AU InforMed

Volume 7 Number 12 (Issue 220) *Monday, August 3, 2009*

Guest editors: Doris Gana, Pharm.D. Candidate, Blake Whitman, Pharm.D. Candidate, and Josh Darnell, Pharm.D. Candidate
Wesley Lindsey, Pharm.D.

Key Inforbits

- Debunking myths about vaccines
- Latest report on H1N1 influenza (swine flu)
- Back to School Immunizations?
- Vaccination in the elderly
- Infant and Childhood Vaccination
- Fear of life?

August is…

NATIONAL IMMUNIZATION AWARENESS MONTH

SEPARATING FACT FROM FICTION: DEBUNKING MYTHS ABOUT VACCINES

As a practitioner, you have likely seen a patient that has held some negative belief about vaccines. Recently many myths and misconceptions have been circulated, and it may be difficult for the average person to filter the information. It is our duty as practitioners to get the correct word out about vaccines. The following are some common myths regarding vaccines:

Myth 1. *Vaccines are not needed since the diseases they protect against had already started to disappear due to improved hygiene/sanitation practices.*

Response: While it may be true that improved hygiene/sanitation practices decreased the transmission of some disease, when vaccines are used, disease cases drop much more significantly.[1] An example of this drop is that seen with the varicella (chickenpox) vaccine. Before a vaccine for varicella was available, about 4 million cases were seen each year in the United States.[2] In 2004, states that report incidence rates showed that the incidence of varicella had decreased 53-88% since the vaccine became available in 1995.[3] So even with modern day hygiene/sanitation practices, we still see a significant decrease in the incidence rates of vaccine preventable illnesses when using vaccines.

Myth 2. Avoid *"hot lots" of vaccines that are associated with more deaths and adverse events*
Response: First, the number of doses in a vaccine lot can vary from a few hundred thousand to a few million. Second, some lots are in distribution longer than others. That means that by pure chance, more adverse events will be reported in lots that have more doses and longer distribution times. If a vaccine lot has more adverse reactions associated with it doesn't mean that the vaccine was the cause of those reactions. This is because the Vaccine Adverse Event Reporting System (VAERS) reports are often missing important information (such as lab data) that could help establish causality. The FDA has legal authority to recall vaccine lots that show more serious adverse effects or deaths on VAERS reports that are likely not due to chance.[2]

Myth 3. *Vaccines can cause many adverse reactions, illnesses, death and long-term side effects that are not known yet.*

Response: Most vaccine adverse events that occur are not serious, such as low-grade fever or injection site pain. Acetaminophen taken before or after the vaccination can help with these adverse events. Other more serious adverse events happen in one out of every thousand to one out of every million doses. Death is hard to associate statistically with vaccine use.[2] From 1990-1992 only one death that was reported to the VAERS is thought to have been possibly associated with the vaccine given to that

patient (This is the newest data that the FDA has reported. It was featured in a 10 year review article of vaccine safety from 1991 to 2001).[2,4] The risk of death due to vaccines is thought to be very low.[2]

In addition, despite what many patients still believe, the diphtheria, tetanus, and pertussis vaccine (DTaP) has not been found to cause sudden infant death syndrome (SIDS). The vaccine is given at the same time when babies are most likely to experience SIDS, and therefore may cause false associations.[1,2] If anything, children were less likely to develop SIDS when given a DTaP vaccination.[2]

The bottom line is that the risk of injury or death due to disease is much greater than the risk of serious injury or death due to vaccines.[2]

Myth 4. *Since some vaccines have nearly eradicated their respective diseases, there is no reason to vaccinate myself or my child.*

Response: Although many of the vaccine-preventable diseases have reached very low numbers of cases in the U.S., they remain higher in other countries. People traveling to the U.S. can bring these diseases here, and therefore could cause us to be re-infected if we stop vaccinating. In addition, the few numbers of cases present here could turn into epidemics if we did not have protection from vaccines. Vaccination is still the best way to protect yourself.[2]

Another reason to get vaccinated is "herd immunity". This concept states that the few people who are not vaccinated in a vaccinated population are indirectly protected from the disease in question, since everyone else surrounding them are immune to that disease and therefore cannot pass it along.[5] If everyone had the notion to not get vaccinated, herd immunity would not work. Herd immunity is important for patients that have contraindications to certain vaccine formulations or for those that do not respond to vaccines.[2]

Myth 5. *Children are at an increased risk of side effects if they are given multiple vaccinations at the same time. Doing so can also overload their immune system.*

Response: Giving recommended vaccinations in combination is just as safe and effective as giving each one individually.[2] In regards to overloading a child's immune system, children are naturally exposed to many foreign antigens daily.[1,2] For example, strep throat alone may expose a child to 25 to 50 different antigens. As children eat food they are exposed to new bacteria constantly, which exposes them to multiple new antigens. Therefore giving multiple immunizations with different antigens is similar to what occurs naturally. The evidence shows that giving multiple vaccinations simultaneously has no adverse effect on children's immune systems.[2]

Myth 6. *The influenza vaccine is not effective or "The last time I got a flu shot, it gave me the flu so I will never get one again."*

Response: In healthy people younger than 65 years old, flu vaccine is 70-90% effective at preventing influenza. In people with chronic medical conditions such as diabetes, asthma or heart disease, and in elderly people who do not live in long term care facilities, it is 30-70% effective at preventing hospitalization for influenza and pneumonia (a complication of influenza). In elderly people that live in nursing homes, it can be 50-60% effective at preventing pneumonia or hospitalization and is 80% effective at preventing flu-related deaths.[6]

There are many other viruses that can cause flu-like symptoms[1] as well as other influenza strains that are not covered by the vaccine. This could fool someone who has been vaccinated against influenza into thinking that the influenza vaccine was ineffective or caused the infection. In addition, it takes about two weeks for the body to develop an immune response against influenza after receiving the influenza vaccine. Thus, any exposure to influenza during or just before that time can infect that person. Also, the vaccine only protects against a handful of similar strains and is a best guess as far as what the infectious strain will be during the current flu season. The influenza shot itself cannot give patients influenza, since live viruses are not used in the vaccine.[6]

1. European Immunization Week [Internet]. World Health Organization Regional Office for Europe; c2009. 10 myths about vaccination; 2009 Apr 24 [cited 2009 Jul 19];[about 2 screens]. Available from http://www.euro.who.int/eiw2009/20090325_2
2. Vaccines and Immunizations [Internet]. Atlanta: Centers for Disease Control and Prevention; c2009. Some Common Misconceptions; 2007 May 29 [cited 2009 Jul 19]; [about 12 screens]. Available from: http://www.cdc.gov/vaccines/vac-gen/6mishome.htm
3. Vaccines and Immunizations [Internet]. Atlanta: Centers for Disease Control and Prevention; c2009. Varicella (Chickenpox) Vaccine Q&A; 2009 Jun 1 [cited 2009 Jul 19]; [about 1 screen]. Available from: http://www.cdc.gov/vaccines/vpd-vac/varicella/vac-faqs-gen.htm
4. Zhou W, Pool V, Iskander JK, English-Bullard R, Ball R, Wise RP, Haber P, Pless RP, Mootrey G, Ellenberg SS, Braun MM, Chen RT. Surveillance for Safety After Immunization: Vaccine Adverse Event Reporting System (VAERS) --- United States, 1991--2001. MMWR 2003;52(ss01):1-24.
5. Pediatrics [Internet]. About.com; c2009. Herd Immunity; 2008 Apr 9 [cited 2009 Jul 19]; [about 1 screen]. Available from http://pediatrics.about.com/od/pediatricsglossary/g/herd_immunity.htm

6. Diseases and Conditions: Seasonal Flu [Internet]. Atlanta: Centers for Disease Control and Prevention; c2009. Questions and Answers: Seasonal Flu Shot; 2008 Jul 16 [cited 2009 Jul 19]; [about 2 screens]. Available from: http://www.cdc.gov/flu/about/qa/flushot.htm

THE LATEST REPORT ON H1N1 INFLUENZA (SWINE FLU)

On July 11, 2009 the World Health Organization (WHO) has increased the global pandemic designation of H1N1 influenza to Phase 6 which characterizes the outbreak as widespread to the community in more than one country. More than 70 countries have now reported cases of H1N1 influenza occurrences and this number continues to grow. In the U.S., outbreaks have slowed some due the summer season, however there are still reports of the H1N1 influenza occurring. In fact, the U.S. has also reported the most cases of any country worldwide. In other parts of the world, the areas with the highest outbreak incidence are in the Southern Hemisphere. This trend has developed because countries in the Southern Hemisphere are well into their traditional flu season.[1] A vaccine is expected to be fast tracked for release for use in the U.S. this September.[2]

In the United States, the CDC lists the current number of Confirmed and Possible Cases of H1N1 Influenza at 40,617 with 263 deaths. This number includes all 50 states, Washington D.C., and 4 U.S. Territories. However, most people have recovered without medical treatment.[3] See the following link for individual states' occurrences: http://www.cdc.gov/h1n1flu/update.htm

1. CDC: Centers for Disease Control and Prevention [Internet]. Atlanta: Centers for Disease Control and Prevention; c2009. H1N1 Flu (Swine Flu); 2009 Jul 17 [cited 2009 Jul 20]; [about 3 screens]. Available from: http://www.cdc.gov/h1n1flu/.
2. Cold and Flu Health Center [Internet]. WebMD; c2009. Swine Flu Vaccine Fast-Tracked to September?; 2009 Jul 17 [cited 2009 Jul 21]; [about 3 screens]. Available from: http://www.webmd.com/cold-and-flu/news/20090717/swine-flu-vaccine-fast-track
3. CDC: Centers for Disease Control and Prevention [Internet]. Atlanta: Centers for Disease Control and Prevention; c2009. Novel H1N1 Flu Situation Update; 2009 Jul 17 [cited 2009 Jul 20]; [about 4 screens]. Available from: http://www.cdc.gov/h1n1flu/update.htm.

BACK TO SCHOOL: WHAT IMMUNIZATIONS SHOULD MY CHILD HAVE?

The Alabama Department of Public Health requires that each child be vaccinated with the required vaccinations before the start of school. These vaccinations are not scheduled to be given yearly, however there are certain checkpoints at which children should receive the vaccines. Parents need to check their children's vaccination records before the start of daycare, before kindergarten, before the start of Junior High School, before the start of Senior High School, and before the start of College to make sure that their child is up-to-date.[1] For a list for your state's required vaccinations: http://www.immunizationinfo.org/index.cfm

1. NNii: National Network for Immunization Information [Internet]. Galveston, TX: National Network for Immunization Information; c2009 [cited 2009 Jul 21]. Available from: http://www.immunizationinfo.org/index.cfm.

VACCINATION IN THE ELDERLY

With the advent of new technologies and improved management of chronic diseases, life expectancy has increased and the number of older adults is increasing. In the U.S., over 35 million people are aged 65 years and older as of 2006.[1] Pneumococcal disease caused by *Streptococcus pneumonia* and influenza are major causes of morbidity and mortality, particularly among the elderly**.** Influenza and pneumococcal vaccination are recommended for people aged 65 years and older or persons with chronic illness. However, despite the burden of disease related to pneumococcus and influenza and the availability safe, efficacious and cost-effective vaccines, immunization rates have tapered off compared to the rise of the eligible population in the 1980s and 1990s.[2] According to Behavior Risk Factor Surveillance System data from 2005, a median of only 65.5% of persons 65 years of age and older received the influenza vaccine in the past 12 months, and 65.7% had ever received pneumococcal vaccine.[2] One of the objectives of Healthy People 2010 is to increase the percentage of influenza and pneumococcal vaccine in adults aged 65 years and older to 90%.[3] There is an estimated 36,000 influenza related deaths annually and 200,000 influenza related hospitalization each year in the U.S. and these numbers are likely to increase as the population ages. In addition, 2006 data from the CDC show that 5,000 people die from invasive pneumococcal disease each year; nearly half are older adults.[4] Vaccinations can reduce the risk for or the severity of illness, yet one-third of people age 65 and older do not get their influenza shots and more than one-third have never been vaccinated against pneumococcal disease, according to CDC data.

An annual influenza vaccination is the best way to prevent influenza, but many people don't receive it. The most frequent side effect from the inactivated influenza vaccine is soreness at the vaccination site that lasts less than two days. However, fever, sore muscles and other side effects can occur after vaccination and can last for 1-2 days.[4]

The pneumococcal polysaccharide vaccine (PPV) for preventing invasive pneumococcal disease is also safe and is given just once after age 65, and not annually. Up to half of patients have very mild side

effects, such as redness or pain where the shot is given. For the 2009 adult immunization schedule at: http://www.cdc.gov/mmwr/PDF/wk/mm5753-Immunization.pdf

1. FastStats [Internet]. Atlanta: Centers for Disease Control and Prevention; c2009. Older Persons' Health; 2009 Apr 21 [cited 2009 Jul 17]; [About 4 screens]. Available from: http://www.cdc.gov/nchs/fastats/older_americans.htm
2. Principles of Vaccination. [Internet]. Atlanta: Centers for Disease Control and Prevention; c2009. Immunization Strategies for Practices and Providers; [cited 2009 Jul 21] Available from: http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/strat-508.pdf
3. Immunization and Infectious Disease. [Internet]. Healthy People 2010; c2009. Objective 14-29; 2001 Jan 30 [Cited 2009 Jul 17] Available from: http://www.healthypeople.gov/document/html/objectives/14-29.htm
4. For the Media. [Internet]. Atlanta: Centers for Disease Control and Prevention; c2009. CDC Says Immunizations Reduce Deaths From Influenza and Pneumococcal Disease Among Older Adults; 2008 Jun [Cited 2009 Jul 17] Available from: www.cdc.gov/vaccines/news/media.htm#Reporters
5. Immunization Schedules [Internet]. Atlanta: Centers for Disease Control and Prevention;c2009. Recommended Adult immunization Schedule; 2009 Jan 9 [cited 2009 Jul 17] Available from: http://www.cdc.gov/mmwr/PDF/wk/mm5753-Immunization.pdf

INFANT AND CHILDHOOD VACCINATION

Why should infants and children be immunized? Infants are born with passive immunity in which antibodies are transported across the placenta during the last 1–2 months of pregnancy.[1] As a result, a full-term infant will have the same antibodies as its mother and will be protected from the diseases to which the mother is immune. These antibodies will protect the infant from certain diseases only temporarily before they degrade.[1] Despite recent advancements in childhood immunization coverage; more than 20% of the nation's 2-year-olds are not fully immunized. In 2007, only 84.5% of children 19 to 35 months of age had received four doses of the DTaP vaccine.[2] Low-income and minority children and adults are at greater risk for under-immunization. Fears about the risk of autism in vaccinated children is another barrier to vaccination. Scientific studies and reviews have found no relationship between vaccines and autism.[3]

Infants and young children need to be immunized because the diseases prevented by vaccination can strike at an early age. Also, these diseases can be far more serious among this group. For example, approximately 72% of children younger than 6 months old who contract whooping cough (pertussis) must be hospitalized, and this age group accounts for about 84% of all deaths from the disease.[4] Today children younger than two years old can be protected from 14 serious diseases if they are immunized. These include: Bacterial Meningitis, Diphtheria, Hepatitis A, Hepatitis B, Influenza, Measles, Mumps, Pertussis , Pneumococcal disease, Polio, Rubella (German measles), Tetanus (lockjaw), Rotavirus, and Varicella (chickenpox).[4] See complete infant immunization schedule: http://www.cdc.gov/vaccines/recs/schedules/child-schedule.htm.

1. Principles of Vaccination. [Internet]. Atlanta: Centers for Disease Control and Prevention; c2009. Immunization Strategies for Practices and Providers; [cited 2009 Jul 21] Available from: http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/strat-508.pdf
2. Statistics and Surveillance [Internet]. Atlanta: Centers for Disease Control and Prevention; c2009. Immunization coverage in the United States. [cited 2009 Jul 21] Available from: http://www.cdc.gov/vaccines/stats-surv/default.htm#immcov
3. The American Academy of Pediatrics. [Internet]. Elk Grove Village, IL: American Academy of Pediatrics; c2009. [cited 2009 Jul 21] Available from: http://www.aap.org/
   Vaccines and Immunizations. [Internet]. Atlanta: Centers for Disease Control and Prevention; c2009. Infant immunization; [cited 2009 Jul 21] Available from: http://www.cdc.gov/vaccines/spec-grps/infants/infant-imz.htm

---

The last "dose" …

"The fear of life is the favorite disease of the 20th century."
~ William Lyon Phelps

An electronic bulletin of drug and health-related news highlights, a service of …
Auburn University, Harrison School of Pharmacy, Drug Information Center
• Phone 334-844-4400 • Fax 334-844-8366 • http://www.pharmacy.auburn.edu/dilrc/dilrc.htm
Bernie R. Olin, Pharm.D., Director
Archived issues are available at: http://pharmacy.auburn.edu/dilrc/au_informed.htm