2015-2016 Influenza Season Summary

The 2015-2016 influenza season (October 4, 2015-May 21, 2016) in Los Angeles County (LAC) was moderate overall. Peak activity occurred during mid-February, substantially later compared to previous seasons where peak activity usually occurs from December to January. During the week of February 14-February 20, 2016 (surveillance week 7), percent positive tests for influenza reached a high of 34.1% for the season (Table 1). In addition, syndromic surveillance detected the highest proportion of visits to EDs for influenza-like-illness (ILI) that same week (Figure 1). The greatest number of influenza-associated deaths (IAD) also occurred during week 7. Overall IADs increased from last season (N=70), however did not surpass the number of deaths during the last A (H1N1) season of 2013-14 (N=105). While influenza A (H1N1) viruses predominated, overall influenza A and B viruses were almost equally represented in laboratory surveillance testing throughout the season which is uncommon (Figure 2).

California data show that influenza activity across the state was similar to what was seen in LAC, in terms of the timing of peak activity and representation of influenza A/B viruses [1]. Conversely, nationwide influenza activity peaked in mid-March (surveillance week 10), almost a month later than in LAC. Influenza A (H1N1) predominated throughout the season followed by a typical later season increase of influenza B viruses [2]. The majority of viruses characterized by the Centers for Disease Control and Prevention (CDC) were similar to the ones included in this season's vaccine. This resulted in an estimated vaccine efficacy of 47-60% which is considered average, and a substantial improvement from last season (23%) [3-4].

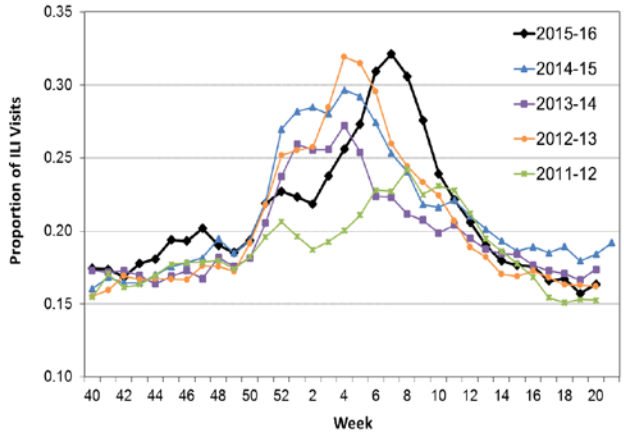
1. CDPH Influenza Surveillance
2. Influenza Activity — United States, 2015–16 Season and Composition of the 2016–17 Influenza Vaccine | MMWR
3. Flu Vaccine Nearly 60 Percent Effective | CDC Online Newsroom | CDC
4. Seasonal Influenza Vaccine Effectiveness, 2005-2016 | Health Professionals | Seasonal Influenza (Flu)

Table 1. Los Angeles County Influenza Surveillance Summary

	2015-2016		2014-2015
	Peak Week 7*	YTD**	9/1/14-8/8/15
Sentinel Laboratory Data			
Positive Flu Tests/Total Tests (Percent Positive Flu Tests)	960/3,059 (34.1%)	6,702/50,640 (13.2%)	5,752/48,405 (11.9%)
Percent Flu A/B	50/50	51/49	81/19
Outbreaks†			
Respiratory Outbreaks	1	26	21
Influenza Confirmed Outbreaks	1	21	37
Total	**2**	**47**	**58**
Influenza-Associated Deaths†‡			
Pediatric Flu Deaths	0	3	3
Adult Flu Deaths	11	67	51
Total	**11**	**70**	**54**

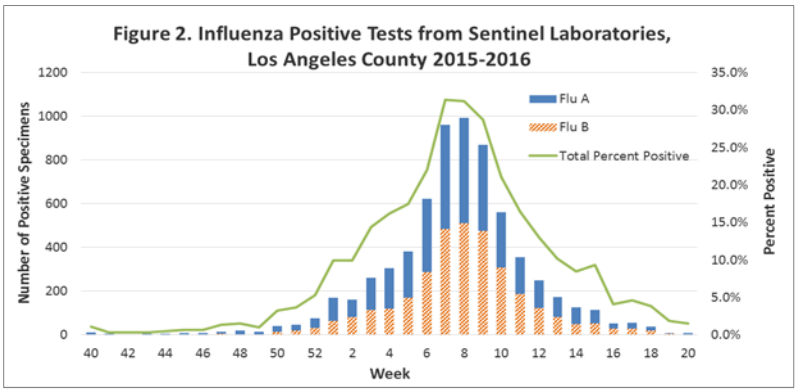
*Week 7 corresponds to February 14-20, 2016
**The influenza surveillance year spans October 4, 2015-May 21, 2016 (surveillance weeks 40-20)
†Numbers are provisional and subject to change
‡Confirmed influenza death is defined by a positive lab test and ILI symptoms with no resolution.

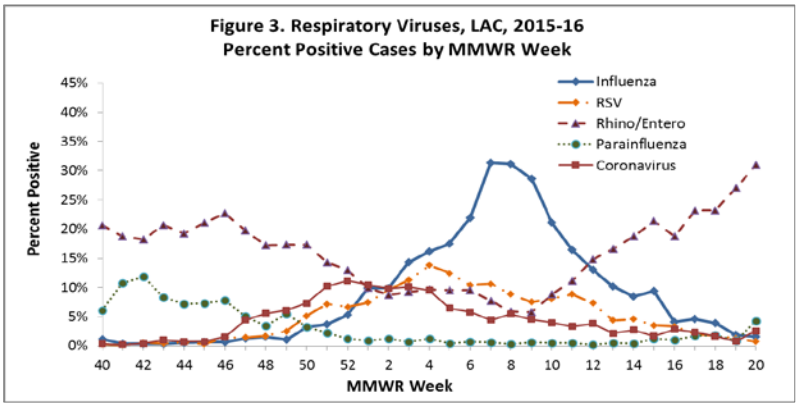
Figure 1. Proportion of Respiratory Illness Emergency Department Visits by Week, LAC, 2009-2015

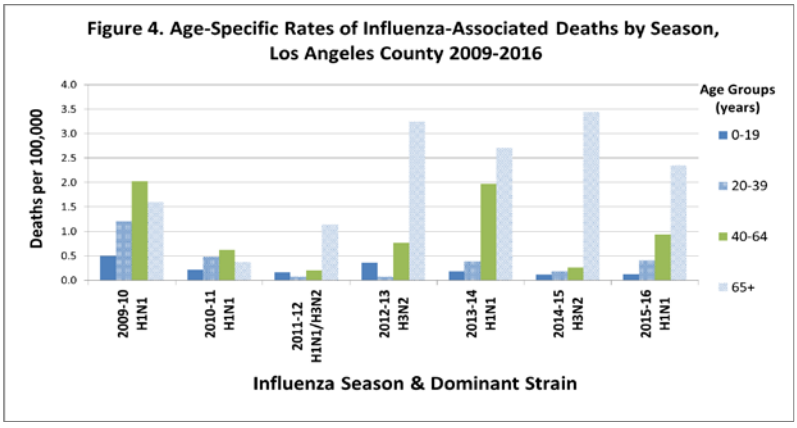


Sentinel Laboratory Data

Eight sentinel laboratories serving healthcare providers and institutions across LAC reported weekly influenza and other respiratory virus data this season. Although individual cases of influenza are not reportable to the LAC Department of Public Health (DPH), analyzing data from these sentinel labs provides a robust estimate of influenza and other respiratory virus activity in the county. This season, a total of 50,640 respiratory isolate tests were reported to LAC DPH (Table 1). Figure 3 shows the distribution of percent positive rates of respiratory specimens by week. Influenza activity began to increase at the end of December, peaked mid-February, then tapered off in April. Other viruses co-circulated with influenza, contributing to the overall impact of respiratory illness in LAC.







Influenza-Associated Deaths

To date, a total of 70 IADs have been confirmed in LAC this season*. The majority of deaths (61%) occurred in those under 65 years old (median 59 years old), which is consistent with other A (H1N1) predominant seasons that more severely affect the <65 years old population (Table 2). More deaths overall were reported in LAC this season compared to last season. Of the 3 pediatric IADs reported this season, 2 had no past medical history identified, highlighting the potential for severe influenza outcomes in otherwise healthy children.

Figure 4 compares the distribution of LAC IADs by age-specific rates across the past 7 influenza seasons. During A (H1N1) seasons, the 20-64 age group accounts for a greater proportion of IADs compared to A (H3N2) predominant seasons. Overall, the CDC estimates that about 90% of all IADs occur among adults 65 years and older[1].

*This number may change as more information becomes available.

1. Estimating Seasonal Influenza-Associated Deaths in the United States: CDC Study Confirms Variability of Flu | Seasonal Influenza (Flu) | CDC

Table 2. Demographic Characteristics of Influenza Fatalities LAC 2009-2016

		2015-16† N(%)	2014-15 N (%)	2013-14 N(%)	2012-13 N (%)	2011-12 N (%)	2010-11 N (%)	2009-10†† N (%)
Total Fatalities		**70**	**55**	**105**	**70**	**24**	**43**	**127**
Age (years)	Median	**59**	82	56	68	64	45	48
	Range	**1-103**	1-101	0-89	0-100	0-104	0-92	0-94
	0-5	**2 (3)**	1 (2)	1 (1)	5 (7)	2 (8)	4 (9)	3 (2)
	6-17	**1 (1)**	2 (4)	3 (3)	3 (4)	2 (8)	2 (5)	10 (8)
	18-40	**10 (14)**	5 (9)	13 (12)	4 (6)	2 (8)	14 (33)	37 (29)
	41-64	**30 (43)**	8 (14)	59 (56)	22 (31)	6 (25)	19 (44)	60 (47)
	65+	**27 (38)**	39 (71)	30 (28)	36 (52)	12 (50)	4 (9)	17 (13)
Gender	Male	**38 (54)**	29 (53)	67 (64)	35 (50)	10 (42)	20 (47)	57 (45)
	Female	**32 (46)**	26 (47)	38 (36)	35 (50)	14 (58)	23 (53)	70 (55)
Race	Hispanic	**26 (37)**	16 (29)	48 (46)	29 (42)	12 (50)	26 (60)	56 (49)
	White Non-Hispanic	**21 (30)**	26 (47)	41 (39)	25 (37)	5 (21)	9 (21)	39 (34)
	Asian/Pacifc Islander	**13 (19)**	8 (15)	7 (7)	6 (9)	3 (12)	4 (9)	9 (8)
	Black	**9 (13)**	4 (7)	9 (8)	8 (12)	4 (17)	4 (9)	11 (9)
	Native American	**1 (1)**	1 (2)	0	0	0	0	0

†2015-16 season missing race data for one case ††2009-10 season is missing race data for several cases

Respiratory Outbreaks

The total number of respiratory outbreaks confirmed in LAC decreased to 47, compared with 58 last season. The majority of respiratory outbreaks this season occurred in schools or pre-schools (47%), followed by skilled nursing facilities (SNFs) (28%) (Table 3). Respiratory outbreak definitions vary by setting, however in general, clusters of ILI (fever >100° F with cough and/or sore throat) is cause for investigation.

Thirty-four respiratory outbreaks were confirmed in schools, daycare, and assisted living facilities. Of those, influenza was identified as the responsible pathogen in 11 outbreaks, with flu B accounting for the majority of them (73%). In SNFs, influenza was identified in 10 of 13 respiratory outbreaks with types A and B equally accounted for.

Table 3. Characteristics of Confirmed Community Respiratory Outbreaks LAC 2009-2016

	2015-16 N (%)	2014-15 N (%)	2013-14 N (%)	2012-13 N (%)	2011-12 N (%)	2010-11 N (%)	2009-10 N (%)
Total	**47**	**58**	**29**	**73**	**39**	**60**	**436**
Location							
Skilled Nursing Facility (SNF)	13 (28)	25 (43)	12 (41)	23 (32)	12 (31)	7 (12)	25 (6)
School or Pre-School	22 (47)	20 (34)	11 (38)	41 (56)	22 (56)	46 (77)	376 (86)
Assisted Living	8 (17)	12 (21)	3 (10)	6 (8)	2 (5)	3 (5)	20 (5)
Daycare/child care	2 (4)	1 (2)	1 (3)	3 (4)	3 (8)	3 (5)	6 (1)
Other	2 (4)	0	2† (7)	0	0	1 (1)	9 (2)
Etiology							
Influenza††	21 (45)	37 (64)	7 (24)	17 (23)	6 (15)	18 (30)	74 (17)
Other Respiratory (RSV, Rhinovirus, Strep)	2 (4)	1* (2)	0	1 (1)	7 (18)	4 (7)	0
Respiratory unknown etiology	24 (51)	20 (34)	22 (76)	55 (76)	26 (67)	38 (63)	362 (83)

†Same home for pregnant women and children
††Confirmed influenza outbreaks must include at least 1 positive lab test
*Both influenza and strep were detected in one outbreak

2016-2017 Seasonal Vaccine

The World Health Organization and the Food and Drug Administration's Vaccines and Related Biologics Advisory Committee recommends that next season's influenza vaccine contain the following components:

- A/California/7/2009 (H1N1)pdm09-like virus
- A/Hong Kong/4801/2014 (H3N2)-like virus
- B/Brisbane/60/2008-like virus (B/Victoria lineage)
- B/Phuket/3073/2013-like virus (B/Yamagata lineage) (quadrivalent only)

These components represent a change in the A (H3N2) strain and the influenza B lineage included in the trivalent vaccine from the 2015-2016 vaccine. Influenza vaccination is the best way to protect yourself and others from getting influenza and potentially serious complications. Vaccination is recommended for everyone 6 months of age and older without contraindications.

The live attenuated influenza vaccine (LAIV), also known as the "nasal spray vaccine" should not be used during the upcoming influenza season. This recommendation was based on data showing lower effectiveness of LAIV from 2013-2016. This marks a significant change in the CDC's Advisory Committee on Immunization Practices (ACIP) recommendations for the 2016-2017 influenza vaccine. See the full report here:

ACIP votes down use of LAIV for 2016-2017 flu season | CDC Online Newsroom | CDC

Acknowledgments: The Los Angeles County Department of Public Health Acute Communicable Disease Control Program would like to thank all of the laboratorians, infection preventionists, school personnel, Community Health Services staff, medical examiners, medical records personnel, nurses and physicians, and others who report cases, obtain information, control outbreaks, provide vaccine, and are an integral part in the surveillance and control of influenza, and other respiratory diseases, in Los Angeles County. Without these individuals, our work would not be possible.