

THE GRIP OF LA GRIPPE: 10 YEARS OF H1N1 AND THE START OF THE 2019–2020 FLU SEASON

It was April 2009, and the virus was wholly unique, a reassortment of influenza viral components never before seen in humans or animals. The first cases identified were in California, and, though they were infected with a swine-lineage virus, lacked a reassuring exposure to pigs, transforming the scenario from zoonotic curiosity to pandemic concern.¹

Identified as influenza A(H1N1), the virus soon became expansive in its extent. By the end of April, it transpired that cases in Mexico had predated the California cases, and the Centers for Disease Control and Prevention (CDC) recommended the delay of all non-essential travel to Mexico. By June there were an estimated 1 million cases in the United States, the virus was spreading to other world regions, and the World Health Organization declared a pandemic.¹ Successive waves of illness in summer and fall swept across the country. Schools and summer camps closed; hospitals braced for high patient loads and staff shortages. The U.S. Food and Drug Administration approved new H1N1 vaccines in September, and a major vaccination campaign, prioritizing higher-risk individuals, was underway by October, just as the second wave of influenza activity was cresting. CDC estimates that during April 2009–August 2010, 151,700–575,400 people died, more than half of them in Africa and Southeast Asia. Strikingly, most of the people who died were younger adults: 65% of deaths were in adults ages 18–64, compared to the typical seasonal flu, in which 80%–90% of fatal cases are adults ≥65 years of age.²

The 2009 H1N1 virus persisted through the next 10 flu seasons,

sometimes as the predominant strain, sometimes as a secondary menace. CDC estimates that during its 2009–2018 existence, the A(H1N1)pdm09 virus has caused 100.5 million illnesses, 936,000 hospitalizations, and 75,000 deaths in the United States.³

While remaining vigilant in surveillance and diligent in preparation for the next great pandemic, we must remember how disruptive plain old seasonal flu can be. Let us recall, therefore, the most recent season and look toward the next.

2018–2019 SEASON REVIEW

The 2018–2019 flu season peaked in mid-March. At its apex, 4.8% of all emergency department (ED) visits in Oregon were for influenza-like illness (ILI), according to ESSENCE syndromic surveillance data (Figure, *verso*). The previous two seasons peaked in January. By contrast, the

fall peak of ILI activity during the 2009 H1N1 pandemic in Oregon was in mid-October, when seasonal influenza activity is typically just beginning to be detected. During that peak, 8.5% of all ED visits were for ILI, an alarming figure.

In the Portland tri-county area, 1,305 people were hospitalized with flu during the 2018–2019 season, and 53 of them died (case-fatality rate 4.1%). More than 99% (1,298) of hospitalized cases had influenza A. Of the 406 that were subtyped, 163 (40%) were A(H1N1)pdm09, and 243 (60%) were A(H3N2). Although hospitalizations were fewer than in the previous two seasons (1,522 in the 2017–2018 season and 1,466 in the 2016–2017 season), the death toll was similar. Flu A(H3N2), generally associated with higher mortality than A(H1N1), was the predominant strain during all three seasons. By comparison, during the 2009–2010 pandemic season, 2.6% of hospitalized

Emergency Rule:

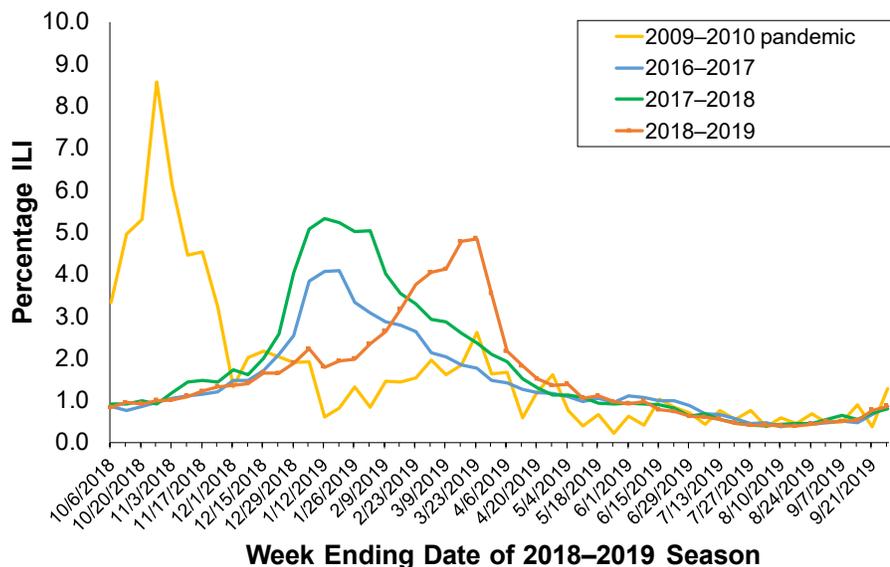
Hospitalization or death due to vaping-associated lung injury (VALI)

In response to the Governor's Executive Order 19-09, the Oregon Health Authority has set forth an emergency rule to mandate reporting of hospitalization or death due to vaping-associated lung injury, effective October 9, 2019. A national outbreak of vaping-associated lung injury was recently identified by the Centers for Disease Control and Prevention (CDC), with 1,299 cases reported from 49 states, the District of Columbia and one U.S. territory as of October 8; 26 deaths have been confirmed in 21 states.* We appreciate your reporting anyone who dies or is hospitalized with vaping-associated lung injury. It helps us to systematically identify those affected by the condition so that we can investigate potential causes of injury, assess the risk to the public, and recommend appropriate preventive action.

Please report **within one working day** any patient who has been hospitalized or who died from radiographically or histologically demonstrated lung injury following a history of e-cigarette use or vaping in the preceding 90 days. Reports may be made to the local public health authority; or to the Oregon Health Authority (phone 971-673-1111; fax 971-673-1100); or on-line at <http://healthoregon.org/onlinemorbidityform>.

*CDC. Outbreak of lung injury associated with e-cigarette use, or vaping. Updated 8 Oct 2019. Available at www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html. Accessed 10 Oct 2019.

Figure. Percentage of ED visits for ILI, Oregon ESSENCE Syndromic Surveillance, 2009–2010 pandemic, 2016–2017, 2017–2018, 2018–2019



flu cases in the Portland tri-county area died during their hospitalization — an important reminder that a pandemic isn't required for the flu to inflict substantial morbidity and mortality.

2019–2020 FLU SEASON VACCINE AND UPDATES

While the viral descendants of pandemic A(H1N1) continue to circulate alongside the variations of A(H3N2), let us turn now to the season at hand. The 2019–2020 U.S. influenza vaccine features updated flu A(H1N1) and A(H3N2) components, as along with last year's B component(s).⁴

All available regular-dose vaccines will be quadrivalent this season and, as in the previous season, live attenuated influenza vaccine (LAIV or FluMist®) is back in rotation. CDC is unwavering in its recommendation that *all* persons ≥6 months of age without a contraindication should receive annual flu vaccination. The only absolute contraindication to influenza vaccination is a previous severe allergic reaction to the influenza vaccine itself (or to one of its components). Cautious providers may consider having patients stay for 15 minutes seated observation following vaccine administration — an ACIP best practice recommendation for the administration of all vaccines to guard against syncope-associated injury, which is most likely to occur in the 15 minutes following vaccine administration, particularly among adolescents.⁵

Though all people would benefit from the protection offered by the flu vaccine, certain groups are at increased risk of complications from influenza disease: children <5 years (and especially <2 years) of age, adults ≥50 years (and especially ≥65 years), persons with chronic health conditions, immunocompromised persons, pregnant and postpartum women, and people living in congregate settings. Furthermore, people who live with or take care of any of these high-risk groups should also be prioritized for vaccination. Any age-appropriate inactivated influenza vaccine or recombinant influenza vaccine may be used with any of these groups, but LAIV is not recommended for immunocompromised persons, close contacts of severely immunosuppressed persons, pregnant women, kids 2–4 years of age with asthma, kids of any age receiving salicylates (aspirin), or persons who have received influenza antiviral medications in the previous 48 hours.⁴ Children <9 years of age who have received <2 lifetime doses of influenza vaccine should receive 2 doses given ≥4 weeks apart; ACIP recently clarified that if a child turns 9 during those 4 weeks, he or she should receive the second dose.⁴

Several studies, including one using data from Portland-area flu hospitalizations and our state immunization registry, show that high-dose vaccines reduce the risk of influenza illness and hospitalization in older adults as compared to standard-dose vaccines.^{7–9} The adjuvanted vaccine may also protect older adults

better than standard dose, non-adjuvanted vaccines.¹⁰

PROTECTING PREGNANT WOMEN

Pregnant and postpartum women are at increased risk of distressing flu complications such as pneumonia, but nevertheless remain undervaccinated. Indeed, over the last five years of surveillance for hospitalized influenza in the Portland Metro area, less than half of pregnant women had received a flu vaccine — well short of the 80% target set by Healthy People 2020.¹¹ Influenza vaccination must be seen as a critical component of prenatal care.

Pregnant women and those ≤2 weeks postpartum with early signs of influenza illness should be evaluated immediately and treated presumptively for influenza with antiviral medications (oral oseltamivir is preferred), without waiting for laboratory confirmation and without regard for vaccination history. The American College of Obstetricians and Gynecologists (ACOG) recommends antiviral treatment even if more than 2 days have elapsed since symptom onset.¹² Lastly, if a woman who is pregnant or ≤2 weeks postpartum is exposed via close contact to someone who likely has the flu, ACOG recommends that postexposure antiviral chemoprophylaxis be considered regardless of vaccination status; CDC, however, would take vaccination status into account.^{11–13}

Whether seasonal or pandemic, influenza can cut great swaths of illness through the community. Handwashing and cough covering are important everyday precautions, but for the best shot at protection — before the end of October — get your flu shot!

FOR MORE INFORMATION

- Oregon FluBites: <http://bit.ly/fluBites>
- CDC FluView: <https://gis.cdc.gov/grasp/fluview/fluportaldashboard.html>
- Oregon Immunization Program Maternal Immunization Toolkit: www.oregon.gov/oha/PH/PREVENTIONWELLNESS/VACCINES/IMMUNIZATION/IMMUNIZATIONPROVIDERRESOURCES/Pages/maternalImm.aspx
- ACOG Maternal Immunization Toolkit: <https://immunizationforwomen.org/providers/resources/toolkits/maternalimmunizations.php>

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REFERENCES

1. Centers for Disease Control and Prevention (CDC). The 2009 H1N1 pandemic: Summary highlights, April 2009–April 2010. Available at www.cdc.gov/h1n1flu/cdcresponse.htm
2. Dawood FS, Iuliano AD, Reed C, et al. Estimated global mortality associated with the first 12 months of 2009 pandemic influenza A H1N1 virus circulation: A modelling study. *Lancet Infect Dis* 2012;12:687–95. Available at www.ncbi.nlm.nih.gov/pubmed/22738893
3. CDC. The burden of the influenza A H1N1pdm09 virus since the 2009 pandemic. 2009 H1N1 Pandemic www.cdc.gov/flu/pandemic-resources/burden-of-h1n1.html. Accessed 27 September 2019.
4. Grohskopf LA, Alyanak E, Broder KR, Walter EB, Fry AM, Jernigan DB. Prevention and control of seasonal influenza with vaccines: Recommendations of the Advisory Committee on Immunization Practices — United States, 2019–20 Influenza Season. *MMWR Recommendations and Reports* 2019;68:1.
5. Ezeanolue E, Harriman K, Hunter P, Kroger A, Pellegrini C. General Best Practice Guidelines for Immunization. Best Practices Guidance of the Advisory Committee on Immunization Practices (ACIP). April 20, 2017.
6. CDC. People 65 years and older & influenza. www.cdc.gov/flu/highrisk/65over.htm. Accessed 27 September 2019.
7. Gravenstein S, Davidson HE, Taljaard M, et al. Comparative effectiveness of high-dose versus standard-dose influenza vaccination on numbers of U.S. nursing home residents admitted to hospital: A cluster-randomised trial. *The Lancet Respiratory Medicine* 2017;5:738–46.
8. DiazGranados CA, Dunning AJ, Kimmel M, et al. Efficacy of high-dose versus standard-dose influenza vaccine in older adults. *NEJM* 2014;371:635–45.
9. Robison SG, Thomas AR. Assessing the effectiveness of high-dose influenza vaccine in preventing hospitalization among seniors, and observations on the limitations of effectiveness study design. *Vaccine* 2018;36:6683–87.
10. Van Buynder P, Konrad S, Van Buynder J, et al. The comparative effectiveness of adjuvanted and unadjuvanted trivalent inactivated influenza vaccine (TIV) in the elderly. *Vaccine* 2013;31:6122–28.
11. American College of Obstetrician and Gynecologists.ACOG Committee Opinion No. 732: Influenza vaccination during pregnancy. *Obstetrics and Gynecology* 2018;131:e109–e114. Available at www.acog.org/-/media/Committee-Opinions/Committee-on-Obstetric-Practice/co732.pdf?dmc=1&ts=20181126T1328280352
12. Swamy GK, Riley LE. Assessment and treatment of pregnant women with suspected or confirmed influenza. *Obstetrics and Gynecology* 2018;132:e169–e173.
13. CDC. Recommendations for obstetric health care providers related to use of antiviral medications in the treatment and prevention of influenza. Seasonal influenza: Antiviral drugs. www.cdc.gov/flu/professionals/antivirals/avrec_ob.htm. Accessed 27 September 2019.