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Flu Shots for Kids with Medical Conditions or Vaccine Reactions

by Susan Agrawal

Please Note: This article is not intended to discuss the safety of the flu vaccine or any other vaccine, nor is it intended to address personal reasons for or against vaccination in general. It is solely intended to help you decide whether getting a flu shot is appropriate for your child, and to provide you with information about when and how to vaccinate.

Last year's H1N1 flu outbreak provoked tremendous fear for many parents throughout the world. This fear was multiplied dramatically for parents of children with complex medical conditions, particularly those with underlying respiratory or neuromuscular conditions. Unlike the typical flu, which tends to hit older people the hardest, the H1N1 flu was exceptionally cruel to children and young adults, and particularly troublesome for children with high-risk medical conditions. In a CDC study of the 36 pediatric deaths due to H1N1 during the summer of 2009, 67% had significant underlying medical conditions.[1] These included cerebral palsy, muscular dystrophy, or other forms of developmental disabilities in 61% (22 of 36 children), the vast majority of children. Considering that during earlier seasons the percentage of pediatric deaths in children with complex medical conditions was much lower, the 2009 H1N1 flu was definitely more difficult and deadly for these children.

Frightening statistics such as these convinced many parents of children with complex medical conditions to get them vaccinated last year. As flu season approaches this year, parents must again make the choice of whether or not to vaccinate. While official recommendations are clear, the decision is more difficult for children with a history of severe vaccine reactions or symptoms that may worsen after vaccination. This article will provide general information about flu shots, as well as specific information to potentially curb reactions and side effects from the vaccine.

Official Recommendations

It is advisable for virtually all children with complex medical conditions to receive the flu vaccine. The only groups who should not get a flu shot are children under six months of age, people with severe allergies to eggs (mild allergies are OK), people who experienced Guillain-Barré Syndrome or another severe reaction to vaccines in the past, and children

who are sick with a fever. Certain children with immune suppression or other immune system diseases may also be unable to receive vaccines.

There have been concerns that vaccination is potentially harmful for certain groups of children, particularly children with mitochondrial or metabolic diseases who often experience reactions to vaccines. While decisions must be made on a child-to-child basis, virtually all of the prominent doctors caring for children with mitochondrial diseases believe vaccination is safe and appropriate for children with these diseases. See this statement regarding last year's vaccine by Dr. Bruce Cohen on behalf of the United Mitochondrial Disease Foundation: http://www.umdf.org/atf/cf/%7B28038C4C-02EE-4AD0-9DB5-D23E9D9F4D45%7D/091017%20Swine%20Flu%20Vaccine%20H1N1%5B2%5D.pdf. Similarly, MDA supports giving flu shots to the vast majority of its clients, and even offers free shots for affected children. See http://www.mdausa.org/flushots/.

Vaccine Reactions

Many children who are medically complex tend to get vaccine reactions or more significant side effects than healthy children. It is important to note that mild vaccine reactions are normal and to be expected. For the flu vaccine (inactivated shot form), non-allergic side effects include soreness at the site of the injection, fever, cough, body aches, and red/itchy eyes. An allergic reaction would occur soon after administration and consist of difficulty breathing, wheezing, hives, or a fast heartbeat.

If your child experienced a fever and aches after a previous shot, including a high fever, she can still be vaccinated. While many parents are shocked by how ill a child may become after a vaccination, fever and other symptoms are normal and expected reactions. The vaccination requires an immune response from the body in order to work, and running a fever or developing other symptoms is the body's way of beginning the immune process that will ultimately protect your child from the flu.

For some children, fever and other symptoms may be very severe. Underlying symptoms, such as seizures or dysautonomia, may be exacerbated by the fever and other immune responses that are a normal part of the vaccination process. For these children, it is important to weigh the consequences of the vaccine reaction against the potential ramifications of a specific child actually getting the flu. In most cases, the vaccine reaction can be tempered or controlled to some degree, while getting the flu itself would be an unexpected event with unknown consequences. In other words, vaccination is a planned event that you can fully prepare for, while the flu may hit anytime with any degree of severity. Deaths and severe complications requiring hospitalization from the flu vaccine are extraordinarily rare, while the rate of deaths and severe complications from the flu itself have been unfortunately common among children who are medically complex.

Preparing for Vaccine Reactions

If you decide to get a flu shot but expect a reaction, it is best to develop a plan in advance with your doctor. Planning ahead can prevent serious reactions or exacerbations of underlying diseases.

The vast majority of reactions involve secondary symptoms due to fever, or additional symptoms due to a child feeling ill and not eating or drinking. Fever in some children may trigger seizures, autonomic crises, tachycardia, and other symptoms. For these children, controlling the fever is paramount. In children who become particularly sick when fasting, especially children with mitochondrial or metabolic disorders, it is important to ensure that they continue to eat and drink even if they feel sick, achy, or feverish.

Here are some strategies for developing a vaccine reaction plan:

1) Document previous reactions to all vaccines, with a particular emphasis on the flu vaccine. Has your child run a high fever with each vaccine? Has he been achy, irritable, or lethargic? Did he have a seizure or more seizures after vaccination? Has he had allergic symptoms? Has he experienced a fast heart rate or difficulty breathing a day or more after receiving a vaccine?
2) Preplan for your child's specific symptoms.
    a. Children who always get a high fever that causes seizures or other significant secondary symptoms should consider pretreatment with acetaminophen or ibuprofen. A recent study has shown that reducing a vaccine-induced fever may also reduce antibody production to the virus/bacterium in the vaccine, thereby reducing its effectiveness.[2] While this is less important with the flu shot because it is considered a very robust vaccine, it may be wise to only treat for fever if and when fever occurs.
    b. Children who get a high fever and have a history of seizures or other significant secondary symptoms to fever should be treated with acetaminophen or ibuprofen when the fever occurs.
    c. Children who have severe reactions to fasting should be given appropriate calories, especially fruit juices or dextrose solutions, in the days after vaccination. This is particularly true if a child has a fever, which increases energy demands. Many children do not feel like eating after vaccination, and fasting exacerbates their underlying disease. Some children may require extra dextrose or other nutrients, either orally or by feeding tube or IV, which can be arranged in advance.
    d. Children who respond with severe reactions to dehydration need to be kept well hydrated after vaccination, even if they do not feel like drinking. Extra fluids should be given by feeding tube or IV if possible. It may be wise to have extra fluids on hand in whatever form is appropriate for your child.

e. Children with expected mild or moderate allergic reactions should be pretreated with Benadryl. An Epi-pen should be on hand.
f. Children with respiratory or autonomic issues who may experience respiratory distress due to fever or immune response should have oxygen on hand. Rescue medications should be readily available.
g. Other expected immune or autoimmune responses should be pretreated with allergy medications.
h. Other conditions should be addressed individually with your doctor.

3) Determine a plan for which symptoms require emergency attention. These may include extremely high fever, inability to consume adequate calories over 24 hours, severe vomiting, extreme lethargy, severe seizures, or unstable vital signs.
4) Assess how the plan worked and revise it prior to the next vaccination.

Which Vaccine?

This year the H1N1 and seasonal vaccines have been combined into one vaccine. Your child will only need to receive one vaccine this season, although certain children under age nine may need a second booster shot.

Flu vaccines come in two forms: the shot given in an arm or leg, and the nose spray. The shot version of the vaccine contains inactivated (dead) virus and should be given to all children who are medically complex. The nose spray contains live virus and may cause more side effects, especially in children with respiratory or immune system problems. The nose spray, typically called FluMist, should not be given to any child with significant medical problems.

If your child needs to receive the inactivated shot form of the vaccine, it is best for the entire family to receive the shot form. While unlikely, it is possible that the live virus contained in the nose spray could be passed along to another family member, especially a family member with immune system problems.

Children who are medically complex should not be given the vaccine brand Afluria due to a higher risk of fever.

Children over the age of two with underlying respiratory issues or neuromuscular weakness may also want to consider getting the Pneumovax vaccine in addition to the flu shot. This vaccine protects against *Strep. Pneumoniae* bacteria. It is common for people with underlying medical conditions who have the flu to get secondary bacterial infections in the lungs or even in the blood. This vaccine protects against one of the most common bacteria seen as a complication of H1N1.

While multiple studies have exonerated the vaccine preservative Thimerosol as a cause of autism and other problems, some parents still have concerns about this preservative, which is found in some flu vaccines. Typically, single dose vials do not contain this preservative. Ask your doctor if this is a concern you have.

It is also very important for all family members, healthcare providers, and other individuals who come into contact with your child to get vaccinated. This provides a "cocoon" around your child, preventing potential spread of the illness.

When to Get the Flu Shot and Booster Shots

The right timing for the flu vaccine depends entirely on the season and your location. The vaccine should be given approximately two weeks before flu season is in force in your locale. It takes approximately two to four weeks for the vaccine to become fully effective.

To determine when flu is beginning to be seen in your area, see the CDC's weekly surveillance map at http://www.cdc.gov/flu/weekly/usmap.htm. During typical seasons, late October or early November is the usual time for vaccination. But as the H1N1 flu proved in 2009, flu season may occur earlier or later.

Certain children, especially those who have a history of losing vaccine titers, may want to wait until later in the season so their immunity does not disappear before the end of the flu season. It is also possible to get a booster shot if this is a concern.

Certain children under age nine will need two shots this year (an initial shot and a booster one month later), while others will only need one. The following guidelines should be used:

- If your child did not receive an H1N1 shot in 2009, s/he needs TWO shots this year.
- If your child has never received a regular seasonal flu vaccine, s/he needs TWO shots this year.
- If your child first received a seasonal flu vaccine last year, and only received one shot, s/he needs TWO shots this year.
- If your child received an H1N1 shot, and first received a seasonal flu vaccine last year, and received two shots, s/he needs ONE shot this year.
- If your child received an H1N1 shot last year and has received the seasonal flu vaccine in more than one year, s/he needs ONE shot this year.

A Tough Decision

It is a tough decision to decide to vaccinate, especially when you know your child will have a reaction to the vaccine. But a vaccination given in a controlled manner with a plan in place may very well save your child's life. As we learned in 2009, the H1N1 flu is one nasty virus.

[1] See http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5834a1.htm

[2] R. Prymula, *et al.* Effect of prophylactic paracetamol administration at time of vaccination on febrile reactions and antibody responses in children: two open-label, randomised controlled trials. *Lancet* 2009;374(9698):1339-50.