

OREGON PUBLIC HEALTH DIVISION • OREGON HEALTH AUTHORITY

PEOPLE, PIGS AND FLU

By now you've probably heard about the latest "swine flu" — a reassortant influenza A (H3N2) variant. Is this the next pandemic? ¿Porké no? This issue of the *CD Summary* discusses the new virus and re-caps recommendations for influenza vaccination for the 2012–2013 season.

H3N2V

In 2011, infection by a variant influenza virus ("influenza A H3N2v") was confirmed in 12 persons in five states — Indiana, Iowa, Maine, Pennsylvania, and West Virginia. The reassortant virus (called "variant" when infecting humans) comprises genetic material from swine, avian, and human influenza viruses, including the "M" (matrix) gene from the 2009 H1N1 pandemic virus. Although swine influenza viruses rarely infect humans, the pandemic virus M gene may increase the transmissibility from swine to humans or among humans.

Since July 12, 2012, 276 cases have been reported from Hawaii, Illinois, Indiana, Maryland, Michigan, Minnesota, Ohio, Pennsylvania, West Virginia, and Wisconsin. Most of these cases are part of large outbreaks associated with exposure to swine at county and state agricultural fairs; 93% were in children. There is no evidence of efficient and sustained transmission of this virus among people; nearly all (except 3) of the cases had been exposed to swine. With fair season continuing into September in some states, further opportunities for exposure likely exist. CDC doesn't think this heralds a pandemic but is tracking the viruses to look for genetic changes that could lead to sustained human-to-human transmission.

Initial serological studies suggest that children <10 years of age are almost completely susceptible to the new virus, as are adults ≥40 years of age.^{1,2} Adults 20–29 years of age seem to have the highest prevalence of cross-reacting antibodies (~60%), perhaps due to age cohort differences in past infection.

As of August 28, influenza A H3N2v virus hasn't been spotted in Oregon, either in swine or in humans. Fair veterinarians continue to monitor and test pigs. However, here are our recommendations for detecting and treating it, and — better still — for preventing it.

CLINICAL FEATURES

Clinically, influenza caused by H3N2v cannot be distinguished from uncomplicated seasonal flu. Thirteen of the recent cases have been hospitalized, but none have died. We presume that persons generally at risk of complications from influenza are also at increased risk for complications from H3N2v.

CDC tested seven FDA-approved rapid influenza diagnostic test (RIDTs) against seven H3N2v viruses: one test detected just one virus; one test detected three viruses; and one test detected five. Four of the RIDTs detected all seven H3N2v viruses, but small numbers and wide variability among the tests suggest that at this point they shouldn't be relied upon.³ Currently, only state health department laboratories (including ours) and CDC can confirm these viruses, using a real-time reverse-transcriptase PCR test developed by CDC. Before you send specimens, contact your local health department. The Oregon State Public Health Lab will test only specimens from persons with respiratory illness and exposure to swine, or from persons in an outbreak of flu-like illness.

The H3N2v virus is susceptible to the neuraminidase inhibitor drugs oseltamivir and zanamivir, but resistant to amantadine and rimantadine. Recommendations from CDC on when to treat with antiviral therapy whether for variant or seasonal flu are in the Table.⁴

Infection control recommendations are the same as those for seasonal influenza, which include standard, droplet, and contact precautions. A fit-tested N95 respirator or equivalent should be used during aerosol-generating procedures.

Table. Influenza treatment recommendations⁴

Patient characteristics	Recommendation for antiviral therapy
Hospitalized with suspected influenza	Treat as soon as possible (ASAP) — without waiting for results
Suspected influenza with severe complications or progressive illness	
Outpatient with suspected influenza (including H3N2v virus infection), in a group at high risk for complications	
Non-high-risk outpatient without underlying medical conditions but suspected to have H3N2v infection	Treatment ASAP is encouraged

PREVENTION

Prevention is always the first line of defense. There is no vaccine yet; CDC has provided the candidate virus to vaccine manufacturers. Meanwhile,

- Persons at high risk (children <5 years of age, adults ≥65 years of age, pregnant women, and persons with certain chronic medical conditions (e.g. asthma, diabetes, heart disease, immunodeficiency, and neurological or neurodevelopmental conditions) should avoid exposure to pigs and swine barns entirely. Others should minimize such exposure.
- Avoid contact with pigs that seem sick. Persons who have to work near sick pigs should don personal protective clothing, gloves and masks.
- If you don't want to close out the summer without visiting the swine barn at the county or state fair, wash your hands before and after entering, don't take food or drink inside, and keep strollers, pacifiers, and baby bottles and toys outside the area.
- Avoid exposure to pigs if you're sick with flu-like symptoms. Exposure of pigs to human flu viruses might increase the likelihood of genetic reassortments that produce pandemic strains.
- Persons who develop flu-like illness after swine exposure should contact their doctors.

SEASONAL FLU: VACCINATE

Whatever happens with the novel H3N2 strain, rest assured that seasonal



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flu viruses will return this winter. In February the World Health Organization recommended three viruses for the Northern Hemisphere 2012–2013 influenza vaccine: an A/California/7/2009 (H1N1) pdm09-like virus; an A/Victoria/361/2011 (H3N2)-like virus; and a B/Wisconsin/1/2010-like virus (from the Yamagata lineage of B viruses). The H1N1 (2009 pandemic) strain is the same as that used for the past 3 seasons, but the H3N2 and B components are new this year.

Who? Everyone ≥ 6 months of age and without a contraindication should be vaccinated. High-risk patients (pregnant females, children 6 months–4 years of age, persons ≥ 65 years of age, persons with underlying medical conditions and persons living in long-term-care facilities); and persons who care for or live with those at high risk (e.g., household contacts, caregivers, health-care personnel) should particularly be targeted for vaccination.

Doses for kids. Dosing recommendations for children 6 months to 8 years of age have changed for this season to ensure that their immune system is “primed” against the 2009 pandemic H1N1 strain, which is expected to continue to circulate. This season, give children in this age group *two* doses of influenza vaccine, at least four weeks apart, *unless* they are known to have received any of the following (in which case one dose will suffice):

- ≥ 2 doses of seasonal influenza vaccine since July 1, 2010; or
- ≥ 2 doses of seasonal influenza vaccine before July 1, 2010, and ≥ 1 dose of monovalent 2009(H1N1) vaccine; or

- ≥ 1 dose of seasonal influenza vaccine before July 1, 2010, and ≥ 1 dose of seasonal influenza vaccine since July 1, 2010.

If you're not sure, give two doses.⁵

When? Patients should be vaccinated as early as possible. Recent flu seasons in Oregon have peaked in January–March, but flu season can begin as early as October. Take advantage of any opportunity to vaccinate a patient while you have them — you may not see them for a while. Studies of duration of efficacy of influenza vaccination have found efficacy waning but still present in the following season, at least against the strains contained in the vaccine.⁶

B sides. Two lineages of influenza B have co-circulated in recent seasons — B/Yamagata and B/Victoria. However, seasonal trivalent influenza vaccines contain influenza B virus from only one of these lineages; as a result, the vaccine has been well matched to the predominantly circulating influenza B strain in only half of the flu seasons during 2001–2010.⁷

In February, FDA approved FluMist® Quadrivalent vaccine, which will cover both B lineages. CDC estimates that 2.7 million cases of flu would have been prevented had all flu vaccines during 2001–2009 been quadrivalent.⁸

FluMist® Quadrivalent is a live, attenuated vaccine in a nasal spray preparation; it is approved for healthy persons 2–49 years of age. It isn't expected to become available for the 2012–2013 season, but several manufacturers are expected to produce a quadrivalent vaccine in future seasons.

FOR MORE INFORMATION

- CDC information about H3N2v: www.cdc.gov/flu/swineflu/h3n2v-clinician.htm
- National case counts and general information: www.cdc.gov/flu/swineflu/influenza-variant-viruses-h3n2v.htm
- Oregon updates: <http://healthoregon.org/fludata>; navigate to “H3N2v Influenza Health Advisory.”

REFERENCES

1. Skowronski DM, Janjua NZ, De Serres G, et al. Cross-reactive and vaccine-induced antibody to emerging swine influenza A(H3N2)v. *J Infect Dis* 2012; ePub 2012/08/09.
2. CDC. Antibodies cross-reactive to influenza A (H3N2) variant virus and impact of 2010–11 seasonal influenza vaccine on cross-reactive antibodies — United States. *MMWR* 2012;61:237–41. www.cdc.gov/mmwr/preview/mmwrhtml/mm6114a1.htm?cid=mm6114a1_w
3. CDC. Evaluation of rapid influenza diagnostic tests for influenza A(H3N2)v virus and updated case count — United States, 2012. *MMWR* 2012;61:619–21. www.cdc.gov/mmwr/preview/mmwrhtml/mm6132a4.htm?cid=mm6132a4_w
4. CDC. Interim information for clinicians about human infections with H3N2v Virus. Available at www.cdc.gov/flu/swineflu/h3n2v-clinician.htm
5. CDC. Prevention and control of influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices (ACIP) — United States, 2012–13 Influenza Season. *MMWR* 2012;61:613–8. www.cdc.gov/mmwr/preview/mmwrhtml/mm6132a3.htm?cid=mm6132a3_w
6. Bridges CB, Katz JM, Levandowski RA, Cox NJ. Inactivated influenza vaccines. In: Plotkin S, Orenstein W, Offitt P, eds. *Vaccines*. 5th ed. Saunders Elsevier, 2008. pp. 259–90.
7. Belshe RB. The need for quadrivalent vaccine against seasonal influenza. *Vaccine* 2010;28 Suppl 4:D45–53.
8. Reed C, Meltzer MI, Finelli L, Fiore A. Public health impact of including two lineages of influenza B in a quadrivalent seasonal influenza vaccine. *Vaccine* 2012;30:1993–8.