

OREGON PUBLIC HEALTH DIVISION • OREGON HEALTH AUTHORITY

FLU SEASON: A SNEAK PREVIEW

Summer may be in full swing, but flu season is always on its heels. This issue of the *CD Summary* revisits the past and looks ahead to next flu season.

A ROTTEN SEQUEL: 2009 H1N1

In early December 2013, hospital emergency departments in Oregon began to ask what new strain of flu was causing severe illness in working-age adults. ICU beds were filling up, and some patients had died. Soon a familiar picture emerged: 2009 H1N1 influenza was back.

Actually, influenza A 2009 H1N1, the virus that caused the 2009 flu pandemic, has been circulating ever since, even here in Oregon. It's become the new seasonal H1N1.* Unlike during other flu seasons since 2009, during 2013–14 the pandemic H1N1 strain was again, overwhelmingly, the predominant influenza A virus in circulation — to the near exclusion of its co-villain H3N2. During 2013–14, >96% of all influenza A subtypes detected at the state public health lab were H1N1.

As in 2009, H1N1 caused severe illness among younger adults and plenty of hospitalizations (Figure) — 608 in the three counties (Multnomah, Washington, Clackamas) of metropolitan Portland — even more than during the 2009 pandemic. Seventy-three percent of those hospitalized were <65 years of age, and 99.6% of influenza A-associated admissions due to H1N1 infection. About 3% of hospitalized patients died, 23% were admitted to ICUs, 13% required mechanical ventilation, and 43% were diagnosed with pneumonia. (During the 2012–13 season, 96% of subtyped influenza A viruses associated with hospitalizations were H3N2.)

Why did 2009 H1N1 reemerge with such intensity, and why did it overtake H3N2? It's a riddle — wrapped in a viral capsid inside a lipid envelope. But it underscores the fact that flu can

* Although the pre-2009 H1N1 virus could return, in theory, it has been notably absent since the pandemic.

show up early, stay long, and leave a lot of suffering in its wake.

VACCINE: RATED FOR EVERYONE

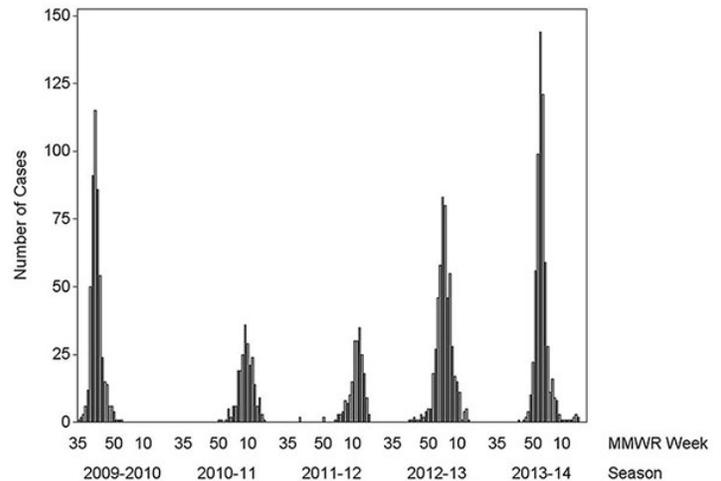
Vaccine is recommended for everyone ≥6 months and this past season reminds us why. H1N1 influenza was eminently preventable with a vaccine well-matched to circulating flu strains, including 2009 H1N1 — but many people didn't avail themselves of the opportunity. Typically, only 26% of men and 33% of women in Oregon 18–64 years of age get a flu shot every year, and just over half of people ≥65 get an annual flu shot. Flu vaccine isn't perfect, but it remains the most effective way to prevent infection, and even when it doesn't prevent illness entirely, it can prevent the more serious complications of flu. The mid-season estimate of the 2013–14 flu vaccine's effectiveness was a fairly typical 61%.¹ Given influenza's routinely high population attack rates, CDC estimates that vaccinations in 2012–13 prevented 79,000 flu hospitalizations and 6.6 million illnesses in the U.S.²

The 2014–15 vaccine-strain viruses for the northern hemisphere influenza season will be the same as last season's: an A/California/7/2009 (H1N1)pdm09-like-virus; an A/Texas/50/2012 (H3N2)-like; and B/Massachusetts/2/2012-like (Yamagata lineage). The quadrivalent vaccines will contain these three strains plus a B/Brisbane/60/2008-like virus (Victoria lineage).

LAIV: PREFERRED FOR KIDS

For children 2–8 years of age, the Advisory Committee on Immunization Practices (ACIP)³ now preferentially recommends the live, attenuated

Figure. Portland metropolitan area influenza-associated hospitalizations by season, 2009–2014.



influenza vaccine (LAIV; administered by nasal spray) over the inactivated influenza vaccine (IIV; administered intramuscularly). Recent research suggests that LAIV is more effective than IIV among this age group.^{4,5} However, if IIV is available and LAIV is not, don't wait to vaccinate your pediatric patients.

LAIV *shouldn't* be used for children who are on aspirin or immunosuppressive therapy; who have asthma or experienced wheezing during the previous 12 months; or with severe allergies to eggs or to influenza vaccines or their components.

On a population level, it may be particularly important to vaccinate children. Stochastic simulation models have estimated that routinely vaccinating just 20% of U.S. children ages 6 months–18 years of age could reduce the total number of influenza cases in the U.S. by 46%, and 80% coverage would reduce cases by 91%.⁶

VIRGOS UNDER-VACCINATED

Vaccination of children may be influenced by the child's birth date relative to influenza season. We analyzed influenza vaccination of Oregon 2-year-olds by interviewing a stratified random sample of Oregon mothers shortly after their child's second birthday. In 2006–2008, 37.7% of mothers reported that their



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toddler had been vaccinated during the preceding year. Children born in November, December or January were more likely to have been vaccinated than children born in July, August or September. The pattern suggested that many children received flu vaccine at their two-year-old well-child visit — but only if their provider had it on hand at that time. This suggests a need to recall all children — whether they're due for a visit or not — to get them vaccinated against flu each season.

ANTIVIRALS: JUST A CAMEO?

Based on randomized controlled trials among healthy adult and pediatric outpatients, a 2014 Cochrane Review concluded that neuraminidase inhibitors reduced the duration of symptoms for influenza-like illness (unconfirmed flu) but did not reduce hospitalizations.⁷⁷ The studies assessed were not specifically designed to determine the effects of antiviral treatment on severe influenza illness, hospitalizations, ICU admissions or death, nor did the review consider any observational studies. CDC continues to recommend prompt antiviral treatment (preferably within 48 hours) for any patient with suspected or confirmed influenza who is hospitalized; has severe, complicated, or progressive illness; or is at higher risk for influenza complications.⁸

NOVEL FLU: A SUMMER SLEEPER?

H7N9 avian influenza continues to circulate in China: 452 cases have been reported since March 2013. The virus appears ill-equipped to spread efficiently among humans.⁹ Flu viruses

can mutate rapidly, however, and modern travel can bring a novel flu strain to our doorstep in a matter of hours. Canada confirmed her first human case of H5N1 avian influenza in January of this year in a person who had recently traveled to China.

Since 2011, swine influenza virus, a.k.a. variant H3N2 (“H3N2v”), has been detected in people with swine contact or who attended agricultural fairs where swine were present. In 2012 alone, 309 human cases of H3N2v were detected across 12 U.S. states, but none in Oregon. One case has been detected so far this summer in Ohio. Human infections with this flu virus have surfaced mainly in the summer months, when agricultural fairs are in full swing. Please report cases of influenza-like illness among people with recent travel to countries afflicted by avian influenza, or people with respiratory illness and recent swine exposure.[†]

FLU SURVEILLANCE: WE NEED YOU

Primary care docs: please consider joining ILINet. Reporting is voluntary, easy, and helps your community keep tabs on flu activity. Email Matthew.Laidler@state.or.us.

FOR MORE INFORMATION

- Oregon Public Health Division general flu information: <http://public.health.oregon.gov/PreventionWellness/FluPrevention/Pages/index.aspx>
- Oregon flu vaccination information: <http://public.health.oregon.gov/PreventionWellness/FluPrevention/Vaccines/Pages/SeasonalFluVaccine.aspx>
- CDC flu site for health professionals: www.cdc.gov/flu/professionals/index.htm

- CDC information on H3N2v for health professionals: www.cdc.gov/flu/swineflu/h3n2v-healthcare.htm

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[†] Oseltamivir didn't, anyway; the review for zanamivir did not evaluate effects on hospitalizations.

[‡] See <http://public.health.oregon.gov/DiseasesConditions/DiseasesAZ/ERI/Documents/guidance-recognizing-emergingrespinf.pdf>