Balancing the H1N1 Risk with Vaccination
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The H1N1 influenza outbreak has people nervous all over the world. The media has overwhelmed people with information. As a result, many people are afraid of getting the flu this year. In order to prevent the flu, people are turning to the H1N1 flu vaccine. However, some people question the safety of the flu vaccine and are reluctant to be vaccinated. At NCNM, we’re getting questions like:

“If I’m a healthy adult, should I get vaccinated? What if I’m pregnant? What if I’m breastfeeding?"

“Should I vaccinate my kids? What if they have asthma? What if they under 3 years old?”

“I’m on medication for Multiple Sclerosis. Should I be vaccinated?”

While flu vaccines are relatively safe, there are still a number of things to consider before you receive a flu vaccine. We’ve tried to include the most recent data as we weigh-in with rationale opinions on the H1N1 vaccine. As always, we consider the risk of getting the disease with the risk of the vaccine. We also consider individual risk and alternatives to vaccination.

Healthy Adults
Most years, between 5-10% of healthy Americans between the ages of 18-50 experience the flu. A larger number of healthy adults (30-50%) are infected with the flu but don’t experience any noticeable symptoms. If you have a healthy immune system, you should be able to fight off the flu. Your immune system protects you from dozens of viral and bacterial infections each year. Therefore, the most important thing you can do to protect yourself from flu is to keep your immune system healthy by eating nutritious food, exercising, and engaging good hygiene skills like regularly washing your hands.

If you are a healthy adult, you may still want to be vaccinated if you are taking care of people who fall into a high-risk category. Healthy adults can infect others 24 hours before they develop symptoms and up to five–seven days after becoming sick. It is also possible to be infectious and never develop symptoms. Thus, if you are a health-care worker, you can spread the flu to others. Since patients are often fall into high-risk categories, health care workers should strongly consider being vaccinated. Also consider being vaccinated if you are taking care of an elderly person or an infant who is less than 6 months old. Finally, if you are healthy, but you also smoke (cigarettes or marijuana), are an alcoholic, or you are obese, you may be more susceptible to getting pneumonia with flu infection, so you may want to be vaccinated. The vaccine is 80-96% effective in healthy adults under 65 years of age. (Science Daily, Sept. 13, 2009)

You should NOT be vaccinated against the H1N1 flu if you have had severe reaction to a past flu vaccine. If you are allergic to eggs, you should also avoid
the flu vaccine. You should NOT be vaccinated if you have an illness with a fever. Some people should not be vaccinated without first consulting a physician.

Often the decision to be vaccinated is more economic than health related. Can you afford to miss one–seven days of work if you should get the flu? Do you have a partner to help with the kids if you are sick in bed? If these are situations that would threaten your personal economic stability, you should consider being vaccinated.

**Pregnant Women**

There are several reported cases of pregnant women who have developed severe complications from the H1N1 flu. Even though H1N1 flu seems to be mild in healthy adults, some pregnant women have lost their pregnancies, and have been hospitalized as a result of flu.

The H1N1 vaccine has not yet been tested in pregnant women. The National Institutes of Health will be testing the vaccine in pregnant women in October 2009. Previous flu vaccines have been safe in pregnant women. If you are pregnant and choose to be vaccinated, your biggest consideration will be the characteristics of the flu vaccine you receive. The vaccines are made in multi-dose vials that contain mercury or pre-filled syringes that do not contain mercury. If you are pregnant, request the pre-filled syringe. All of the vaccine manufacturers make a version of the vaccine that is mercury (Thimerosal) free—however you must request it. While there is not sufficient evidence to suggest that Thimerosal has negative effects on a fetus, the Environmental Protection Agency reminds pregnant women that a fetus is very sensitive to mercury. Therefore, to be safe, get a Thimerosal-free vaccine. Also avoid the intra-nasal influenza vaccine. The intra-nasal vaccine (called LAIV) is a live attenuated vaccine and is not considered safe for pregnant women.

Regardless of whether or not you are vaccinated, if you’re pregnant, you should try to stay away from people with the flu. If you have an appointment with a physician or other health care professional (acupuncturist, chiropractor, massage therapist, etc), you should ask the doctor’s office to keep you separated from other patients or clients who may have the flu. You may also consider wearing a respiratory mask if you have a doctor’s appointment.

**Breast-feeding Women**

If you’re a woman with a newborn, your breast milk is protective for your infant. Therefore, if you are vaccinated, your immunity will be passed along to your child for as long as you breast feed. If you get the flu, your breast milk will still be protective for your child. However, be careful of exposing your baby to the flu. Some pediatricians recommend expressing your breast milk and having someone else feed the infant while you are sick.
**Children**

Children under five tend to be at higher risk for developing flu symptoms. An average of 20% of kids under five develop flu each year. Initial reports suggest that a higher percentage of kids are developing flu symptoms from H1N1. The Center for Disease Control (CDC) recommends that people between the ages of six months and 24 years are vaccinated. The vaccines are not approved for children under six months of age.

The H1N1 vaccine is being tested in three groups of kids: 10-17 year olds, 3-9 year-olds, and 6-35 months-olds. While testing is still in preliminary phase, so far the vaccine appears most effective in 10-17 year old kids. 76% of 10-17 year olds were protected with a single 15 microgram dose of vaccine. In children under nine years of age, only 36% of the kids were protected by the vaccine. And 25% of kids aged 6-35 months were protected with a single dose of vaccine. (Science Daily, Oct. 5, 2009)

Are these vaccines risky for kids? Perhaps the biggest risk is the illusion of protection. Because the vaccine doesn’t appear to be very effective for kids, the likelihood of it protecting your kids is low. Herd immunity will also be low. Some parents are concerned about mercury (Thimerosal) in vaccines. All four manufacturers who make flu vaccines have a mercury-free version. If you do choose to vaccinate your kids, make sure you ask for the pre-filled syringe as this the type that does not contain mercury.

There is a nasal version of the H1N1 flu vaccine. The nasal spray vaccine is called LAIV for live-attenuated influenza vaccine. Rather than inactivated (dead) virus, LAIV contains a live version of the H1N1 virus that has been mutated to be less dangerous. Parents often like the idea of a nasal spray vaccine because it means that kids don’t have to get a shot. However, this vaccine should not be administered to children with asthma, or children under 2 years of age. Because the vaccine is alive, LAIV should also not be given to anyone with a compromised immune system (like a pregnant woman, or someone with HIV.)

If you decide not to vaccinate your kids, there are things you can do to help protect them. Make certain they are eating a good diet with lots of vegetables. Vitamin D is helpful—so get your kids outside to play, or make sure they’re taking their vitamins. Ensure they are washing their hands often. Teach them how to sneeze and cough into their shoulder and bent elbow. And teach them how to breathe into their shirt if someone sneezes around them.

**Asthma**

Flu often causes upper-respiratory symptoms including a dry cough, sore throat, and runny or stuffy nose in addition to a high fever, headache, and muscle aches. The flu vaccine may cause milder versions of these same symptoms. Because people with asthma already have breathing issues, it is not yet clear
whether it is safe for people with asthma to be vaccinated with H1N1 vaccine. A study to evaluate the safety is under way.

In the meantime, the safest way to address flu prevention is asthma is to promote a healthy immune system.

**Other Illness**
Lung diseases like Chronic Obstructive Pulmonary Disease (COPD) and emphysema make people especially susceptible to influenza. If you have respiratory problems from being overweight or obese, you may also be at higher risk for influenza. In these cases, vaccination with H1N1 vaccine may prevent hospitalization if you are exposed to the flu.

There are several other illnesses that make people prone to hospitalization if they get the flu. These include:
- Cardiovascular disease (but not high blood pressure)
- Liver problems
- Kidney problems
- Blood disorders and sickle-cell disease
- Neuromuscular disorders
- Neurologic disorders
- Diabetes and metabolic disorders
- Immune suppression, including HIV and immuno-suppressive medications

There are a number of instances when someone would be taking immuno-suppressive medications. If you have received a transplant or if you have an autoimmune disease such as lupus, MS, rheumatoid arthritis, or insulin-dependent diabetes mellitus, you may also be taking immuno-suppressive drugs. In these cases, the flu shot is safer than getting the flu.

Residency in a nursing home or other chronic-care facility is also a high risk for developing complications from H1N1 flu. Thus, if you live in a nursing home or a chronic-care facility, you may want to strongly consider being vaccinated.

**Flu Symptoms**
Flu can cause a variety of symptoms and may differ in how it presents in different people. People are sick for different lengths of time. Symptoms of seasonal flu include:
- fever (often high)
- headache
- extreme tiredness
- dry cough
- sore throat
- runny or stuffy nose
- muscle aches
• Stomach symptoms, such as nausea, vomiting, and diarrhea, also can occur but are more common in children than adults. Some people who have been infected with the new H1N1 flu virus have reported diarrhea and vomiting.

**Side Effects of Flu Vaccine**

The side effects of the H1N1 Flu Vaccine are a milder form of the symptoms caused by the flu. Approximately 45% of people are expected to have side effects. Side effects usually only last one-two days, if they occur at all.

The H1N1 flu shot side effects include soreness, redness, or swelling in the muscle where the shot was given. In addition, a low-grade fever and muscle aches and headaches could occur.

The H1N1 nasal spray side effects include runny nose, wheezing, headaches, vomiting, and fever. In adults, the nasal spray may also cause a sore throat and cough.

**About Dr. Zwickey:**

Dr. Heather Zwickey is the dean of Research and director of the Helfgott Research Institute at NCNM, where she is an associate professor of Immunology. She also has an adjunct appointment in the Department of Neurology at Portland’s Oregon Health & Science University (OHSU), where she collaborates with researchers and physicians. Dr. Zwickey trained at the world-renowned National Jewish Medical and Research Center in Denver and received a PhD. in Immunology and Microbiology at the University of Colorado Health Sciences Center. Dr. Zwickey completed a post-doctoral fellowship at Yale University.

Dr. Zwickey’s research in Colorado examined innovative vaccine methods for tuberculosis (TB). In this context, she travelled in several developing countries where TB is endemic and thousands of people die each year from vaccine preventable diseases. The need for safe and effective vaccines was readily apparent in her travels. As NCNM’s dean of Research, Dr. Zwickey learned of the large population of people in the US opposed to vaccination, who questioned whether vaccines were harming their children. Having witnessed both sides of the debate, Dr. Zwickey began her own research on how developmental biology, public health, capitalism, and individualized medicine collide within the vaccine field. Thus, Dr. Zwickey brings a unique outlook to the vaccine debate because she has examined the issues surrounding vaccination from multiple perspectives.

Maintaining her passion for global health, Dr. Zwickey serves on the Board of Directors of Natural Doctors International. She collaborates with researchers and physicians in Brazil, Nicaragua, and Tanzania. She is currently writing a book about vaccines.