
County of Los Angeles • Department of Health Services
Public Health
Acute Communicable Disease Control
Special Studies Report 2000

**LOS ANGELES COUNTY INFLUENZA SURVEILLANCE 2000-2001: WHO KNEW WHAT
FLU WOULD DO?**

Because of difficulties producing the 2000-2001 influenza vaccine, distribution was postponed and forecasts assumed this would result in an especially severe season. However, despite the vaccine delay and subsequent shortages, the influenza season in Los Angeles County (LAC) was actually quite mild; the onset of influenza activity occurred several weeks later than usual, the peak in activity was far less pronounced than the previous season, and overall, the incidence and impact of influenza was substantially less extreme than expected. Similarly, during the 2000-2001 season, there were no confirmed influenza outbreaks in LAC (compared to five confirmed outbreaks during 1999-2000), and nationally, the influenza/pneumococcal mortality rate seldom exceeded the seasonal baseline or the epidemic threshold.

The following summarizes the major events which occurred during the 2000-2001 influenza season as well as the surveillance efforts which detail the season's occurrence and impact of influenza.

CHRONOLOGICAL EVENT SUMMARY

During the 2000-2001 season, there were many events that potentially influenced the onset, acceleration and duration of influenza (Table 1). First and foremost was the vaccine delay; because of difficulties in developing the vaccine needed for the 2000-2001 season, vaccine distribution did not begin in LAC until November 1, 2000, more than a month later than usual and three weeks after the first confirmed influenza case of the season was reported. Moreover, since only about 60% of the LAC Department of Health Service's annual allocation of vaccine was received from the State, supplies quickly ran out. Vaccination was able to resume on November 26, 2000.

Despite the vaccine delay and initial shortage, the overall incidence of influenza remained low. In addition, despite the slow start to the 2000-2001 season, the peak in activity still occurred at the usual time for LAC, just prior to the new year.

VIRAL ISOLATE COLLECTION

In order to assess the seasonal pattern of influenza activity in LAC, during the winter months, influenza viral isolates are reported weekly to ACDC from Kaiser Permanente and Cedars Sinai laboratories. When combined with clinical information from the community, these isolate reports are a valuable resource since they effectively describe the onset, peak and duration of influenza activity. In addition, since this surveillance method is fairly consistent from season to season, it provides a practical means of comparing seasons.

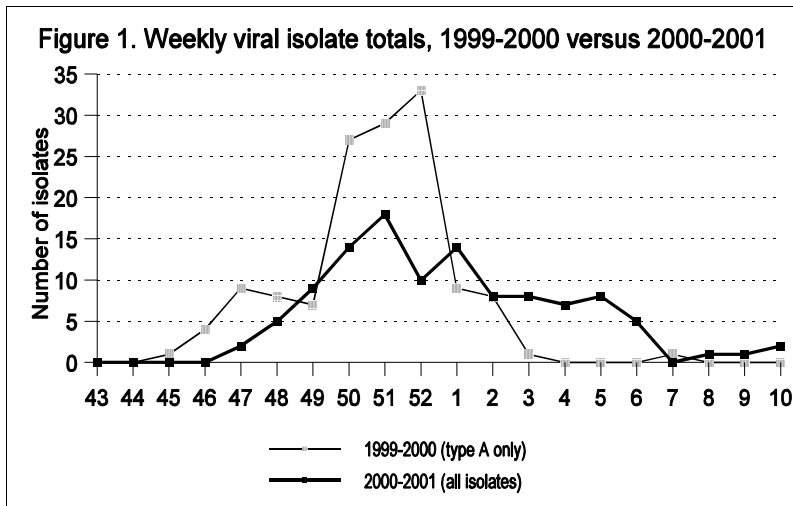
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Table 1. Chronological Event Summary for Influenza Season 2000-2001

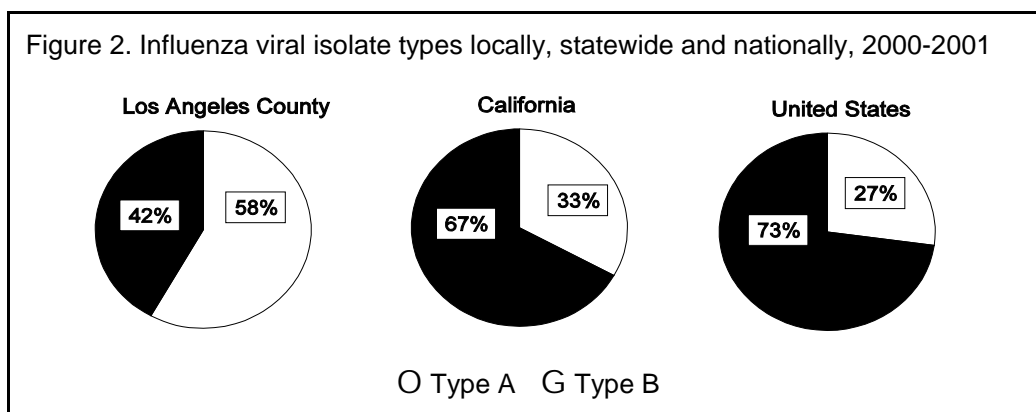
Week	Dates	Events
38	9/17 - 9/23	Vaccine is delayed. In typical years, influenza vaccine distribution begins in late September to early October. However, because of difficulties in cultivating the viruses needed to create the 2000-2001 vaccine, distribution was postponed. The potential consequences of the delay were unknown; the FDA warned of potential vaccine shortages, whereas the CDC predicted delay but no shortage.
41	10/8 - 10/14	First confirmed case in L.A. County (10/11). The first recognized case of influenza (type B) is reported from Kaiser Permanente laboratory.
44	10/29 - 11/4	Vaccine distribution begins (11/1). Supply and demand in action. Community vaccine programs were deluged by people hoping to be vaccinated, most likely a consequence of the increased publicity surrounding this year's vaccine distribution. Only about 60% of the Department of Health Service's annual allocation of vaccine was received from the State. Presumably, the private sector experience was similar.
45	11/5 - 11/11	Vaccine runs out. Beginning with Service Planning Areas 1, 2, 3, and 7, vaccine supplies were exhausted and clinic sessions were canceled until the remaining supply was received.
47	11/19 - 11/25	Antiviral medication as prophylaxis. On 11/20, the FDA approves the use of Tamiflu (oseltamivir) to prevent influenza among those unable to be vaccinated.
48	11/26 - 12/2	Vaccination resumes. Incidence of influenza remains low. The remaining publically administered vaccine is delivered to clinics and administration resumes. Fortunately, the number of confirmed influenza cases remained low with only 4 official isolates reported as of 11/30. The number of isolates was substantially lower than the previous year, which had a cumulative total of 24 isolates by the same date.
50 - 51	12/10 - 12/23	Typical peak of influenza season. Even though the 2000-2001 season began later than expected, the peak in activity occurred as usual, just prior to the new year.
8 - 10	2/18 - 3/10	Typical end of influenza season. Influenza activity tapered longer into the new year than the previous season, but still culminated as expected.

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Figure 1 shows the weekly total number of isolates reported from the 2000-2001 season compared to the 1999-2000 season. Overall, there was a 20% decrease in the total number of influenza isolates reported during 2000-2001 compared to the previous season. In addition, while activity peaked roughly around the same time during the last two seasons, during 2000-2001, the peak was considerably less pronounced and activity extend longer into the new year.



Another differentiating feature of the 2000-2001 season was the high proportion of type B influenza activity nationally and *especially* locally (Figure 2). During the 1999-2000 season, only one isolate of type B influenza was reported in LAC, whereas during the 2000-2001 season, more than half (58%) of the influenza isolates were type B. Across California, roughly a third of the isolates reported during 2000-2001 were type B, and nationally, slightly more than a fourth were type B.

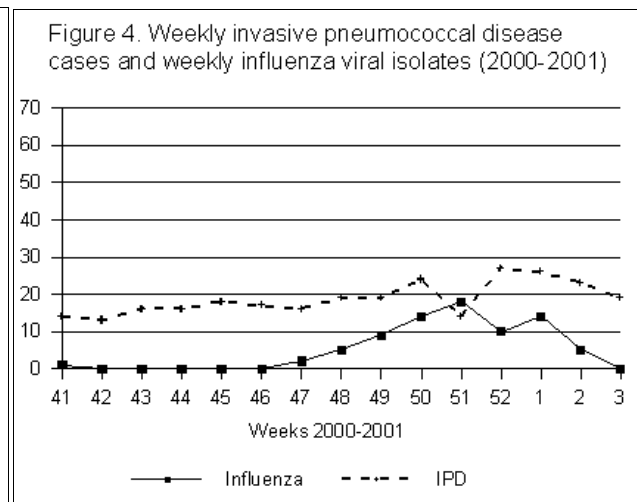
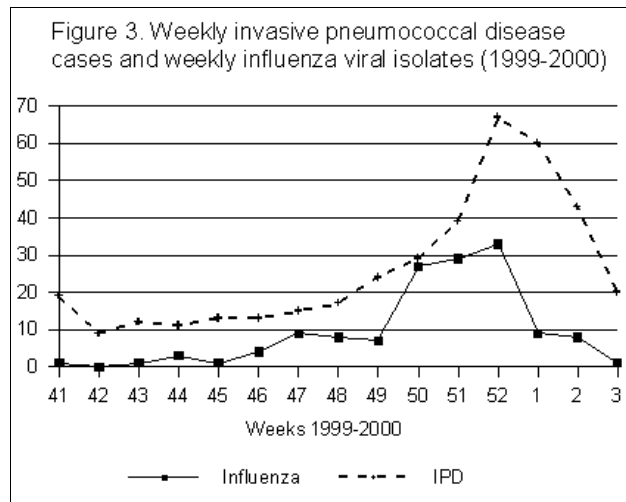


INVASIVE PNEUMOCOCCAL DISEASE

Invasive pneumococcal disease (IPD) can also approximate the intensity and impact of influenza; IPD is often a consequence of severe influenza infection and, as such, seasonal IPD rates typically

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match the seasonal pattern of influenza rates. As shown in figures 3 and 4, the weekly total of IPD cases mirror the weekly total of reported influenza viral isolates. During 1999-2000, both diseases



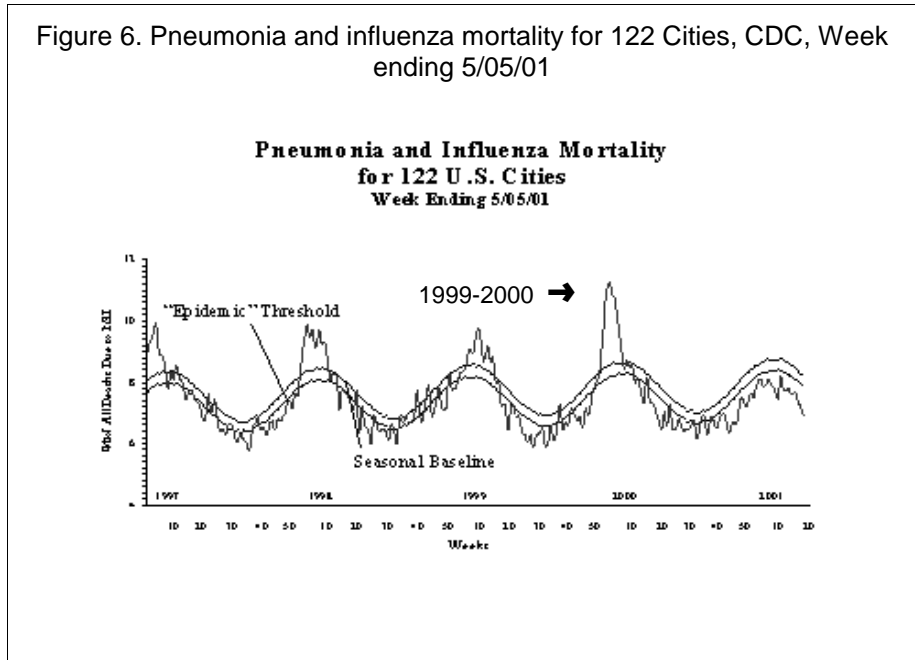
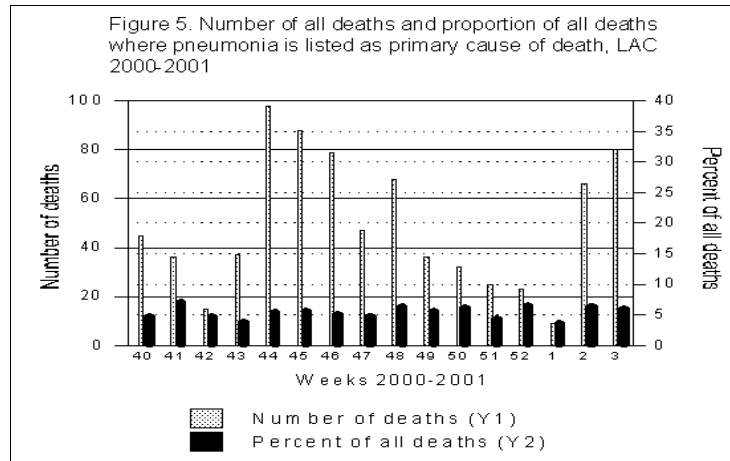
show a sharp peak in incidence around the new year, whereas during 2000-2001, the incidence for both is relatively flat, a finding which is consistent with the mild influenza season.

INFLUENZA/PNEUMONIA MORTALITY

Every week as a part of the 122 Cities Mortality Reporting Program, the LAC Department of Health Services reports to the CDC the number of pneumonia and influenza deaths which occur in the largest cities in LAC (Los Angeles, Glendale, Pasadena, and Long Beach). In 1999, to correct an underreporting of pneumonia deaths, the case definition was expanded from deaths due to pneumonia listed as the *primary* cause of death to deaths from pneumonia listed *anywhere* on the death certificate. However, this modification has not been incorporated into the LAC system due to technical difficulties. In addition, the LAC mortality information is reported by its file date, which may deviate from the actual date of occurrence.

The mild influenza season was reflected by the stable influenza/pneumonia mortality rate. As shown in graph 5, while the number of influenza/pneumonia deaths in LAC fluctuated from week to week, during the height of influenza season, the proportion of deaths in LAC (where pneumonia is classified as the primary cause) remained relatively flat and never exceeded 10% of all deaths.

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The national mortality findings were similar. Consistent with other surveillance findings which have indicated that this has been a mild influenza season, the number of pneumonia and influenza deaths have been low compared to historical averages (Figure 6). While last season (1999 - 2000) there was a dramatic peak in pneumonia and influenza mortality, this season, the number of pneumonia and influenza deaths reported never exceeded the seasonal baseline, much less the

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epidemic threshold. These findings as well as additional influenza-related information is available at <http://www.cdc.gov/ncidod/diseases/flu/fluvirus.htm>.

CONCLUSION

Overall, the 2000-2001 season provides an interesting model for the effectiveness of surveillance methods during a mild influenza season. Findings provided by more direct methods of surveillance, such as the weekly viral isolate reports, continued to reflect the seasonal pattern of influenza activity (i.e., its onset, peak and duration), albeit to a lesser extent than more intense years. In contrast, findings from indirect methods, such as invasive pneumococcal disease and mortality rates, which rely upon the secondary consequences of influenza, were similar to rates which occur outside of influenza season. Thus, while indirect methods validated the low intensity of the season, if taken out of context, they cannot detect the presence of influenza activity. Future efforts should concentrate on expanding methods which can effectively characterize the influenza season during both severe and mild seasons.