H1N1 Fact or Fiction?
Test your knowledge about 2009 pandemic H1N1 influenza

The second wave of pandemic H1N1 influenza infection has crested both in the United States as well as in Los Angeles County. Nationally, it is estimated that as of December 2009, more than 45 million persons have been infected and more cases are expected. Monovalent H1N1 flu vaccine production was delayed and vaccine has arrived in quantities far behind what was scheduled. Even so, more than 2.5 million doses of vaccine have been made available in Los Angeles County, with the vast majority going directly to clinicians who provide care to those at highest risk of complications of influenza infection. More vaccine is expected to arrive in the weeks ahead. Because the future course of the H1N1 pandemic is unknown, it is important to vaccinate as many persons as possible. The vaccine is now available to any patient over the age of 6 months for whom the vaccine is not medically contraindicated. However, it remains important to encourage vaccination for patients at highest risk of flu complications: pregnant women, caregivers of persons less than 6 months of age, persons 6 months through 24 years of age, persons 25 through 64 years of age with a chronic medical condition, and health care/emergency medical services workers. Please direct questions about pandemic H1N1 flu vaccine orders to the Public Health Call Center at (866) 756-1512. In this brief article, we highlight fact and fiction about H1N1.

FICTION! Even though the second wave of the H1N1 pandemic has crested in Los Angeles County, a large majority of the population remains susceptible to infection in the months ahead. Over 99% of viruses isolated in California are the pandemic H1N1 strain, which will almost certainly continue to circulate throughout the world in the months and years ahead. This is what normally occurs following the introduction of a new pandemic influenza virus. While the virus will undergo genetic drift so that future seasonal vaccines will eventually contain variations of the current H1N1 virus strain, it is possible the current strain will cause repeated outbreaks. In fact, this year’s pandemic is very similar to the influenza pandemic that occurred in the United States during 1957-58, when a third wave of the epidemic occurred in the nation during the months of January through March. For these reasons, it is very important to continue to recommend vaccination for those in the priority groups and for any other person who desires to receive the vaccine.

Antiviral medications are recommended for everyone who has flu-like symptoms.
FICTION! Most cases of H1N1 flu in the United States have been mild and have not required antiviral treatment. Overall, the case-fatality rate appears to be well below 0.1%. Public Health recommends that providers treat suspected or confirmed pandemic H1N1 flu cases the same way they treat seasonal influenza cases. Early empiric antiviral treatment is recommended for all hospitalized patients with acute febrile respiratory illness, including hospitalized persons with presumed community-acquired pneumonia. Antivirals are also recommended for those at highest risk for influenza complications, and persons who are at high risk and in close contact with confirmed or suspected influenza cases.

For additional guidance: www.publichealth.lacounty.gov/acd/docs/H1N1/ClinicalGuidance/TreatmentProphylaxis.pdf.

Providers should report all cases of influenza to the LA County Department of Public Health.

FICTION! Ongoing surveillance of pandemic H1N1 influenza is an important tool that helps to identify severe disease, better understand risk factors for complications, identify cases in long-term care and large group residential institutions, and identify outbreaks. However, providers should not report all cases of influenza-like illness (ILI) to the Department of Public Health. Only report those who
• Have died or are severely ill (hospitalized and require ICU care).
• Are part of an outbreak of influenza-like illness.

Contact the Acute Communicable Disease Control program at (213) 240-7941 or visit www.publichealth.lacounty.gov/acd/Flu.htm.
Pneumococcal vaccination is an important tool against influenza complications, including pandemic H1N1 influenza complications.

FACT! The groups at greatest risk for severe illness from pandemic H1N1 influenza also face the highest risk for complications from pneumococcal infection. In fact, many of the deaths during recent pandemic H1N1 flu outbreaks have been among persons with chronic health conditions that increase the risk for pneumococcal complications, such as asthma, chronic pulmonary disease, heart disease, and metabolic disorders (e.g., diabetes). Furthermore, recent CDC surveillance data indicate greater than expected cases of invasive pneumococcal disease (IPD) in some areas of the United States, which are coincident with increases in flu-related hospitalizations. This suggests that H1N1 flu may be responsible for the increase in IPD cases.

Vaccinating children and adults against pneumococcal disease, per the U.S. Advisory Committee on Immunization Practices guidelines, can prevent invasive pneumococcal infections for those infected with H1N1 and others at increased risk for pneumococcal complications.

Following simple illness prevention tips can help prevent the spread of pandemic H1N1 influenza.

FACT! The following simple illness prevention tips can prevent the spread of H1N1:

• If you are sick, stay home from work or school and limit contact with others until you are well.

• Cover your nose and mouth with a tissue when you cough or sneeze. If a tissue is not available, use your sleeve.

• Wash your hands often with soap and water, especially after you cough or sneeze.

• When possible, avoid close contact with sick people. Avoid touching your eyes, nose, or mouth.

• Avoid sharing personal items such as forks, toothbrushes, and towels.

Additional guidance regarding precautionary measures, free educational materials and the latest H1N1 updates can be found at www.publichealth.lacounty.gov and www.getimmunizedca.org.

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Guillain-Barré Syndrome Now Legally Reportable

As part of post-licensure vaccine safety monitoring of the 2009 influenza A (H1N1) vaccine, the Los Angeles County Department of Public Health (DPH) is collaborating with the Centers for Disease Control and Prevention (CDC) and the California Department of Public Health to identify patients with Guillain-Barré syndrome (GBS).

During the 1976 swine influenza campaign, an increase in GBS was noted among vaccine recipients. There has been no indication from the Food and Drug Administration’s efficacy and safety studies that the 2009 influenza A (H1N1) vaccine will pose a risk of GBS. However, in anticipation of widespread vaccination, CDC and DPH began conducting enhanced GBS surveillance in early October 2009.

Because of the importance of monitoring for GBS in this setting, GBS was made a legally reportable disease in LA County for one year, from October 1, 2009, through September 30, 2010.

Since DPH is conducting enhanced surveillance to look for any increases in GBS cases above the expected annual baseline, physicians are required to report all newly diagnosed cases of GBS to DPH regardless of vaccination status. Confirmed or suspected cases must be reported within seven (7) working days using the GBS reporting form, which can be found online at http://www.publichealth.lacounty.gov/ACD/EpiForms/GuillainBarreSyndromeCaseRepForm.pdf. Health care providers who have questions regarding GBS reporting may call (213) 240-7941.

Guillain–Barré syndrome has long been recognized to occur rarely after Campylobacter infection, as well as infections with Mycoplasma, influenza itself, and other viruses. GBS is a rare disease with a baseline incidence in the United States estimated at 1–2 cases per 100,000 per year. Thus, in LA County with an estimated population of 10 million, we would expect to have 100–200 cases per year regardless of 2009 influenza A (H1N1) vaccination.

Guillain-Barré Syndrome

GBS or Acute Inflammatory Demyelinating Polyradiculoneuropathy is an autoimmune process characterized by rapid progression of inflammatory demyelination of the nerve roots and peripheral nerves. Patients present with acute, bilateral, symmetric weakness that usually spreads from the legs upward and may involve respiratory and cranial nerve muscles. Sensory symptoms generally are overshadowed by the motor loss. Tendon reflexes are lost as the weakness progresses. The autonomic nervous system may be involved. The diagnosis of GBS is suspected in a patient who presents with progressive weakness and areflexia. Cerebrospinal fluid analysis shows increased protein level without a prominent cellular response.

Influenza Vaccination and GBS

Multiple infectious illnesses, including Campylobacter jejuni and upper respiratory infections, are associated with GBS. It is important to remember that influenza infection itself may trigger GBS. Getting GBS from a vaccination is very rare. In these very rare cases, someone may develop GBS in the days or weeks after getting a vaccination. In 1976, there was a small increased chance of GBS after getting a flu (swine flu) vaccination. This means about 1 more case per 100,000 people who got the swine flu vaccine. Since 1976, many studies have been done to see if other flu vaccines may cause GBS. In most studies, no link was found between the flu vaccine and GBS. However, two studies did suggest that about 1 more person out of 1 million people vaccinated with seasonal flu vaccine may develop GBS. This continues to be studied. The chance of getting very ill from flu is far higher than the chance of getting GBS after receiving the flu vaccine.

In a recent review of vaccine safety monitoring of the 2009 influenza A (H1N1) monovalent vaccines, no statistical differences between H1N1 and seasonal influenza vaccines were noted in the proportion or types of serious adverse events reported. No increase in any adverse events under surveillance has been seen, and monitoring of vaccine safety continues.

Finally, health care providers should report any adverse events following vaccination to the national Vaccine Adverse Event Reporting System, at www.vaers.hhs.gov.

What Do We Tell Patients?

Since pandemic influenza vaccine is prepared in the same manner as seasonal flu vaccine, we have no reason to believe that GBS risk will be any different than for seasonal flu vaccination. A risk profile similar to seasonal influenza vaccine means that, at worst, 1 person in 1 million vaccinated may develop GBS. Given the known benefits of vaccination, the benefits far outweigh the potential harm.

Guillain–Barré syndrome has many causes, including influenza virus. The majority of GBS cases follow GI and respiratory infections. In fact, the risk of GBS following influenza infection will likely be higher than the risk of GBS from vaccine.

Acknowledgment

Special thanks to the Oregon Department of Human Services Public Health Division for sharing its newsletter, which served as the template for this document.

References

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A 5-year-old boy recently arrived from another state and will be enrolling in kindergarten. He is up-to-date on all of his vaccinations; however, his medical record states he had a single-antigen measles vaccination at age 1 year and a dose of MMRV at the age of 3. Does he need another MMR and varicella (VZV) vaccination to enter school?

A. No. California kindergarten entry requires that students have two doses of measles-containing vaccine and only one dose of mumps and rubella-containing vaccines. While only one dose of varicella-containing vaccine (VZV) at any age is required for school entry, school officials should encourage parents to complete the varicella vaccination series with an additional dose of VZV for optimal protection. The child’s parents should also be encouraged to vaccinate their son with a second dose of MMR to better protect him against mumps.

I heard that the pneumococcal vaccination recommendations were recently changed. What changes should my clinic be aware of?

A. There are two different kinds of pneumococcal vaccine. One is the pneumococcal conjugate vaccine (PCV7) that is recommended for all infants and children less than 24 months of age, and children 24 through 59 months of age with high-risk medical conditions. The other is the pneumococcal polysaccharide vaccine (PPSV) that is recommended for all persons 2 through 64 years of age with specific high-risk conditions that place them at risk for invasive pneumococcal disease, and all adults who have not previously received two lifetime doses by age 65. Usage recommendations for PPSV were revised on October 22, 2008, by the U.S. Advisory Committee on Immunization Practices (ACIP).

Based on data reviewed by ACIP, persons having asthma as well as persons who smoke are at increased risk for developing invasive pneumococcal disease. These two independent risk factors were therefore added to the list of indications for receipt of PPSV in adults 19 through 64 years of age.

The second change pertains to the routine vaccination of Alaskan Native and American Indian children 24 through 59 months of age who have been vaccinated with PCV7. Routine use of PPSV for those children who have been vaccinated with PCV7 is no longer recommended. In addition, routine vaccination of persons less than 65 years of age solely because they are Alaskan Native or American Indian is no longer recommended. PPSV continues to be recommended for Alaskan Natives and American Indians if they have a medical condition or risk factor (such as smoking) that puts them at high risk for invasive pneumococcal disease.

Lastly, although a second dose of PPSV continues to be recommended for children 2 years of age and older who are immune-suppressed, have sickle cell disease, or functional or anatomic asplenia, the recommended vaccination interval has changed. For children 10 years of age or younger, a second dose is now recommended to be given 5 years after the first dose, instead of 3 years, as previously recommended. For the most current ACIP recommendations for use of PPSV, visit http://www.cdc.gov/vaccines/pubs/ACIP-list.htm.

Some parents have requested that we provide only one vaccine per visit or that we give single-antigen vaccines. Do you recommend spacing of each vaccine, use of single-antigen vaccines, or an alternative schedule for vaccination?

A. Providers should strive to adhere to the ACIP recommended schedule, which has some flexibility for when doses can be given. The ACIP recommended schedule ensures that infants receive specific vaccine doses, when the vaccines can be given safely, and when they will induce a beneficial immune response. Additionally, this schedule ensures that children will be immunized when the child is most at risk for each of the vaccine-preventable diseases.

Since there are 14 vaccine-preventable diseases for which children should be immunized by 12 months of age, it would require inordinately frequent visits to receive all recommended vaccines if the child only receives one dose per visit. In addition, delaying doses leaves children unprotected for a longer period of time, at the time when they are at higher risk for contracting the disease the vaccine prevents. For example, in the pre-vaccine era, two-thirds of Haemophilus influenza type b (Hib) invasive disease, including meningitis, occurred among children less than 12 months of age. To provide protection before the peak of this disease, you need to be sure to give the recommended number of doses (2 to 3 primary doses, followed by a dose that boosts immunity) well before 12 months of age, which would be difficult to do if you only provide one vaccine per visit.

Also, please remember that administering more than one vaccine during the same visit is safe, effective, and efficient. Studies have shown that receiving several vaccines during the same visit results in an excellent immune response to...
Lessons Learned

A Model for Improving Immunization Coverage Levels

There are many efforts undertaken by health care providers to facilitate an increase in childhood and adolescent immunization rates. Some methods are more successful than others and can be used as model interventions. Providers who have implemented evidence-based interventions, such as a reminder/recall system have been successful in increasing vaccine coverage levels in their practice.

One such provider is the Northeast Valley Health Corporation (NEVHC), a Joint Commission-accredited federally qualified health center in the San Fernando and Santa Clarita Valley areas of Los Angeles County. The corporation is comprised of 12 licensed health centers, including one mobile unit, that provide health care services for low-income and medically underserved populations. Lessons learned and recommendations from the center’s experience can be used to improve immunization coverage levels in physician offices, community clinics, and public health centers.

Background

In 2002, significant efforts were undertaken by Northeast Valley to improve immunization rates. Those efforts included evidence-based interventions, such as the following:

• Implementation of a computerized immunization registry
• Reminder (vaccinations are due)/recall (vaccinations are overdue) postcards
• Tools to prompt providers
• Practice assessments and feedback
• Education on immunization standards of care, including missed opportunities.

Despite the implementation of these interventions, the average up-to-date rate for five of Northeast Valley’s primary

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care health centers was only 49%. Later in 2002, to achieve greater improvement, the plan was revised to include the development of a Case Management Program focused solely on immunizations that was funded through the California Department of Health Services Immunization Branch.

**Case Management Program**

The program was initially implemented at four Northeast Valley primary care centers. At the inception of the project, baseline up-to-date immunization rates were recorded for children between the ages of 24 and 35 months. The children were then assessed on a monthly basis at six designated intervals (3 months, 5 months, 7 months, 13 months, 20 months, and 24 months). Children identified as not up-to-date on their immunizations were automatically enrolled in the program and followed until they completed the primary series of 4 DTaP, 3 polio, 3 Hib, 1 MMR, and 3 hepatitis B, or they turned 3 years of age.

Peer-reviewed literature shows that patient reminder/recall is effective in increasing childhood and adult vaccination rates (“Recommendations regarding interventions to improve vaccination coverage in children, adolescents, and adults.” *Am J Prev Med* 2000;18(1S):92-6). Its primary benefit is to improve the timeliness and completion of recommended immunizations to prevent disease. Reminder/recall strategies have been found effective in all types of medical settings, including private practices, academic medical centers, and public health agency clinics and has led to increases in immunization coverage rates from 5 to 20 percentage points.

Reminder/recall can be delivered by mail, telephone, electronic medium (immunization registry), or a combination of these. The strategies used by Northeast Valley proved to be quite successful. Those interventions included a recall strategy. Project staff contacted parents/guardians by phone to inform them of their child’s immunization status and schedule immunization appointments. After three unsuccessful phone attempts, a postcard generated from the immunization registry was mailed. If postcards were returned or if the child had a new provider, the patients were changed to Moved or Gone Elsewhere (MOGE) status and eliminated from future contact lists. Case managers utilized phone logs to note the dates calls were made, plus a case management log to document the status of each patient.

Case management is a useful and very effective intervention that, when used consistently, can increase immunization rates. As a result of their case management efforts, Northeast Valley saw an overall increase in its up-to-date immunization rates for the 24- to 35-month-old age group in 2003 (80%), 2004 (93%), and 2005 (95%). In the years to follow, Northeast Valley clinics have consistently maintained vaccination coverage levels above 95%.

Building on this success, the case management program was expanded to include an adolescent reminder/recall program, which also includes postcards and phone calls.

**Lessons Learned**

As noted, the enhanced case management program contributed to significant improvements in immunization coverage levels. However, Northeast Valley learned that the use of recall postcards alone is not very effective in increasing immunization rates for any age group. A multi-component intervention that includes phone calls and postcards is most effective. These practices facilitated the inactivation of patients who had moved or were lost to follow-up. In addition, they provided an opportunity to encourage parents to schedule a preventive care visit for their children and adolescents. Finally, use of an immunization registry facilitates the reminder/recall process.

**Tools and Resources**

The American Immunization Registry Association (AIRA) has developed recommendations for implementation of reminder/recall systems using immunization registries. To download a copy of the recommendations, go to [www.immregistries.org/pdf/AIRA_MIROW_RR_041009.pdf](http://www.immregistries.org/pdf/AIRA_MIROW_RR_041009.pdf).

In Los Angeles County, the CAIR immunization registry (formerly known as LINK) can be used to conduct reminder/recall activities in your office. To join the registry or learn how you can use CAIR to conduct reminder/recall in your practice, visit the CAIR website at [www.immunizelink.org](http://www.immunizelink.org) or contact the Helpdesk at (213) 351-7411.

Additional information about reminder/recall strategies is available at [www.thecommunityguide.org/vaccines/index.html](http://www.thecommunityguide.org/vaccines/index.html).

To learn more about NEVHC’s strategies, contact Debra Rosen, RN, MPH; Director, Public Health Programs, Chronic Disease and Health Education at NEVHC at (818) 270-9700, ext. 41517 or debrarosen@nevhc.org.

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Los Angeles County Department of Public Health
Protecting Moms and Their Babies
Preconception, Pregnancy, and Postpartum Vaccine Recommendations

Vaccines play a pivotal role in keeping pregnant women and their infants healthy and safe. Vaccines that are of particular importance before, during, and after pregnancy are Tdap (tetanus, diphtheria, and pertussis), MMR (measles, mumps, and rubella), varicella, influenza, and hepatitis B.

Preconception Vaccine Recommendations

Vaccinations are a basic part of preconception care for all women of childbearing age. MMR and varicella vaccines are very effective in preventing congenital rubella and varicella syndromes. In fact, systematic vaccination has virtually eliminated congenital rubella in the U.S., but one case was reported in Los Angeles County this past year. Providers are therefore encouraged to screen for vaccination history and/or immunity at preconception visits and vaccinate women with unknown vaccination status or those who have not completed their vaccination series. Women who receive live vaccines, such as varicella and MMR, should be counseled to delay conception until 4 weeks after vaccination.

Vaccination of Pregnant Women

The risk to a developing fetus from vaccinating the mother during pregnancy with inactivated virus or bacterial vaccines or toxoids is primarily theoretical. Therefore, providers should weigh any theoretical risk of vaccination against the benefit of vaccination for the individual. Vaccinations during the antepartum period may be beneficial in the event the mother is at risk. For example, inactivated pandemic H1N1 influenza vaccine is recommended for pregnant women since they are at increased risk for developing serious complications related to H1N1 infection. Both seasonal and H1N1 influenza vaccines are safe and effective and should be given to pregnant women. Providers are encouraged to vaccinate pregnant women using the seasonal inactivated trivalent influenza vaccine (TIV) to prevent the serious complications and hospitalization related to the virus. Live-attenuated influenza vaccine (LAIV) is contraindicated for pregnant women. Live-virus vaccines are generally contraindicated for pregnant women because of the theoretical risk of transmission of the virus to the fetus. If a live-virus vaccine is inadvertently given, or if a woman becomes pregnant within 4 weeks after vaccination, she should be counseled about the potential effects on the fetus. However, vaccination is usually not an indication to terminate the pregnancy.

For all vaccines, pregnant women should be counseled on risks and benefits for her particular situation.

Vaccinations in the Postpartum Period

For women who have not been immunized with all recommended vaccines, the Centers for Disease Control and Prevention’s Advisory Committee on Immunization Practices (ACIP) recommends that Tdap, varicella, and MMR vaccines be given in the immediate postpartum period to protect the mother and her infant. Vaccines given after delivery are safe and effective, even for breastfeeding mothers.

Women who are not immune to measles, mumps and rubella should be vaccinated with MMR prior to leaving the hospital. In addition, new mothers should receive varicella vaccine if they do not have proof of immunity or have not completed the varicella vaccination series. If necessary, a second dose of MMR and varicella should be given 4 weeks later to complete the series.

Pertussis and influenza vaccinations should also be given to women prior to discharge to protect their newborn infants. The consequences of contracting pertussis or influenza can have a deadly effect on newborns as they are too young to be immunized. Tdap and influenza vaccines are also recommended for anyone who lives with or takes care of newborns.

Key Recommendations

• Review immunization status and other evidence of immunity to vaccine-preventable diseases for all women of childbearing age. The CDC’s preconception and pregnancy vaccination guidelines can be accessed at www.cdc.gov/vaccines/pubs/downloads/f_preg_chart.pdf.

• Use non-traditional settings, such as WIC centers and ob/gyn offices, to vaccinate women.

• Screen all women for immunity to rubella, varicella, and hepatitis B. If they do not have immunity, vaccinate appropriately.

• Provide influenza vaccination (seasonal and H1N1) to women who are pregnant during the influenza season.


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**Physician Registry**

**Become a Member of the Health Alert Network**

The Los Angeles County Department of Public Health urges all local physicians to register with the Health Alert Network (HAN). By joining, you will receive periodic email updates alerting you to the latest significant local public health information including emerging threats such as pandemic influenza. Membership is free. All physician information remains private and will not be distributed or used for commercial purposes.

Registration can be completed online at www.lahealthalert.org or by calling 323-890-8377.

*Be aware of public health emergencies! Enroll now!*

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**Editor’s Note**

Over the past five years, I have had the privilege of serving as Editor in Chief of *The Public’s Health*, which debuted in August 2001, as a publication for medical professionals in Los Angeles County. Throughout this time, I have enjoyed bringing you editorial content that I and my extremely competent editorial board have deemed useful and of interest to practicing providers. Your feedback and well wishes have assured me that we succeeded in this endeavor.

During my tenure, we were able to provide an increasing variety of topics from numerous health-related fields. We kept readers abreast of current policies and changes within the Department of Public Health. We increased guest authorship, and readership grew.

Now, the time has come for me to pass the torch, as I accept new challenges and responsibilities within the department. Hence, this issue will be my last as the editor. I will be turning over the helm to two well-respected colleagues, Dr. Jeffrey Gunzenhauser, Medical Director of Public Health, and Dr. Steven Teutsch, Chief Science Officer. Both physicians have worked on clinical issues in prevention and population health for many years and have a keen sense of the needs of clinicians.

Many new changes are planned for the future. In the new year, this publication will relaunch with a new title and a redesigned layout. All of the upcoming modifications reflect the Department of Public Health’s continuing commitment to meeting the evolving needs of our partners in the community. I know you will be impressed. As for me, I would like to thank you for the honor of serving as your Editor in Chief. I wish you all well in your endeavors.

Sincerely,

Sheree Poitier, MD