Australia and what to expect in 2019

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The Melbourne WHO Collaborating
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Influenza is supported by the Australian
Government Department of Health



How was the 2018 SH influenza season for you?

- Normal season – nothing much different from any other
- Low season – similar to 2010
- Medium season – similar to 2011, 2013
- Big season – similar to 2012, 2014, 2015, 2016
- Massive season – Once in every decade or two
 - Pandemic of 2009
 - Flumageddon 2017



Summary of the 2018 Australian Influenza season

- A low “Influenza” season by most accounts
 - NNDSS Lab confirmed influenza data
 - Highest “interseasonal” influenza activity (Jan-Mar) on record (again)
 - Moderate no. of lab confirmed cases recorded; lowest in last 5 years 58,736 (cf: 2017: 251,150; 2013: 28,316)
 - Slow early start to main season with increased cases reported by NNDSS in June, late peak (Wk 36 w/e Sept 9) reduced activity in October but higher than normal activity in Nov/Dec/Jan 19 (highest on record)
 - ASPREN-VIDRL ILI figures lowest levels in 6 years
 - High press coverage around new elderly vaccines and vaccine shortage
- Characteristics of season
 - Australia mainly A(H1N1)pdm09, followed by B’s and A(H3N2)
 - FluCan data; 725 hospital admissions (April 3-Oct 21) compared to 3969 2017; 8.1% cases admitted directly to ICU (8.9% 2017; 7% 2015, 11% 2014)
 - Influenza deaths (NNDSS); 57 deaths (2017 598; 5y av, 378) med. 80y
 - Paediatric hospitalizations – Total no. cases no longer available on AISR



Australia

Unprecedented demand creates flu vaccine shortage across Australia



Demand for the influenza vaccine has soared by 25-30 per cent this season over the same period last year, authorities say.

21 May 2018

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ANALYSIS

What you need to know about Fluad and FluZone High Dose, the new flu vaccines for over-65s

The Conversation By Allen Cheng, Monash University

Updated 20 Feb 2018, 10:53am



PHOTO: The two free vaccines for over-65s, Fluad and FluZone High Dose, work in different ways. (ABC News: Anesha Bhole)

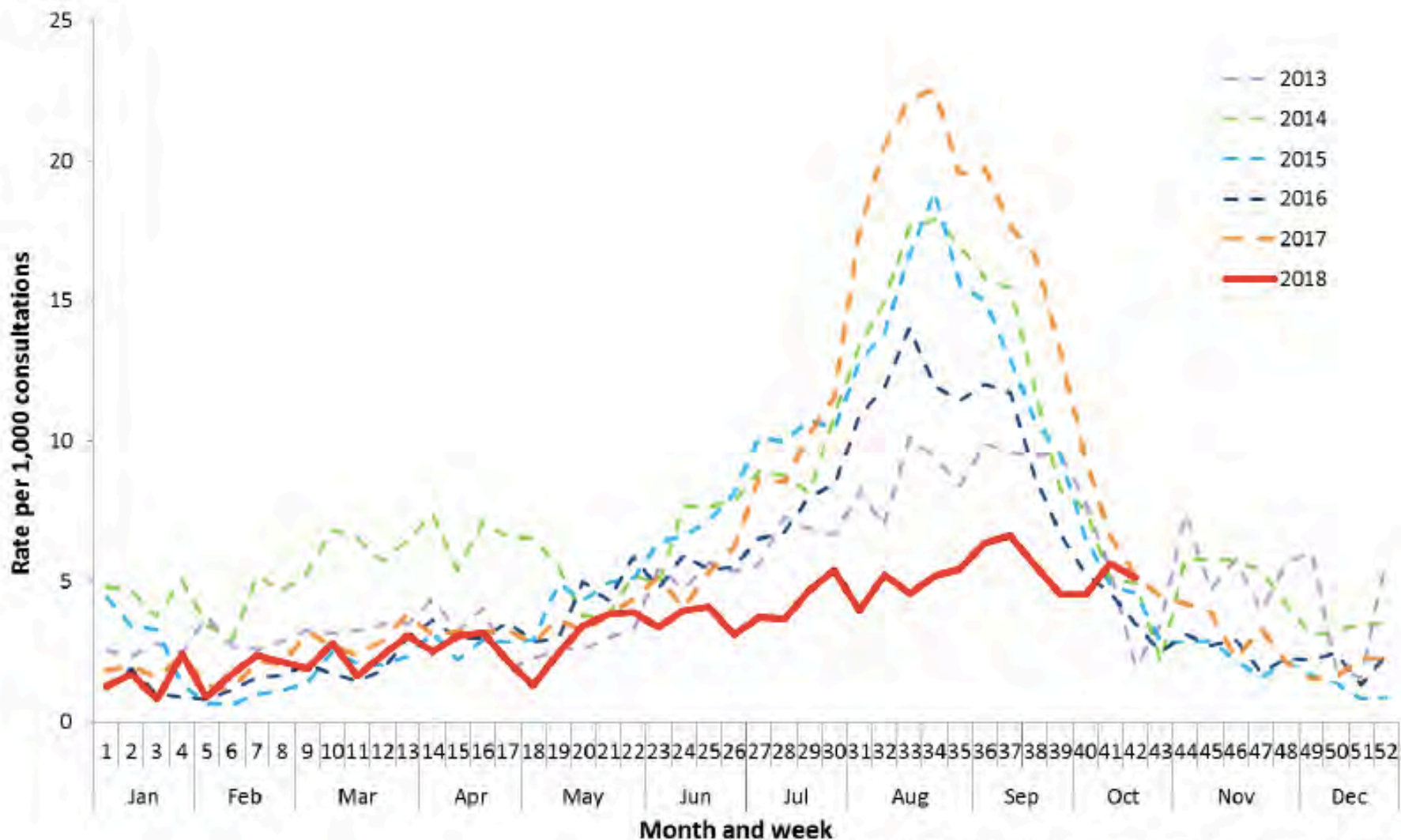
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- Emergency fire warning downgraded to Watch and Act in Victoria
- Sinkhole forms in Perth shopping centre car park
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- Live: Sri Lanka end the day three wickets down, trailing by 411 runs
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- Defence force dropout jailed for kicking young woman in the face, stealing her violin
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- NRL boss admits off-season has been a 'train wreck', says Barba may never play again
- 'Devastated' dog owner pushing for change after claims pet died on Spirit of Tasmania
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- 'She's not even pretty': Public servant who abused girl with disabilities jailed after 'callous' denial
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19 Feb 2018

Influenza-like illness (ILI) 2013-18 in Australia

SENTINEL GP ILI SURVEILLANCE



Source: ASPREN and VicSPIN (Note: weeks 41 and 42 do not include VicSPIN data)

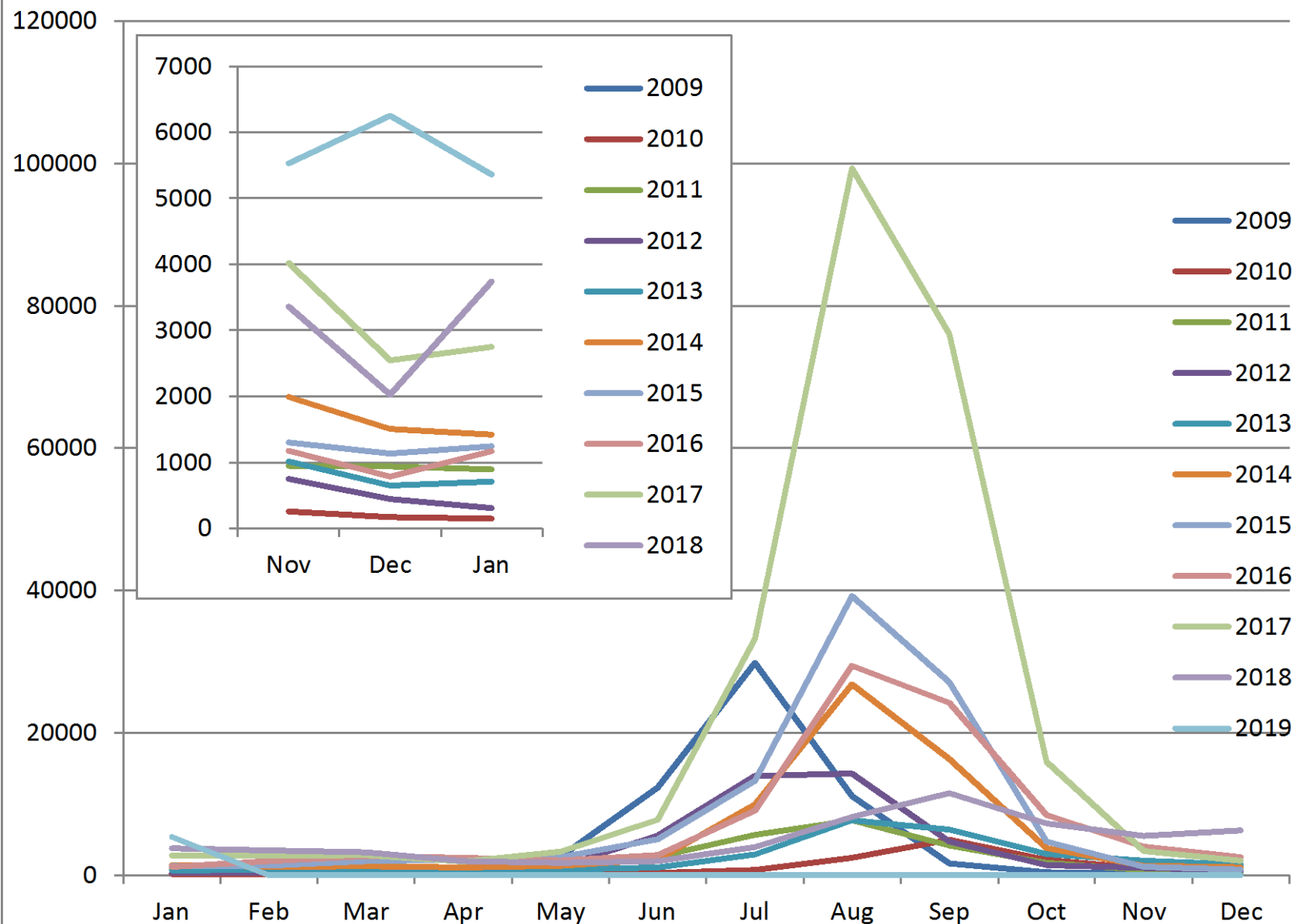
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**AUSTRALIAN INFLUENZA
SURVEILLANCE REPORT**

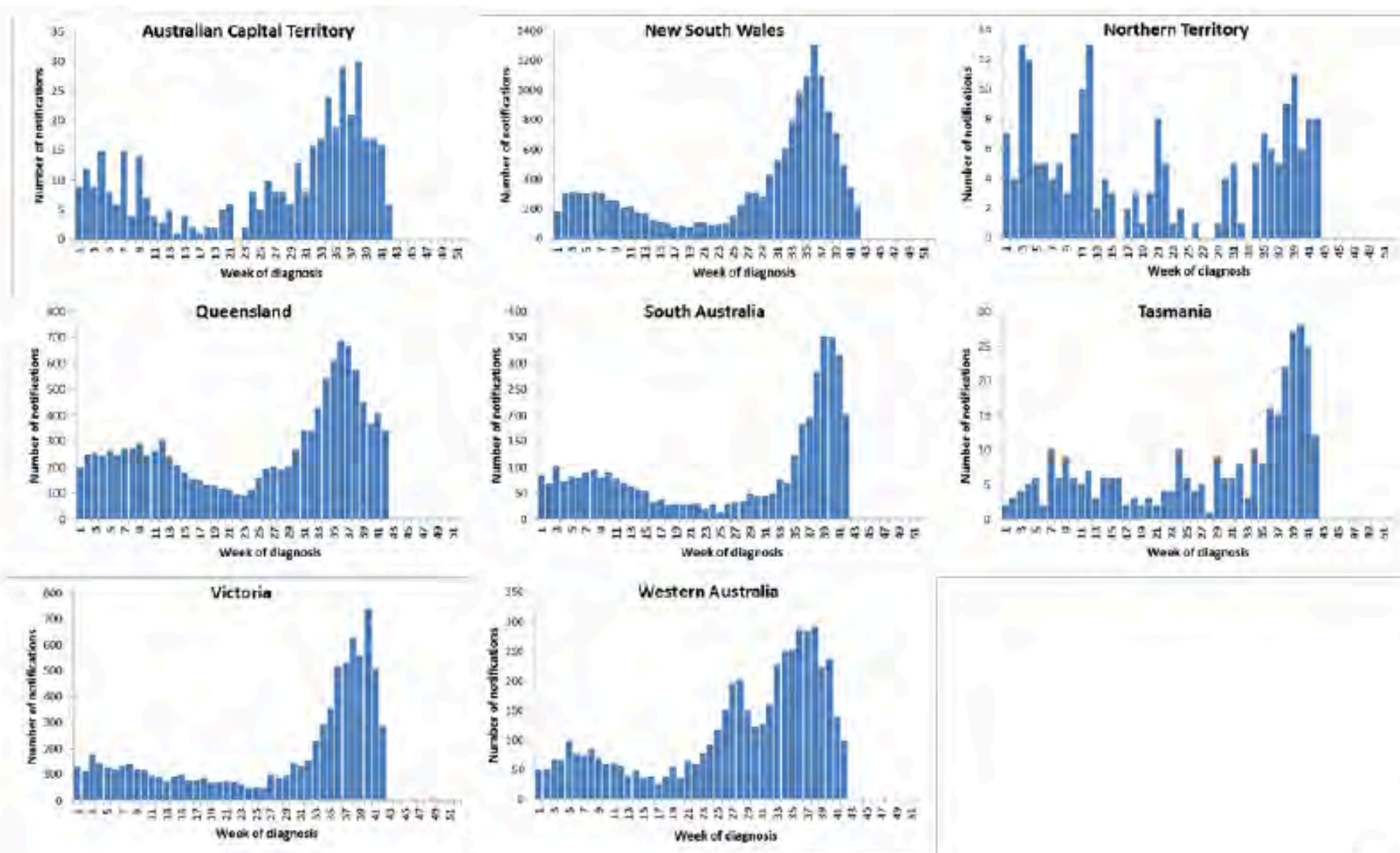


Lab confirmed influenza in Australia 2013-17 (NNDSS)



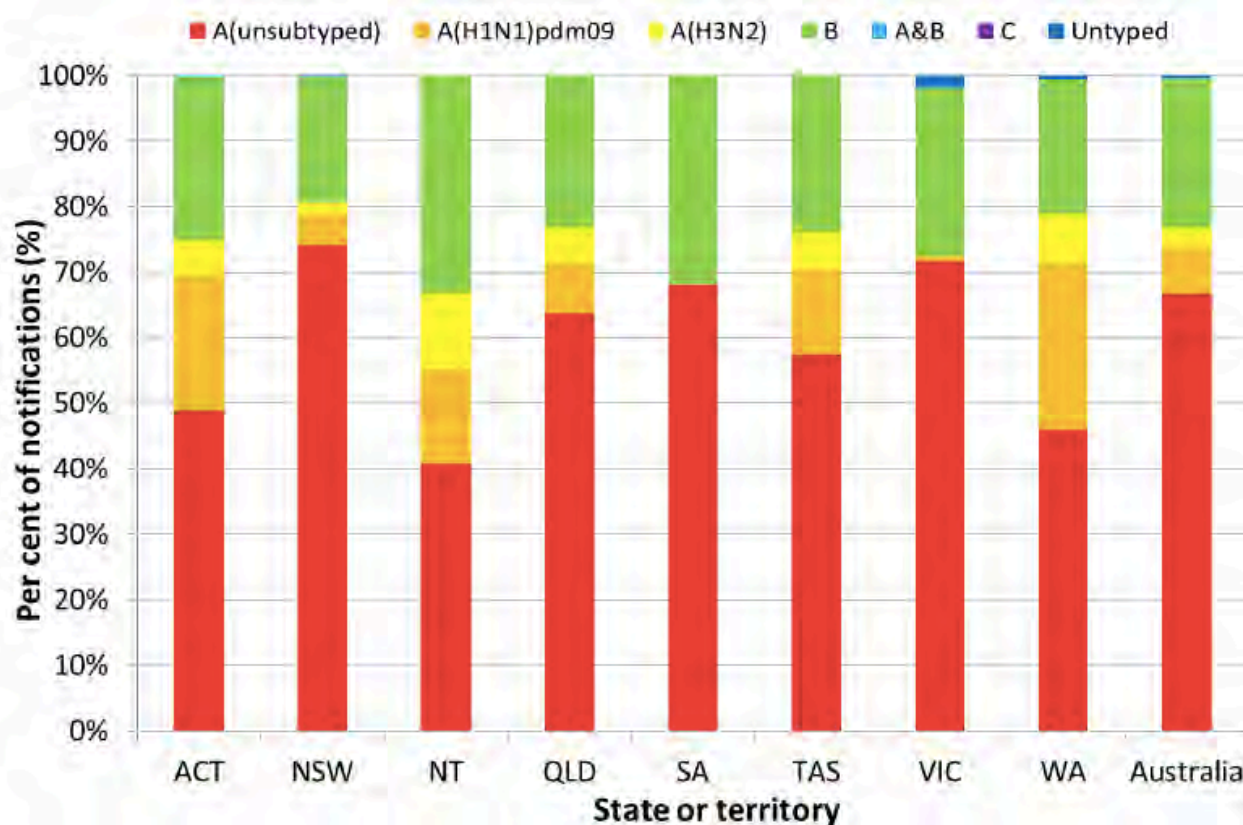
Lab confirmed influenza in Australia 2017 by State

- Similar timings; NT multiple peaks



NNDSS Laboratory confirmed influenza cases by state 2018

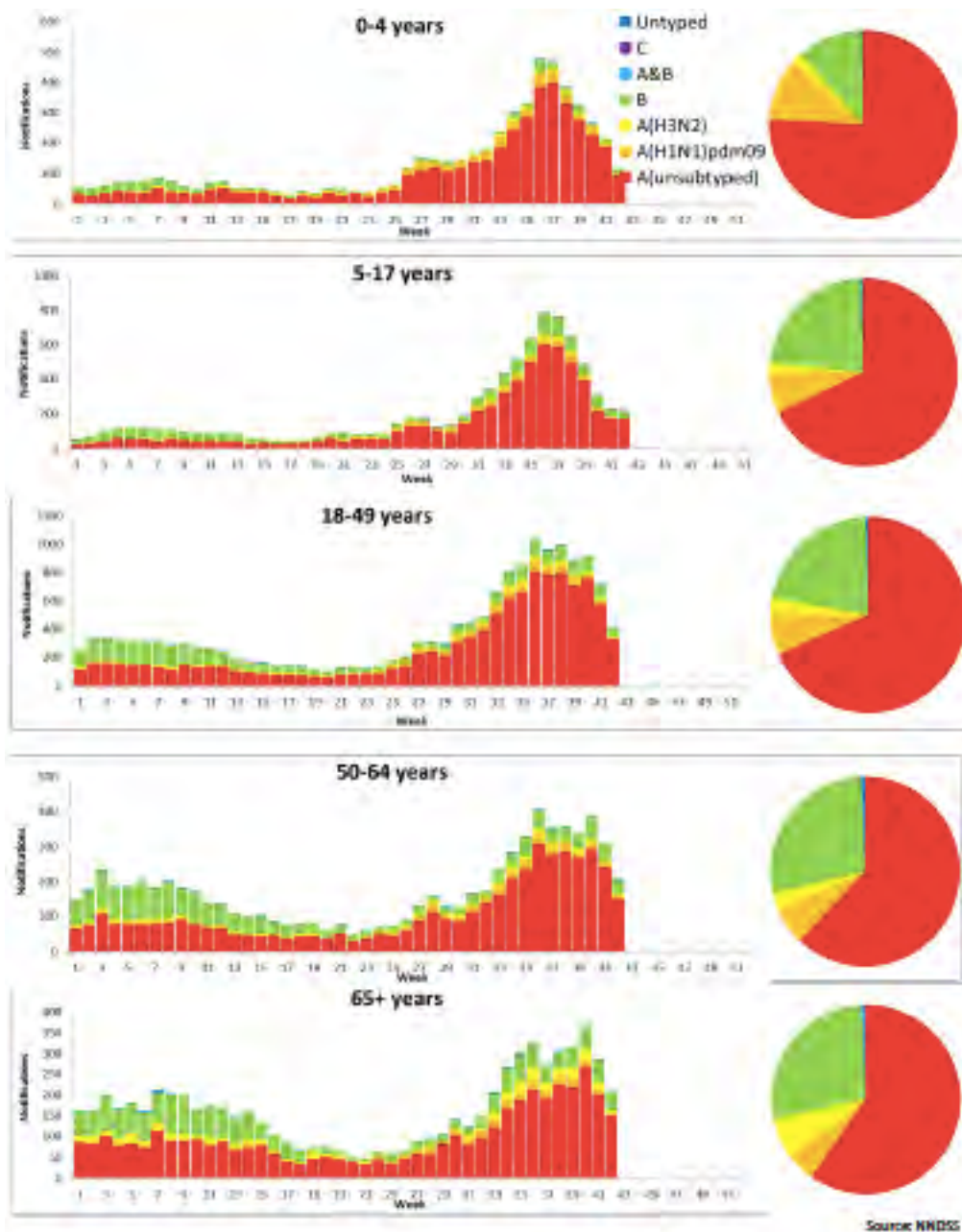
State	#	Rate/ 100K
ACT	477	115
NSW	17484	222
NT	1196	482
QLD	15687	318
SA	5859	339
Tas	452	86
Vic	11703	185
WA	5879	228
Total	58736	238



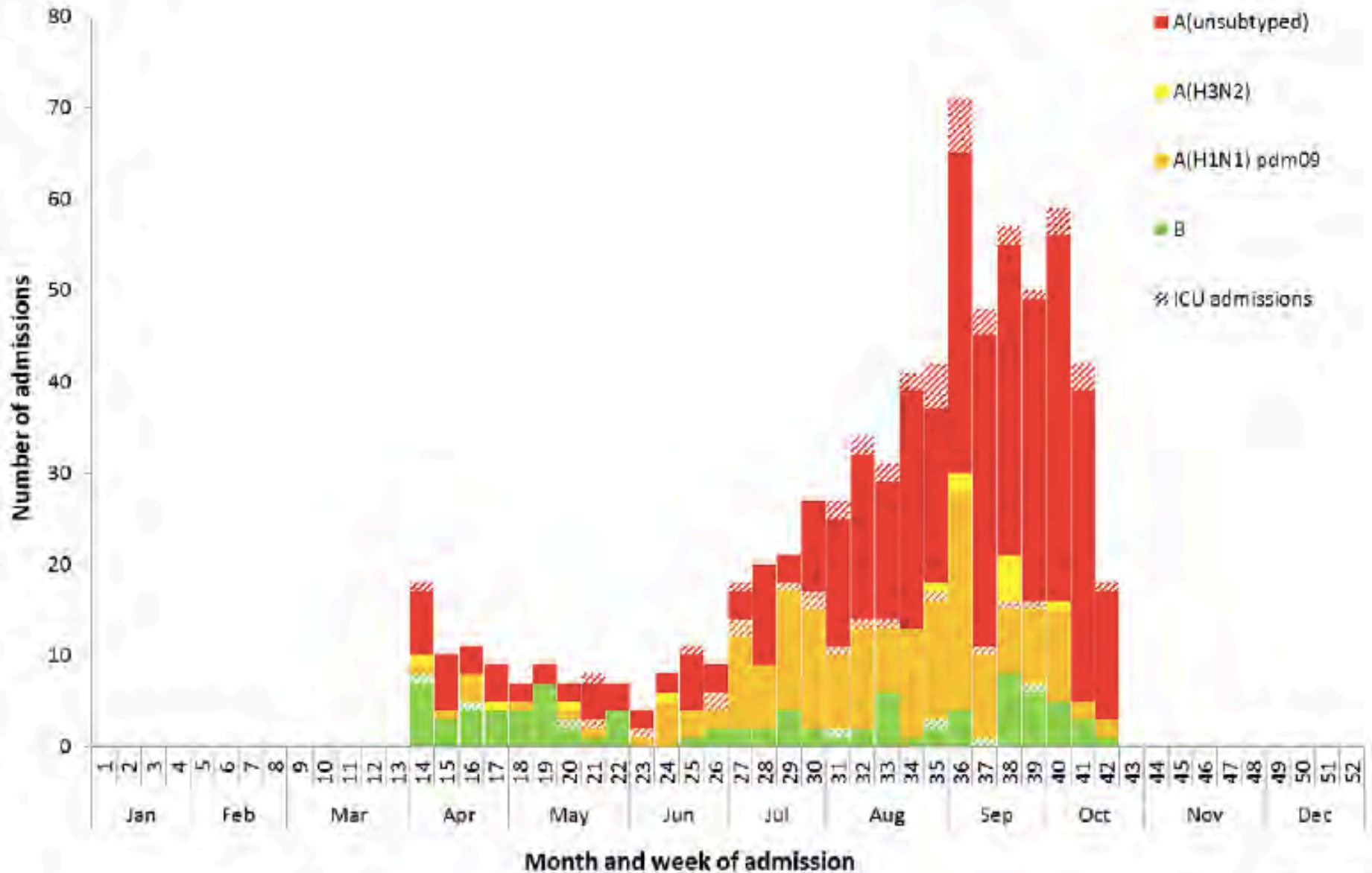
Source: NNDSS



NNDSS Laboratory confirmed influenza cases by age 2018



FluCAN hospitalisation data 2018



Source: FluCAN



Reported influenza outbreaks in institutions

NSW 2011-2018



Year	2011	2012	2013	2014	2015	2016	2017	2018
No. of outbreaks	4	39	12	120	103	279	588	46

Influenza Monthly Epidemiology Report, NSW

December 2018

Victoria 2019

	Institutional respiratory outbreaks	Outbreaks due to influenza	Outbreaks due to other agents
January 2019	14	12 (all A subtype)	2 (RSV)
January 2018	2	0	2

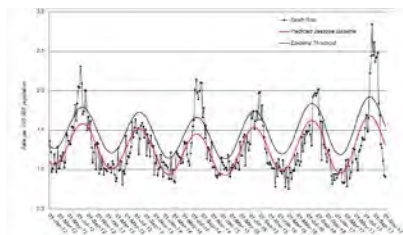
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NNDSS reported influenza associated deaths

(Aust. Influenza Report)

Year	Deaths #	Median age y	Virus type/subtype
2011	14	47	83% A(H1N1)pdm
2012	60	78	88% A(H3N2)
2013	28	63	86% Influenza A
2014	72	72	100% Influenza A
2015	97	85	B and A(H3N2)
2016	92	80	87% Influenza A
2017	598	85	78% influenza A
2018	57	80	75% influenza A



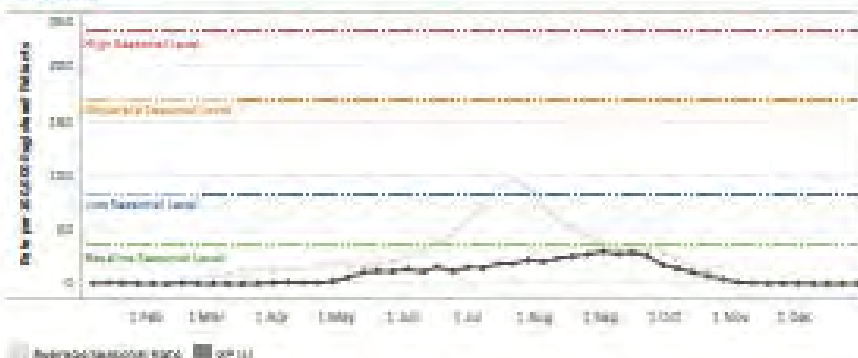
NSW excess death data due to influenza and pneumonia no longer publicly available in 2018!!

Month of December 2018

National Overview

Influenza activity remained at interseasonal levels in New Zealand. This intelligence report will be updated monthly until May 2019 unless the cost of season surveillance is identified GPs and iCCs identifies concerns.

Weekly General Practice Influenza-like illness (ILI) Rates To 30 Dec 18



As expected for this time of year, indicators of community influenza-like illness (ILI) activity have remained low over the last month. ILI related calls to Healthline have continued at low levels in December.

Severe acute respiratory infection (SARI) admissions to sentinel hospitals in Auckland and Counties Manukau CHNs have remained low over the past month.

Influenza-like illness (ILI) Activity to 30 Dec 18

Below colour indicates whether the current weekly change is **statistically significant**.



Acute Hospital Activity (SARI) to 30 Dec 18

Below colour indicates whether the current weekly change is **statistically significant**.

Activity by DHB

As expected for this time of year, across all District Health Boards, rates of GP visits for ILI have remained low over the month. Interpretation of DHB-level GP ILI rates should be done with caution, because rates for an individual DHB are dependent on the number and size of participating practices in the DHB. Some DHBs have sparse ILI GP surveillance coverage. Cumulative rates for Healthline ILI calls in 2018 showed very greatly across DHBs.

GP Visits (ILI) Rate by DHB - Current Week



Current Illnesses

The 2018 publicly funded seasonal influenza vaccine contains the following four components (i.e. this is a quadrivalent vaccine):
- A/Indonesia/05/2015 (H1N1)pdm09-like virus
- A/Perth/05/2015 (H1N1)pdm09-like virus
- B/Florida/02/2018 (H3N2)-like virus
- B/Phuket/05/2015 (H3N2)-like virus (belonging to B/Victoria lineage)
- B/Alaska/02/2018 (H3N2)-like virus (belonging to B/Victoria lineage)

Overseas acute respiratory disease surveillance

In the temperate zone of the Northern Hemisphere, influenza activity has continued to increase, although overall activity remains low (based on data reported to 28 December 2018). Where detected, H1N1pdm09 predominates. Increased influenza-related hospitalisations have been reported in some Southern and South-East Asian countries.

In the temperate zone of the Southern Hemisphere, influenza activity has returned to inter-seasonal levels.

Other viral illnesses

The US CDC used to have to investigate an increase in acute flaccid paralysis (AFP) associated with enterovirus infections. In 2018, there were 288 confirmed cases in 20 states (by 4 January 2019). AFP may sometimes be acute respiratory or gastrointestinal symptoms and has previously been associated with enterovirus D68 infections.

In 2018, cases of Middle East Respiratory Syndrome coronavirus (MERS-CoV) have continued to be reported in the Middle East. Sporadic cases have been reported elsewhere (linked to human exposure to camels in the Middle East).

In 2018, sporadic cases of human infection with avian influenza A/H7N9, A/H5N1, A/H5N6, and A/H7N2 have been reported associated with exposure to birds in China. A case of viral illness associated with human infection with avian influenza A/H7N2 was also reported in the USA associated with contact with infected cats. This is only the second human transmission of this virus from cats to humans. MERS-CoV and the avian influenza viruses are not known to spread easily from person to person at present and are classified by the WHO as being of low risk of international spread.

Further information on overseas acute respiratory disease activity

1. WHO Global Flu Update (data to 28 December 2018): www.who.int/influenza/human_viruses_monitoring/updates/flu_global_update_28_december_2018 (accessed 05/01/19)
2. Eurosurveillance: www.eurosurveillance.org/ViewArticle.aspx?doi=10.2807/1560-7917.ES.2018.23.19.1800000 (accessed 05/01/19)
3. Pacific: www.pacific.flu.org/ (accessed 05/01/19)
4. CDC USA: www.cdc.gov/media/releases/2018/s181228-flu-activity.html (accessed 05/01/19)
5. WHO Weekly Epidemiol. Recs., www.who.int/emergencies/diseases/influenza/2018/weekly (accessed 05/01/19)
6. WHO Asian and other reports: www.who.int/emergencies/diseases/influenza/2018/weekly (accessed 05/01/19)



Measles, flu surges alarm health chiefs

By **SEAN PARNELL**
HEALTH EDITOR
Follow [@seanparnell](#)

12:00AM JANUARY 12, 2019
6 COMMENTS



More than 6000 Australians were diagnosed with influenza in December, three times as many as at the previous year's end. Picture: iStock

A summer flu surge and a measles outbreak have health authorities on alert and urging more Australians to get vaccinated.

More than 6000 Australians were diagnosed with influenza in December, three times as many as at the previous year's end. Holiday travel and public gatherings put more people at risk.

Queensland alone recorded 2028 cases last month, more than three times higher than the five-year December average. The number of cases recorded in November was also up.

"We must remain vigilant during 2019 because, as we've seen in the past, flu can occur at any time of the year and every flu season can be different," said Queensland Health's Jonathan Malo.

NSW also experienced a late surge in flu cases in 2018, which had otherwise been a much better year than 2017 for flu preparedness.

"Notifications of influenza did increase across NSW in December with 816 cases reported but this unseasonal increase was also noted in other states and territories across Australia," a NSW Health spokesman said.

"Testing found three strains of influenza — influenza A (H1N1), influenza A (H3N2) and influenza B, the same strains that circulated during winter.

"Supplies of influenza vaccine remain available from general practitioners. Pregnant women in particular are urged to be vaccinated."

A spokesman for Victoria's Department of Health and Human Services said flu cases peaked in September last year but there had been a "slight increase in notifications in November-December".

"Flu vaccine is highly recommended for people in higher risk groups such as older people, pregnant women and those with pre-existing medical conditions that put them at risk of serious complications of the flu," the spokesman said.

"There are some easy steps to take to prevent getting and spreading the flu, such as coughing or sneezing into your elbow and washing your hands thoroughly.

"If you're really sick, stay away from work and other places where you'll spread the flu."

Australia's defences against measles have also been tested in recent weeks.

NSW Health confirmed last week that a fifth person had contracted measles after being exposed to an infectious child visiting from Thailand.

In the latest case, an unvaccinated man in his 20s visited Sydney's Darling Harbour, Town Hall, Newtown and Marrickville while infectious between January 4 and 8.

People who may have been exposed to him in that period may not know if they have contracted measles until January 26.

Symptoms of measles include fever, sore eyes and a cough followed three or four days later by a red, blotchy rash spreading from the head and neck to the rest of the body.

It is so contagious that people who suspect they have measles should phone ahead to a GP clinic to ensure they do not have to spend time around other patients in the waiting room.

Health authorities have been alert to the potential for similar outbreaks after people with measles were confirmed to have been in public while contagious in Canberra, Newcastle, Brisbane and Perth.

Authorities want more people to be vaccinated to help with herd immunity.

The proportion of children being fully immunised has increased in recent years, and last year a record number of people had the flu shot, however there are still pockets of concern.

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'Grumpy' men snipe at candidate

RACHEL BAXENDALE

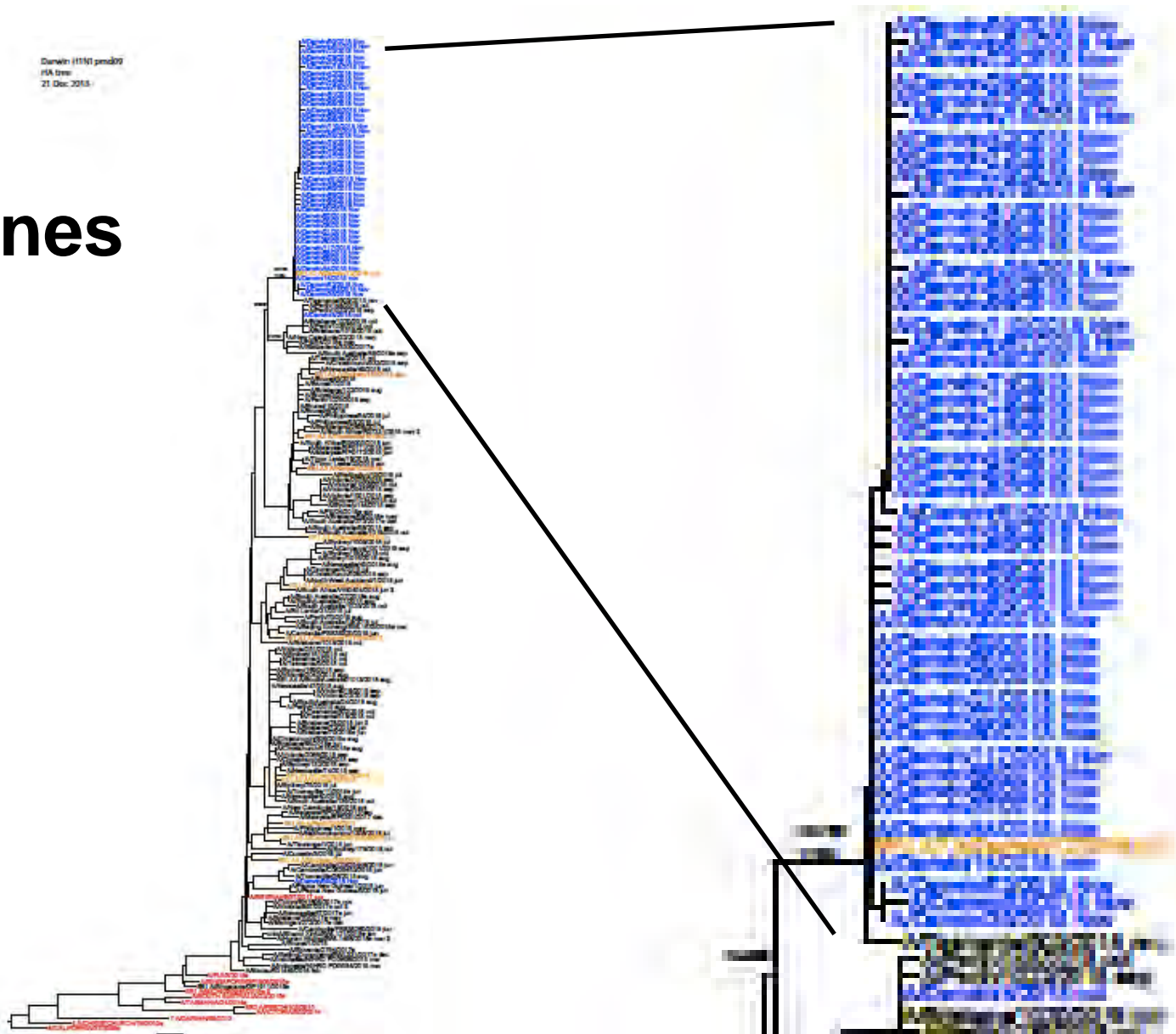
SEAN PARNELL, HEALTH EDITOR

Sean Parnell is Health Editor and FOI Editor at The Australian and was a political reporter for 10 years. Sean is a member of the Open Government Partnership Media Council, has been interviewed for various TV a... [Read more](#)



Phylogenetic analysis of the NT outbreak (Oct-Nov-Dec 2018)

HA genes

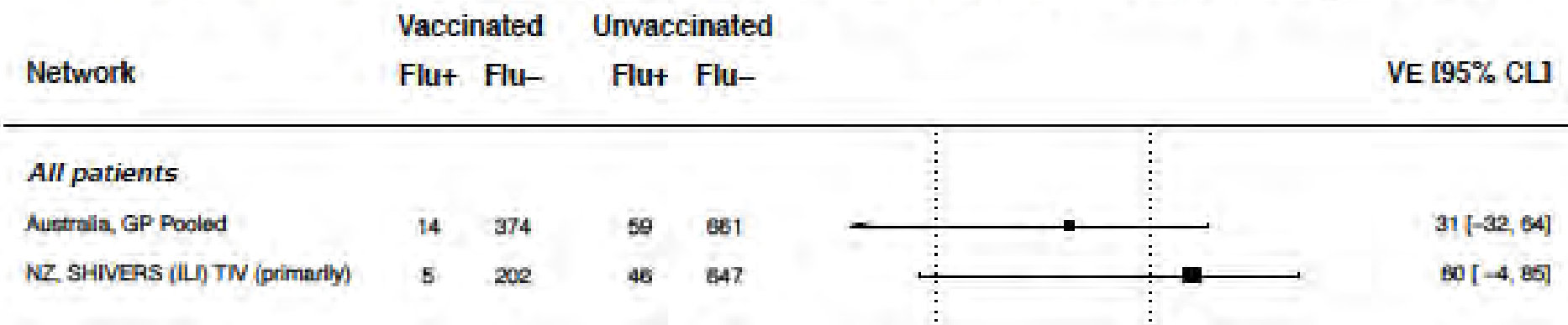


Vaccine effectiveness for Australia 2018

GIVE report (interim estimates)

September 2018

Figure 1. Interim VE against influenza A(H1N1)pdm09, outpatients



Interim estimates of 2018/19 vaccine effectiveness against influenza A(H1N1)pdm09, Canada, January 2019

Danuta M Skowronski^{1,2}, Siobhan Leir¹, Suzana Sabaiduc¹, Michelle Murti^{3,4}, James A Dickinson⁵, Romy Olsha³, Jonathan B Gubbay^{3,4}, Matthew A Croxen^{6,7}, Hugues Charest⁸, Tracy Chan¹, Nathalie Bastien⁹, Yan Li⁹, Mel Krajden^{1,2}, Gaston De Serres^{8,10,11}

1. British Columbia Centre for Disease Control, Vancouver, Canada

2. University of British Columbia, Vancouver, Canada

Model	Any influenza		Influenza A		Influenza A(H1N1)pdm09	
	n vac/N	%	n vac/N	%	n vac/N	%
Primary analysis – all participants						
Total	1,518		1,514		1,442	
Cases	59/661	9	58/657	9	45/585	8
Controls	234/857	27	234/857	27	234/857	27
Vaccine effectiveness	%	95% CI	%	95% CI	%	95% CI
Unadjusted	74	65 to 81	74	65 to 81	78	69 to 84
Univariate adjustment for						
- Age group (1–8, 9–19, 20–49, 50–64, ≥65 years)	69	57 to 77	69	57 to 78	73	61 to 81
- Province (AB, BC, ON, QC)	73	63 to 80	73	63 to 80	77	68 to 84
- Interval from ILI onset to specimen collection (≤4, 5–7 days)	73	63 to 80	73	64 to 80	77	68 to 84
- Calendar time ^a	75	66 to 81	75	66 to 82	78	69 to 84
Full covariate adjustment ^b	68	55 to 77	68	55 to 77	72	60 to 81



Influenza vaccines for Australia and NZ in 2019

- H1N1pdm – A/Michigan/45/2014-like
- H3 – A/Switzerland/8060/2017

Trivalent vaccine:

- B – B/Phuket/3073/2013-like (B/Yam)

Quadrivalent vaccine:

- B – B/Phuket/3073/2013-like (B/Yam)
- B – B/Colorado/6/2017-like (B/Vic)

***Changes to 2018 recommendations**



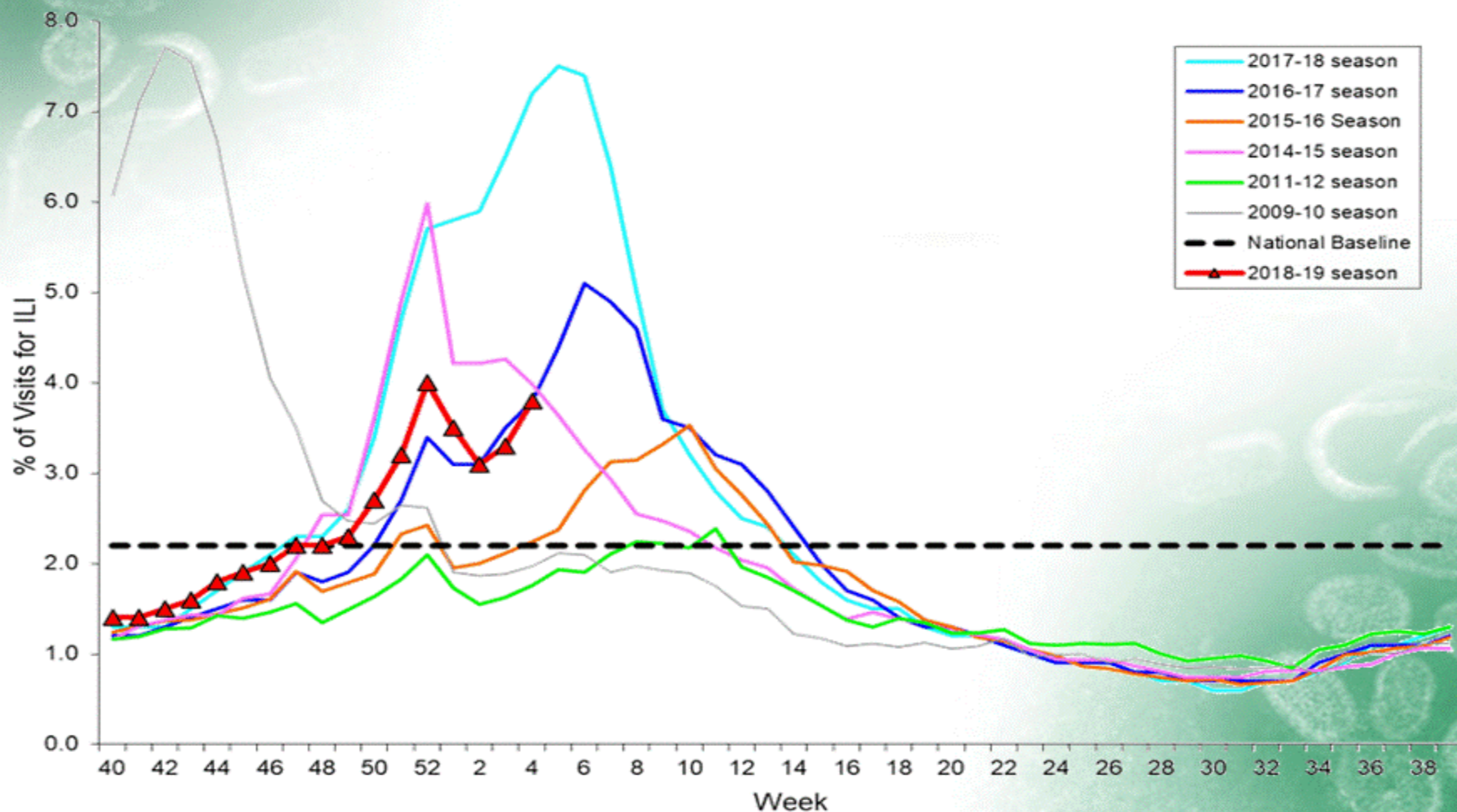
The NH 2018-9 influenza season (so far)



FLUVIEW

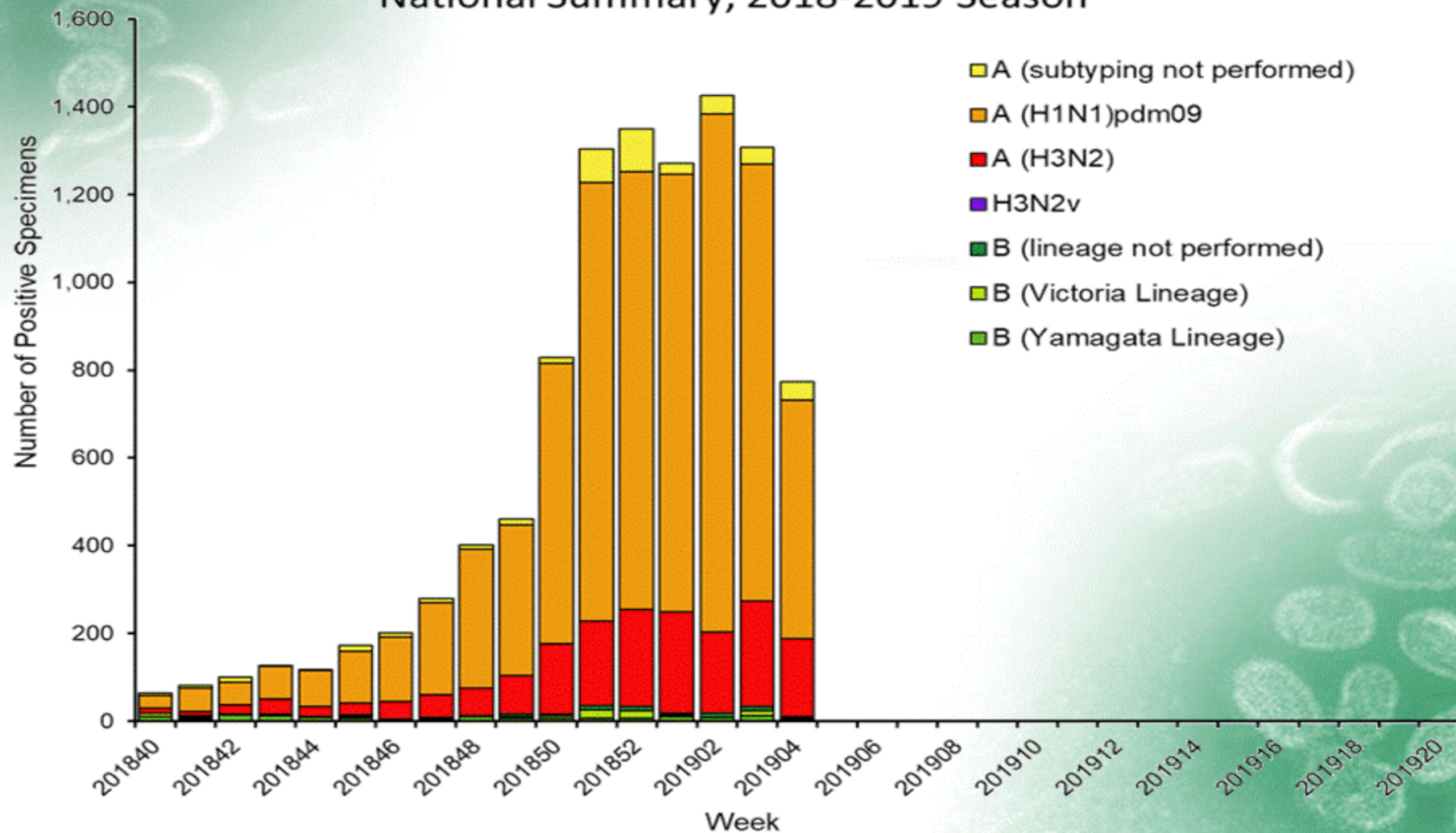
A Weekly Influenza Surveillance Report Prepared by the Influenza Division

Percentage of Visits for Influenza-like Illness (ILI) Reported by
the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet),
Weekly National Summary, 2018-2019 and Selected Previous Seasons



A Weekly Influenza Surveillance Report Prepared by the Influenza Division

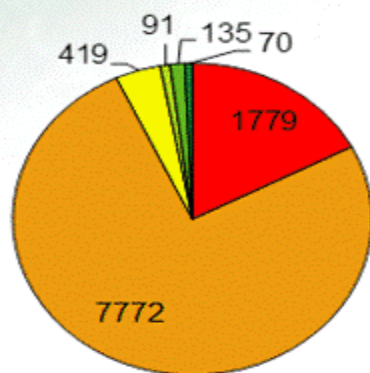
Influenza Positive Tests Reported to CDC by U.S. Public Health Laboratories, National Summary, 2018-2019 Season



FLUVIEW

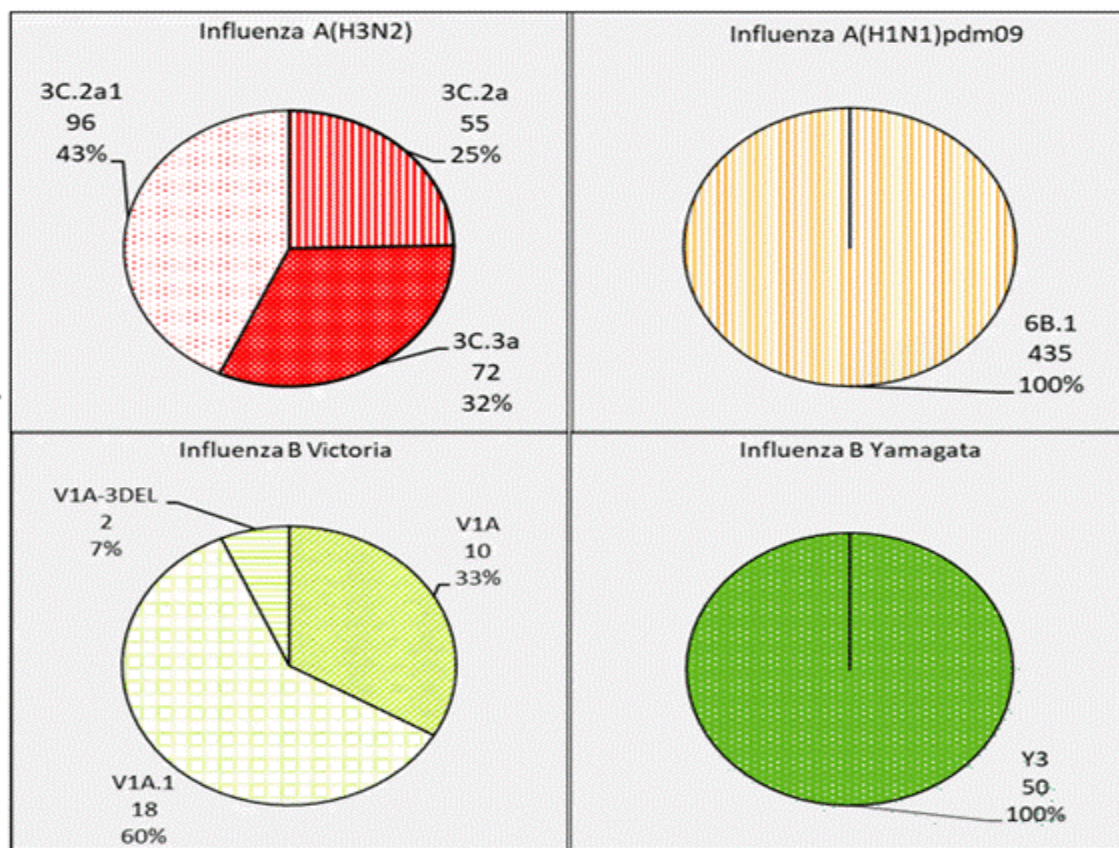
A Weekly Influenza Surveillance Report Prepared by the Influenza Division

Influenza Positive Specimens Reported by
U.S. Public Health Laboratories,
Cumulative, 2018-2019 Season



- Influenza A(H3N2)
- Influenza A(H1N1)pdm09
- Influenza A(subtype unknown)
- Influenza B Victoria
- Influenza B Yamagata
- Influenza B (lineage not determined)

Sequence Results, by Genetic HA Clade/Subclade, of Specimens
Submitted to CDC by U.S. Public Health Laboratories, Cumulative,
2018-2019 Season

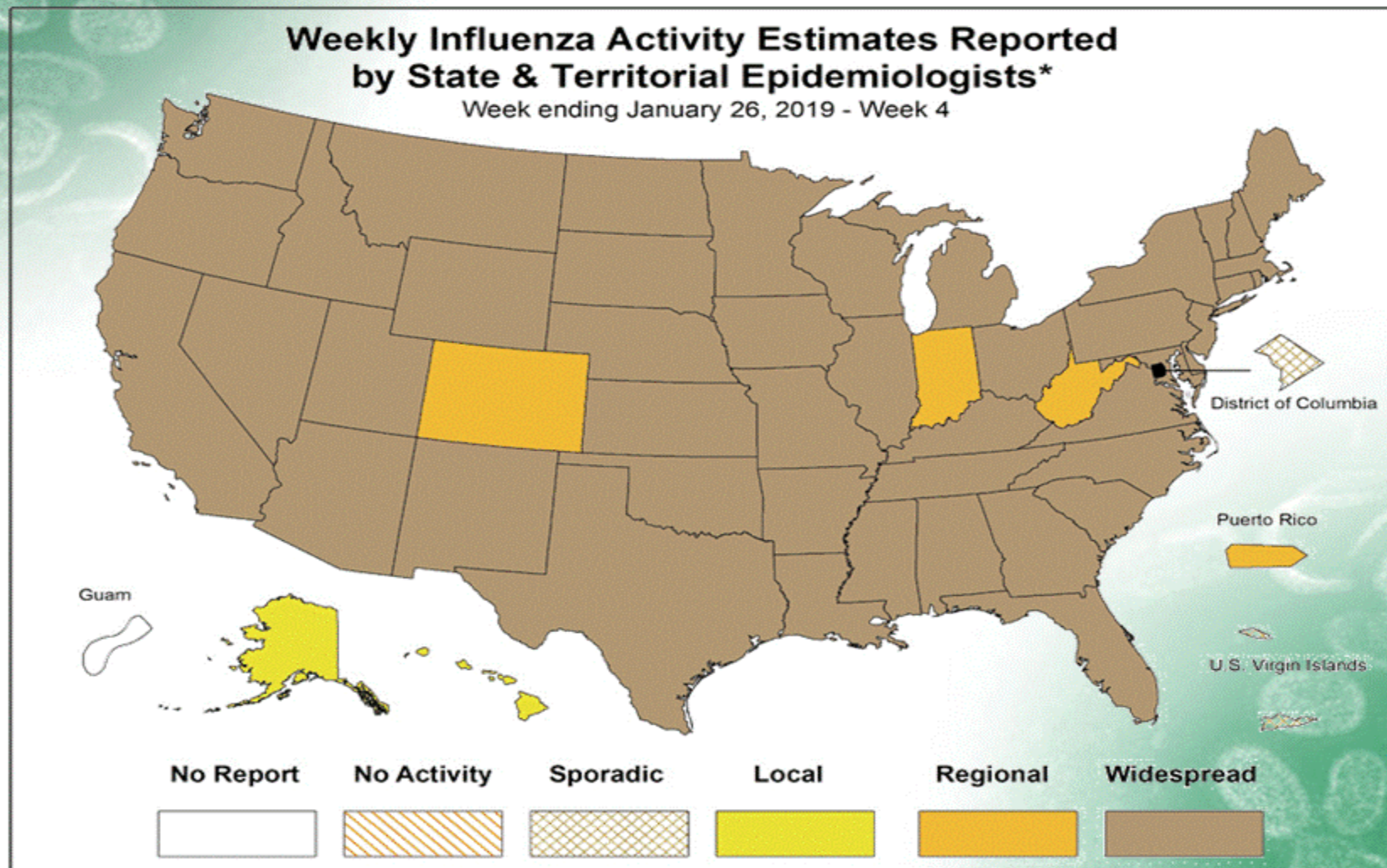


FLUVIEW

A Weekly Influenza Surveillance Report Prepared by the Influenza Division

Weekly Influenza Activity Estimates Reported by State & Territorial Epidemiologists*

Week ending January 26, 2019 - Week 4



* This map indicates geographic spread & does not measure the severity of influenza activity

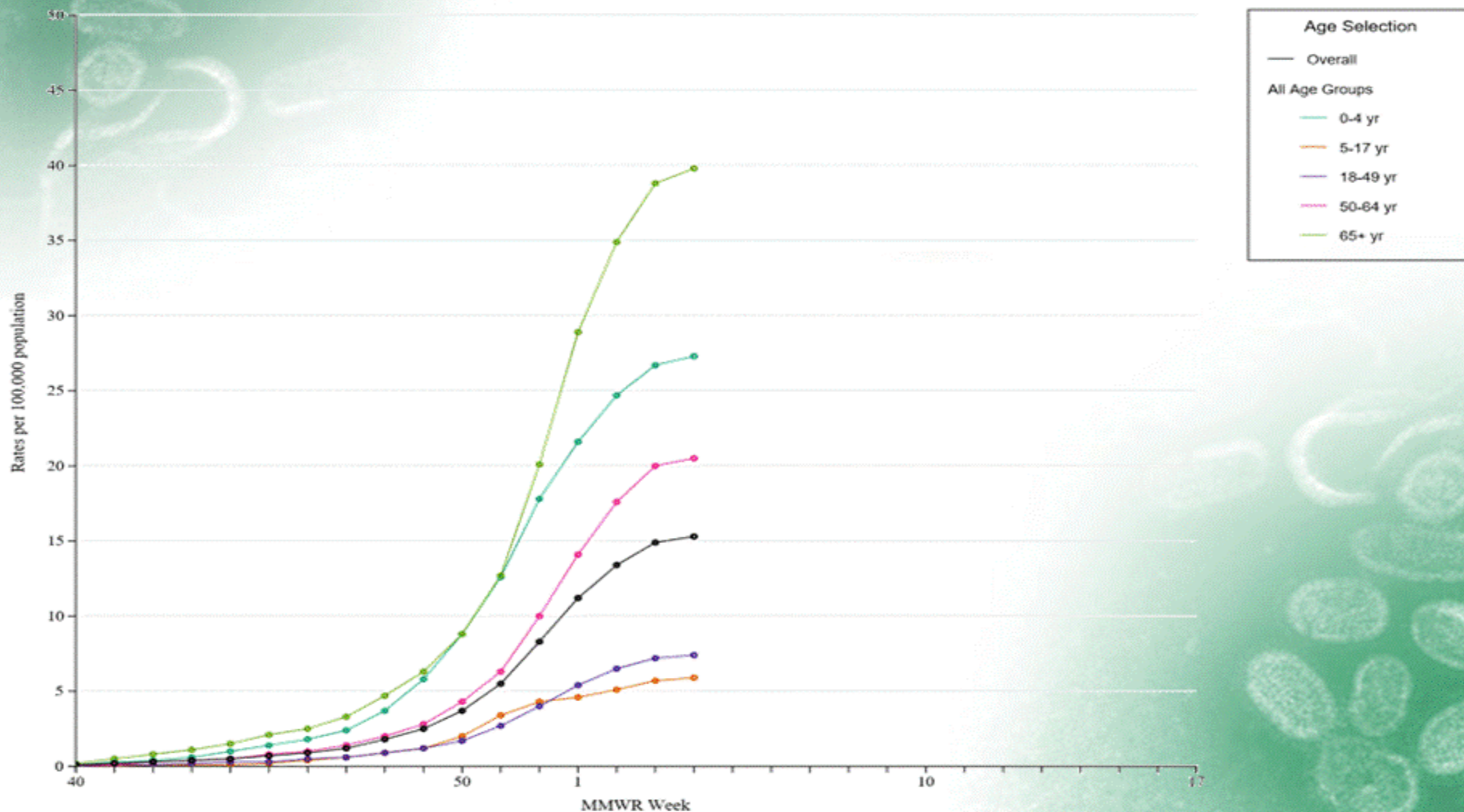


FLUVIEW



A Weekly Influenza Surveillance Report Prepared by the Influenza Division
Laboratory-Confirmed Influenza Hospitalizations

Preliminary cumulative rates as of Jan 26, 2019



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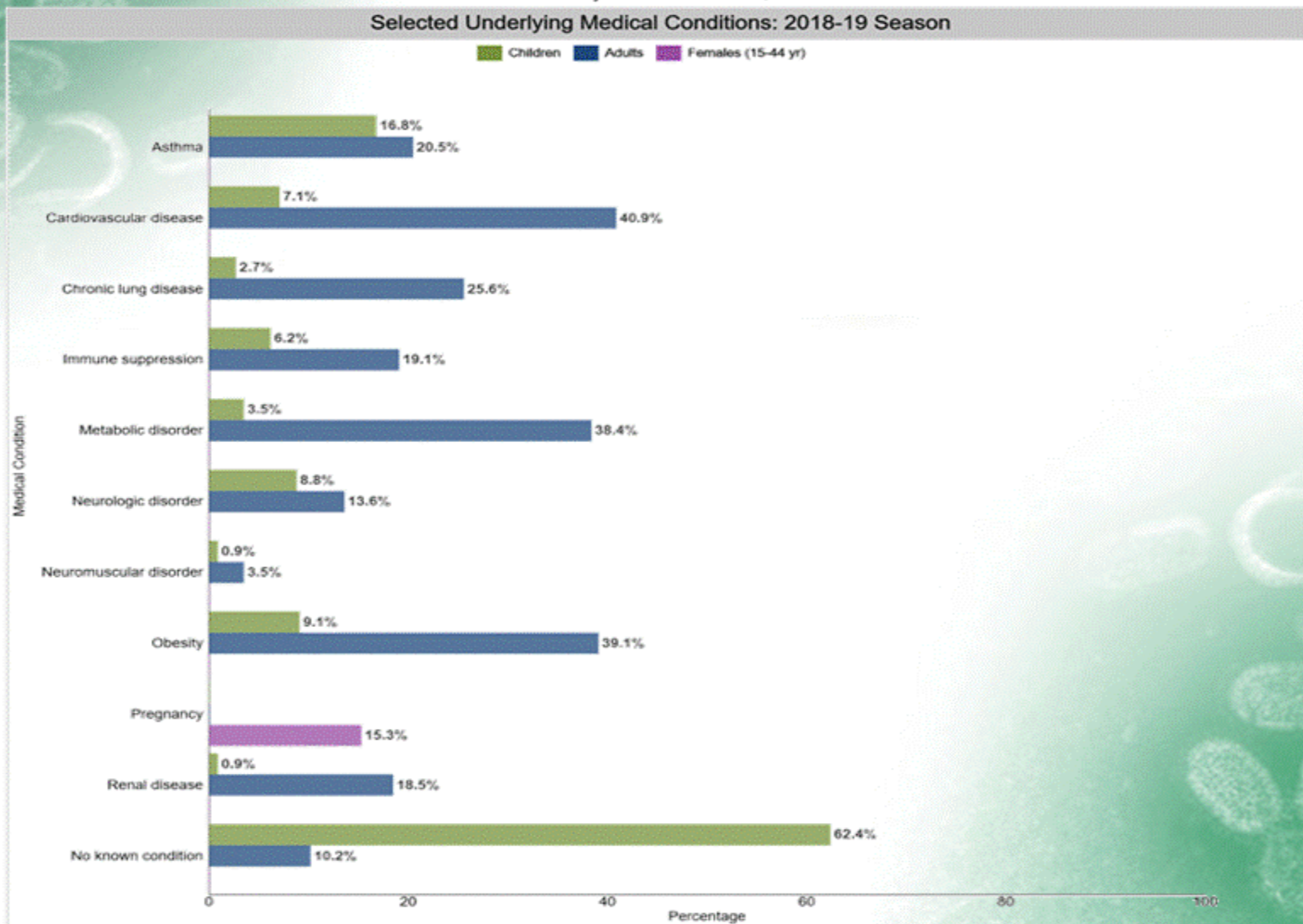


FLUVIEW



A Weekly Influenza Surveillance Report Prepared by the Influenza Division

Laboratory-Confirmed Influenza Hospitalizations
Preliminary data as of Jan 26, 2019



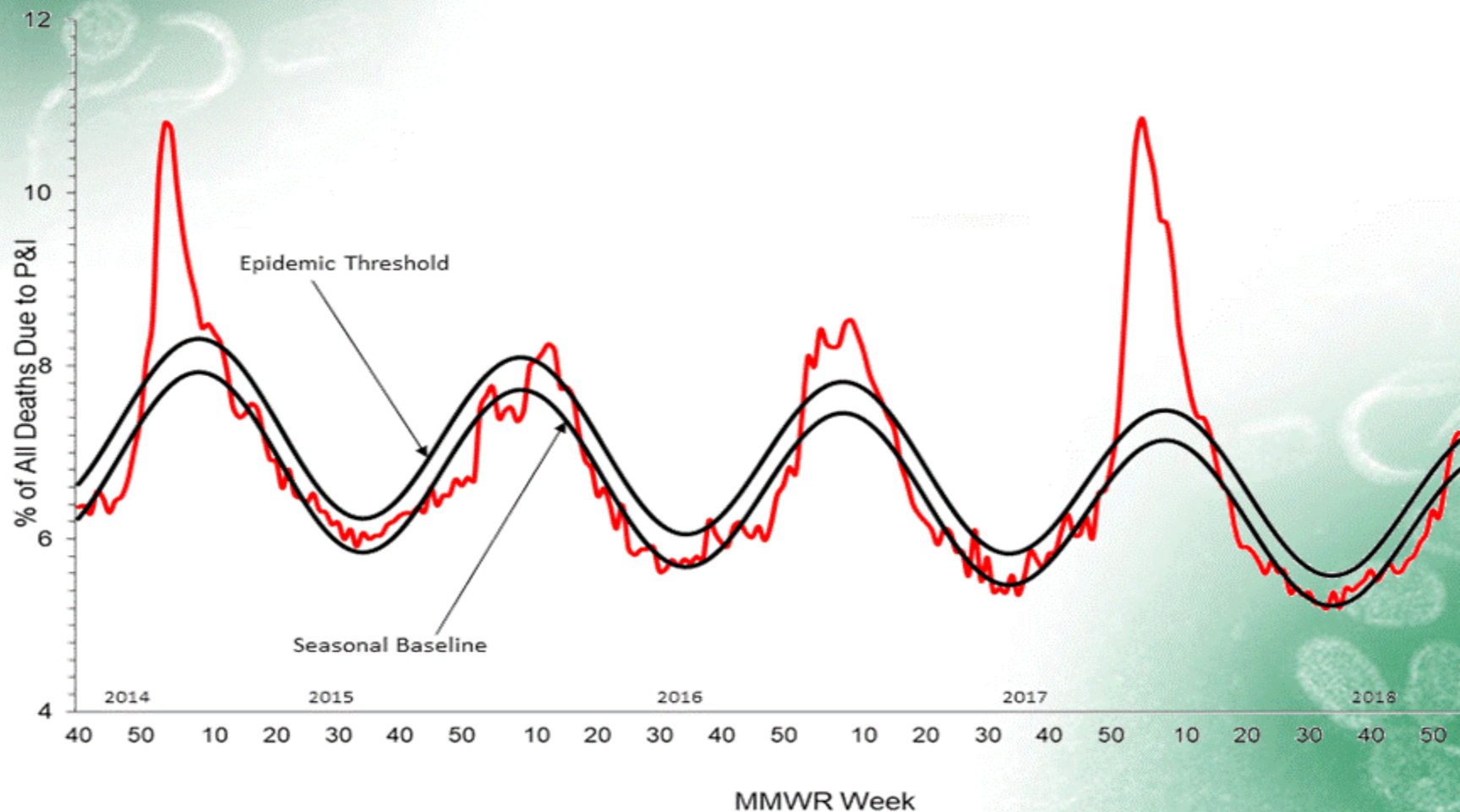
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A Weekly Influenza Surveillance Report Prepared by the Influenza Division

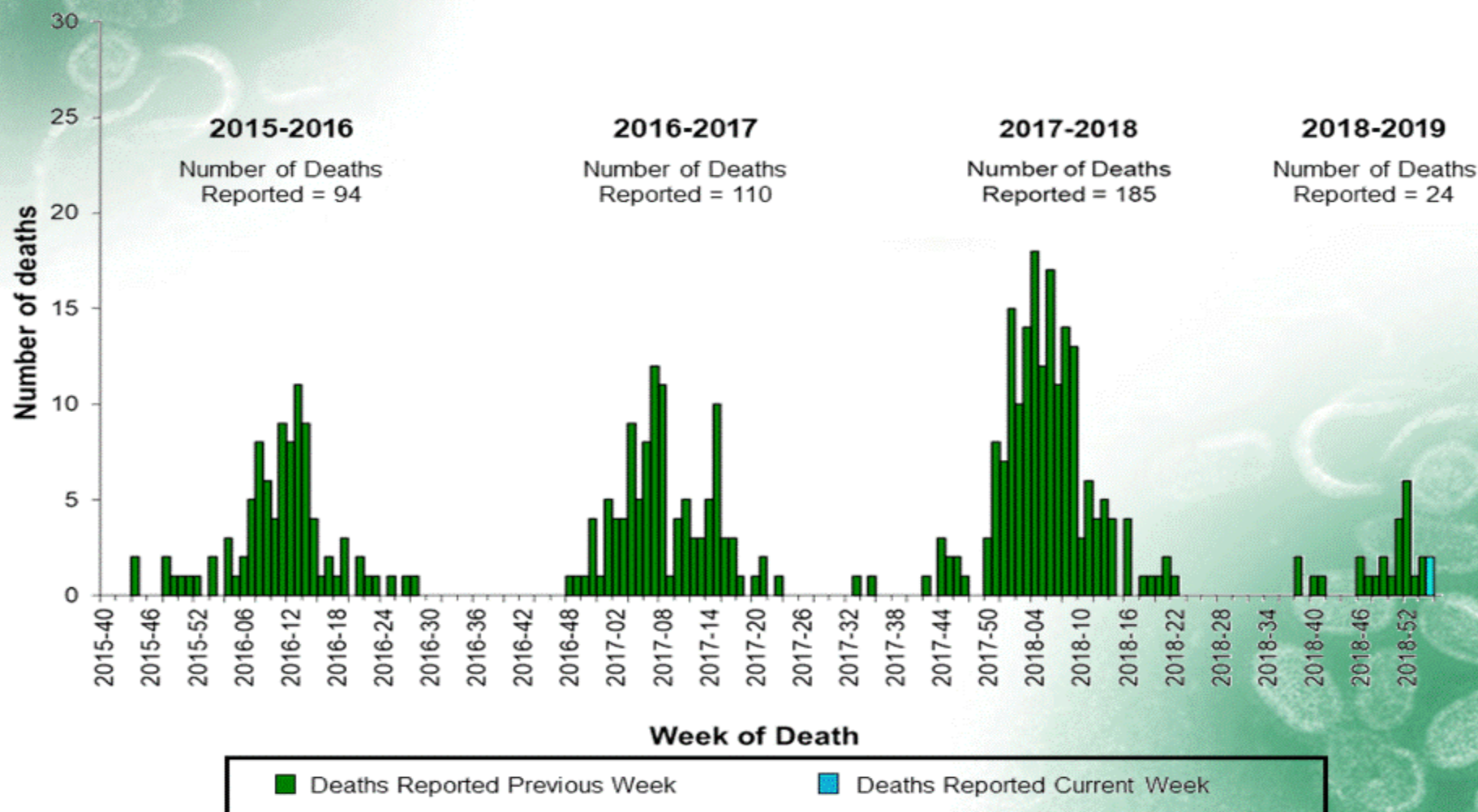
Pneumonia and Influenza Mortality from the National Center for Health Statistics Mortality Surveillance System

Data through the week ending January 19, 2019, as of January 31, 2019



A Weekly Influenza Surveillance Report Prepared by the Influenza Division

Number of Influenza-Associated Pediatric Deaths by Week of Death: 2015-2016 season to present



Summary data shown on CDC influenza home page

CDC estimates that, from October 1, 2018 through January 26, 2019, there have been:

10.1 million – 11.7 million
flu **illnesses**



4.7 million – 5.6 million
flu **medical visits**



118,000 – 141,000
flu **hospitalizations**



*These estimates are preliminary and based on data from CDC's weekly influenza surveillance reports summarizing key influenza activity indicators.

2018-2019 U.S. Flu Season: Preliminary Burden Estimates



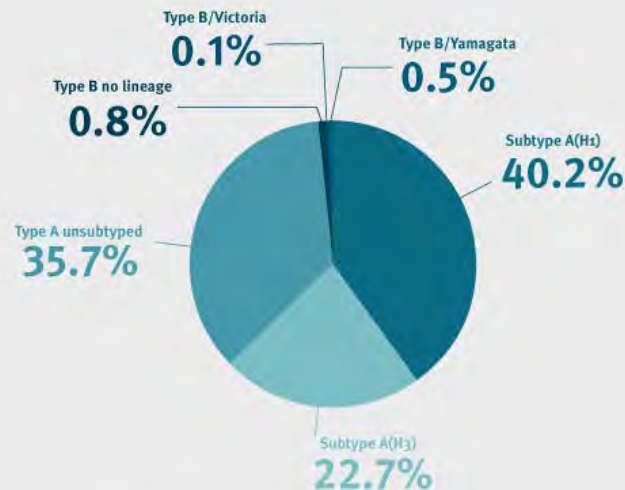
Influenza in Europe

Data from EU and EEA countries for the 2018–2019 season
Week 4 (21–27 Jan 2019)



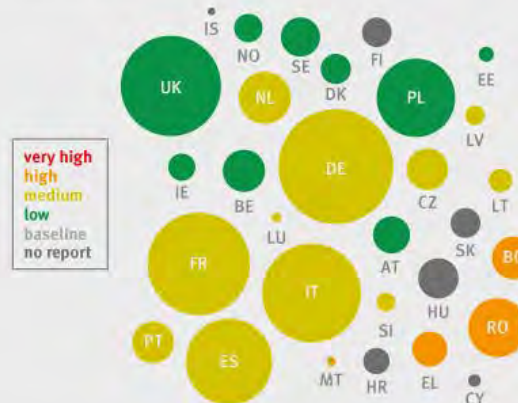
Influenza viruses circulating in 2018–2019

Only sentinel specimens are included



Influenza intensity in week 4

based on sentinel reports of influenza-like illness and/or acute respiratory infections



Bubble size is indicative of country population

Influenza trend

based on the percentage of sentinel specimens found positive, by week



Summary of influenza seasons

- 2018 a low influenza season in Australia
- 2018 an even lower activity season in NZ (below seasonal baseline level)
- Influenza A(H1N1)pdm09 predominated in Aus + NZ
- B-Yamagata lineage most common B virus in Australia (10:1 Yam:Vic) & NZ
- Vaccine match – good for H1N1pdm and B's, A(H3N2) - poor
- Very few oseltamivir/zanamivir resistant viruses detected
- Hospital admissions & deaths in Australia both low
- Vaccine Effectiveness: Australian data ??? due to low numbers; Canadian data – VE=68%
- H3N2 + B/Vic components of the Australian/NZ 2019 vaccine updated from 2018
- Influenza activity 2018-9 in Nth Hemisphere; low in USA and most of EU
- A(H1N1)pdm09 the predominant virus in Nth Hemisphere; USA, Canada, Europe, China, Japan but H3N2 increasing in Japan and predominant in some EU countries
- Prediction for 2018; A quiet year with B's and H1N1pdm's predominating!!
- Prediction for 2019: A moderate year with mixed viruses and more H3N2!!



Acknowledgments

- Various influenza reports
 - Australian influenza surveillance report
 - NSW Influenza report
 - ESR Influenza weekly update
 - CDC Fluview
 - ECDC Influenza report
 - WHO reports
- NICs and labs that have sent us samples
- Staff at Melbourne WHO CC
- Sheena Sullivan for VE data
- Other WHO CC's especially CNIC for zoonotic reports
- WPRO and WHO HQ Geneva

