The ITAT sharp shooter

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The newsletter of the Immunization Technical Assistance Team (ITAT), a partnership of leaders from various organizations who are dedicated to improving and maintaining maximum immunization rates utilizing practice-based interventions

The ACIP Recommended Immunizations and the Colorado Department of Public Health and Environment's Required School Entry Immunizations—What's the Difference?

by Jamie Damico, RN, MSN

Nurses and para professional staff work very hard to ensure that children enrolled in school are in compliance with the School Immunization Law. Understanding which vaccines are recommended and which are required for school entry can be confusing, and this article will attempt to provide some clarity.

The Advisory Committee on Immunization Practices (ACIP) provides advice and guidance to the Centers for Disease Control and Prevention (CDC) regarding the control of vaccine-preventable diseases. This committee meets regularly to develop written recommendations regarding which vaccines are necessary to prevent disease in children and adults. It is responsible for recommending the ages when vaccines should be administered, the number of doses of vaccine and the minimum intervals between doses. The "Recommended Immunization Schedules" for both children and adolescents are included in this newsletter and are approved by ACIP, the American Academy of Pediatrics and the American Academy of Family Physicians.

The Board of Health at the Colorado Department of Public Health and Environment reviews immunization proposals developed by the board's Immunization Workgroup. This work group consists of approximately 12 professionals who review immunization literature and vaccine-preventable disease trends in Colorado. They represent local health departments and school health and child-care professionals, as well as experts in immunizations and vaccine-preventable disease. It is this work group that proposes to the board suggestions for requiring specific school entry immunizations. The board reviews and discusses those proposals, either approving or denying the recommendations from the work group. Approved immunization proposals then become requirements for the upcoming school year.

ACIP recommends more vaccines than the Colorado Department of Public Health and Environment requires. The children's vaccines that ACIP **recommend** include Hepatitis B, Rotovirus, Meningococcal, Diphtheria/Tetanus/Pertussis (DTaP), Haemophilus influenzae type b (Hib), Pneumococcal, poliovirus, influenzae, Measles, Mumps, Rubella (MMR), Varicella and Hepatitis A.

The Board of Health at the Colorado Department of Public Health and Environment **requires** Hepatitis B, DTaP, Hib (for children under 5 years of age), Pneumococcal (for children under 2 years of age), Polio, MMR, Varicella and Meningococcal vaccine (or waiver) for college freshmen living in dorms.

Many health-care provider practices follow ACIP's recommended schedule, which will ensure that students entering Colorado schools will be well-vaccinated. Schools and health-care providers working together to make sure students are immunized are the key players in Colorado's efforts to control vaccine-preventable diseases in schools. ✪

Children and the Recommendations for Flu Vaccine

by Jamie Damico, RN, MSN and Lynn Trefren, RN, MSN

The Centers for Disease Control and Prevention (CDC) estimates that more than 20,000 children under 5 years of age, most of whom are under 2 years of age, are hospitalized every year because of influenza, and its complications. Many children 2 to 4 years of age will visit a doctor, urgent care or the emergency room because of the disease. Each flu season there are news reports of children who die from influenza.

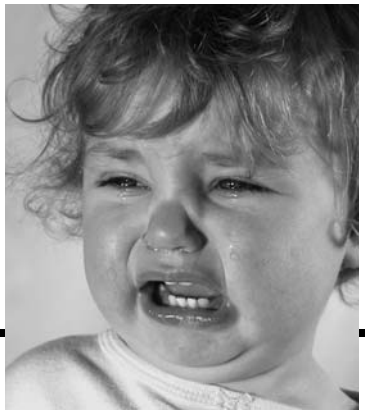
The influenza vaccine, in conjunction with other preventative measures, is the most effective way to avoid getting the flu. The CDC recommends that all children age 6 months through 5 years of age receive the flu vaccine and that the people in close contact with these children, such as household contacts and caregivers, be vaccinated as well. Even those family members and caregivers who don't have routine contact with children should receive an influenza vaccination, particularly if they will be traveling over the holidays to visit friends and family with young children.

The flu shot also is recommended for children ages 6 months through 18 years of age if they have asthma or other lung conditions that compromise lung function, immune suppression, chronic kidney or heart disease, HIV/AIDS, diabetes, sickle cell anemia or long-term aspirin therapy.

There are two different influenza vaccines available for administration to children. Trivalent inactivated influenza vaccine (TIV) is licensed for children over 6 months of age. Children 6 to 35 months of age should receive 0.25 mL while children over 3 years can receive 0.50 mL. Live attenuated influenza vaccine (LAIV) is administered intranasally and is licensed for healthy children over two years of age.

Many children will be receiving their first flu vaccine this year. Children between the ages of 6 months and 9 years of age who have never had a flu shot will receive two doses, separated by at least 28 days (or two doses of LAIV given six weeks apart). The CDC suggests that these children have their first flu shot administered early in the season (September) if the vaccine is available at that time. Their second dose would then be administered in October or November to complete the two dose series for the season. Children 6 months to 9 years of age who only received one dose of flu vaccine last year should be given two doses of vaccine this year. After the first two years, these children will only need one dose per year.

Other preventative measures for controlling flu include covering the mouth and nose when coughing or sneezing and frequent hand washing. With attention to hygiene that prevents the spread of disease and getting immunized against the flu, children have a good chance of staying healthy this flu season. ✪



Influenza Vaccine Efficacy— Does the Flu Vaccine Really Protect People?

by Pat Hood, RN, BSN

Every year, questions are posed about whether the influenza vaccine really works and if it's worth the effort to get vaccinated. "I got the shot, and I still got the flu," is a common complaint. As with many vaccine issues, the answer is not a simple one. The information below can be used to help your patients evaluate the effectiveness of influenza vaccine.

- **The vaccine can be evaluated for its ability to prevent influenza-like illness and for its ability to prevent laboratory-confirmed influenza.**
  Rates have been found as low as 10 percent in preventing influenza-like illness, which can be caused by many different agents not in the vaccine. However, when the rates of laboratory-confirmed illness are reviewed, the effectiveness of the vaccine has been estimated as high as 86 percent.

- **Efficacy is affected by how well the vaccine components match strains of the virus circulating in the community.**
  Effectiveness is lower when a good match is not achieved. During the 2003–04 season when the viruses in the vaccine were not well-matched to circulating viruses, efficacy against laboratory-confirmed disease dropped to 60 percent among healthy people and 48

continued on the next page

percent among high-risk people, but the vaccine still prevented influenza-related hospitalization among 90 percent of recipients.

- **Efficacy is affected by how well a vaccine recipient's immune system responds.**
  Seventy to 90 percent of healthy adults are usually protected by the vaccine, as opposed to only 48 percent of people with underlying medical conditions.

- **The vaccine can be less effective at preventing disease; yet it still prevents serious illness and/or death.**
  Even with a poor match and in people with underlying medical conditions, the vaccine has been found to be effective in preventing influenza-related death. For example, while only 30 to 40 percent of frail, elderly people living in nursing homes may be protected from infection, the vaccine is effective in preventing 50 to 60 percent of influenza-related hospitalization or pneumonia and is 80 percent effective in preventing influenza-related death.

- **Children seem to be protected from laboratory-confirmed disease.**
  Studies on the effectiveness of influenza vaccine for children still are being conducted, but so far they show that children can benefit from receiving the flu vaccine. However, because many children younger than 9 years of age have not been exposed to influenza infections or vaccine, they need two doses of the vaccine to have a good immune response.

- **The live flu vaccine is an effective alternative for adults younger than 50 years of age.**
  A trial was done to study efficacy of the live vaccine among healthy adults 18 to 49 years of age during the 1997–98 flu season. This was a time when the vaccine match was not good. The difference in efficacy between the live and killed vaccines was not statistically significant.

- **The live vaccine is effective for children.**
  A trial among healthy children between the ages of 6 and 7 years assessed the efficacy of the live vaccine against culture-confirmed influenza over two seasons. In season one, when the vaccine and circulating virus strains were well-matched, it was found to be 87 percent effective in children receiving two doses. In season two, when the A strain was not well-matched to the circulating strain, the efficacy also was 87 percent.

Every year, 36,000 Americans die from influenza. An average of 200,000 hospitalizations per year are related to influenza—57 percent of which are among people younger than 65 years. Children 24 months of age and younger are just as much at risk for hospitalization as are people 65 years of age.

While not always highly effective at preventing illness, influenza vaccines are effective against preventing serious illness and death, even when vaccine strains don't match the circulating virus or when the people immunized have medical complications that weaken their immune system. Those are good reasons for getting the vaccine. ✪

Influenza Update

by Margaret Huffman, ND, RN, MA
Adult Immunization Coordinator/
Pandemic Influenza Coordinator
Colorado Department of Public Health and Environment

Influenza is a highly infectious viral illness. It is a single-stranded RNA virus, in the family Orthomyxoviridae, with three types (A, B and C). Subtypes of type A are determined by hemagglutinin and neuraminidase. The structure of hemagglutinin (H) and neuraminidase (N) periodically change. When the change is a "drift," it is a minor change, which may result in an epidemic. When the change is a "shift," it is a major change, with a subsequent new subtype, and exchange of gene segment. This type of change, or shift, may result in a pandemic.

Type A results in potentially severe illness and can be rapidly changing. This is the type that may cause epidemics and pandemics. Type B is usually less severe, though epidemics have resulted from this type. It is genetically more stable than type A. Type C is rarely reported in humans, and there have been no epidemics noted from this type.

Annual Influenza vaccinations are the consequence of strain drift. Contrary to other vaccines, influenza vaccines can produce immunity only for a limited duration of time. If the strain drift is considered significant, vaccine composition is changed.

*See **Influenza Update** on page 4*

Influenza Update *from page 3*

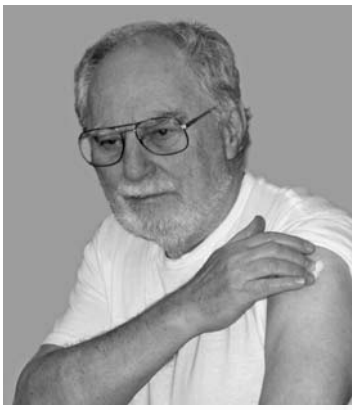
It is important to remember influenza pathogenesis: there is respiratory transmission of the virus, and the virus is replicated in the respiratory epithelium with subsequent destruction of cells. Viral shedding in the respiratory secretions lasts for five to 10 days. Complications of influenza include pneumonia, both of a primary influenza infection or from secondary bacterial infections. Other complications include Reye Syndrome and Myocarditis, and death may occur in 0.5–1 in 1,000 cases.

Influenza is responsible for 36,000 deaths in the United States each season. Influenza takes a high annual toll of disease in the United States, with resulting 25 million physician visits, 200,000 hospitalizations, and $3–$5 billion in direct medical costs. These are important figures to remember when considering that influenza is a vaccine-preventable disease.

Intervention is centered on prevention and treatment. Prevention is based on education about the virus and vaccination. There are two options for vaccination: Trivalent Inactivated Vaccine (TIV) delivered by intramuscular injection, and Live-attenuated influenza vaccine (LAIV) delivered by intranasal administration. Treatment is based on education regarding signs and symptoms and on pharmocotherapy. There recently has been evidence of resistance among the traditional antiviral medications of amantadine and rimantadine; these two are no longer considered to be front-line treatments. The antiviral medications "Tamiflu" and "Relenza" now are considered to be the first treatment for influenza illness and/or direct exposure.

Influenza vaccine is 70–90 percent effective in the population younger than 65 years of age. It is 30–40 percent effective among frail, elderly populations. The vaccine is 50–60 percent effective in preventing hospitalization, and 80 percent effective in preventing death. These figures are important to remember when considering the people with whom healthcare workers come in contact. Consider that while the elderly patients we see have half the efficacy from the vaccine as the younger healthcare worker who is caring for them, we have a responsibility to protect our patients as well as ourselves from this vaccine-preventable disease and its possible subsequent health concerns.

Prevention is the key in reduction of influenza infections. Avoid close contact with people who are sick. **Stay home from work or school if you are sick!** Cover your mouth and nose with a tissue when coughing or sneezing; cough or sneeze into your sleeve, and not your hands. Wash your hands often, and avoid touching your eyes, nose and mouth. Above all, **get your annual influenza vaccination!** ✪



While not always highly effective at preventing illness, influenza vaccines are effective against preventing serious illness and death…

National Influenza Immunization Week and "What If ?" Colorado

by Margaret Huffman ND, MA, RN
Adult Immunization Coordinator,
Colorado Department of Public Health and Environment

This year, the Office of Emergency Preparedness at the Colorado Department of Public Health and Environment, in collaboration with the department's Immunization Program and Colorado Influenza and Pneumococcal Alert Coalition are launching an emergency preparedness campaign that will include emphasizing the importance of annual seasonal influenza vaccination. This campaign, under the name of "What If? Colorado," includes a reality house competition in September, seasonal influenza public service announcements in October, and inclusion of a statewide emergency preparedness exercise in November.

In September, the "What If ? Colorado" reality house competition culminates in a four-day stay at a location in Denver, where participants from around the state are placed into various scenarios demonstrating the importance of emergency planning and preparedness. One of the scenarios will include educating the public on how influenza illness is spread. In this event, the participants will be "exposed" to an influenza-like illness and shown how easily germs can be spread. The exercise will place emphasis on the importance of personal hygiene and healthy habits to stop the spread of germs, as well as helping the public understand the importance of taking care of themselves when they are sick. The lessons learned from this will then be taken back to local communities to assist others in planning and preparing themselves and their loved ones in the event of an influenza pandemic.

The second part of this campaign will focus on the importance of seasonal influenza vaccination. This part of the media outreach will include members of the Colorado Influenza and Pneumococcal Alert Coalition and will involve a seasonal influenza vaccination kick-off event on October 3. As part of pandemic readiness, it is important to include seasonal influenza vaccination in our preparation efforts. By ensuring a wide proportion of our population receives annual influenza vaccination, we also are assisting in the investigation, formulation and manufacture of vaccine, which could be used in the event of a pandemic. It also is important to remember that by protecting ourselves against seasonal influenza, we are protecting other, more vulnerable populations with whom we come into contact.

In November, there will be a statewide emergency preparedness campaign that will be part of the "What If ? Colorado" outreach efforts. By participating in this event, citizens across the state will have the opportunity to be involved in preparation efforts at the local level. Many local public health agencies around the state will be participating in an exercise that will test the abilities of state and local agencies to respond in the event of influenza pandemic.

Finally, at the end of November, the Centers for Disease Control and Prevention again will be supporting local outreach efforts to continue efforts to reach all populations regarding seasonal influenza vaccination. During the week after Thanksgiving, the Colorado Influenza and Pneumococcal Alert Coalition, the Colorado Department of Public Health and Environment and the Centers for Disease Control and Prevention will participate in National Influenza Immunization Week. For anyone who has not yet received a seasonal influenza vaccination, it will not be too late! There will be plenty of time at this point in the season to receive an influenza vaccination, and be fully protected from influenza for the 2007–08 influenza season. Please continue your efforts to vaccinate each and every person who you may see in your practice, as influenza certainly is an illness that is highly preventable by vaccination. Vaccination efforts should then continue into 2008, especially for those patients who are travelers, or who come into contact with more vulnerable populations around the holidays. ✪

Sharpshooter Marksman Corner

Highlighting Outstanding Work

As part of the Colorado Department of Public Health and Environment's Immunization Outreach Project, the Rio Grande County Public Health Nursing Service in Del Norte, Colorado, has held successful outreach clinics in the homes of Amish families in the area south of Monte Vista. The nursing service first learned of the need in the Amish community while conducting outreach clinics in Monte Vista. The nursing service made contact with Amish community leaders and built relationships with them. With the availability of clinics in their own community, mothers and their children come on foot and by horse-drawn buggies to vaccinate their children instead of making the 22-mile round trip into town to receive shots. The clinics have been well received!

For more information on this great project, contact Pat Perry at 719-657-3352. ✪

Pertussis Vaccination for Healthcare Personnel: Protecting Ourselves, Our Patients, Families, and Communities

by Faye Gillis RN, BScN
Broomfield Health and Human Services

In the United States, it is estimated that there are more than one million people infected with pertussis annually. These cases are occurring more frequently in adolescent and adult populations which account for more than half of the reported pertussis cases (1). While the number of cases decreased after the introduction of a whole-cell pertussis vaccine in the 1940s, rates gradually have increased since the 1980s with the highest incidence among children less than 1 year of age. (1) In 2005, there were 1,383 reported cases of pertussis in Colorado but many cases are not reported. Pertussis is highly communicable with attack rates of 80 to 90 percent among susceptible household contacts.(1)

Health-care personnel are nearly twice as likely to be infected than other adults. In a survey of health-care workers in pediatric hospitals, 90 percent reported exposure to pertussis over a five-year period (2). On Feb. 22, 2006, the Advisory Committee on Immunization Practices (ACIP) recommended Tetanus, Diphtheria and Pertussis vaccine (Tdap) for all health-care personnel under 65 years old who have direct patient contact, with priority for HCP's working with infants less than 12 months of age. An interval as short as two years since the last Td is recommended but a shorter interval can be used. Tdap should be administered at least two weeks before working in close contact with any infants. Previous infection with pertussis does not convey immunity and the vaccine efficacy ranges from 80 to 85 percent. (1) The Healthcare Infection Control Practices Advisory Committee supports this ACIP recommendation.

Symptoms of pertussis can last for months with 10 percent of working adults missing more than one month of work and requiring frequent physician visits. Individuals can remain contagious for as long as six weeks. The cost of controlling an outbreak is high requiring contact tracing, laboratory testing, treatment with prophylactic antibiotics, public education and lost time from work for symptomatic contacts. (2) Vaccinating health-care workers with Tdap can be a cost-effective control measure resulting in a decrease in the number of follow-ups and a decrease in the number of days absent from work.

Between 2000 and 2004, infants less than 12 months old accounted for 19 percent of nationally reported cases and 92 percent of pertussis deaths. Of these children 63 percent required hospitalization and 13 percent developed pneumonia. Other complications included seizures, encephalopathy, pneumothorax, subdural hematoma, hernia and rectal prolaspe. Patients who are immunocompromised, requiring surgery or who have other health issues also are at risk of complications if infected with pertussis.

Vaccinating health-care personnel with Tdap can decrease the number of cases and deaths associated with pertussis infection. Tdap should be readily accessible and these recommendations need to be made available to all health-care personnel.

In large hospital centers, occupational health departments maintain records and arrange for staff immunizations. In smaller centers, such as community and walk-in clinics, home-visiting health-care services, and physician offices, this information and/or the ability to vaccinate staff with Tdap may not be present. It is important that vaccine providers and those involved in vaccine promotion continue to educate health-care personnel and others involved in the care of children or at-risk individuals to ensure they are aware of these new recommendations to protect the populations that they serve. ✪

References

(1) CDC. Epidemiology and Prevention of Vaccine-Preventable Diseases. Atkinson W., Hamborsky J., McIntyre L., Wolfe S., eds., 9th ed. Washington DC: Public Health Foundation, 2006.

(2) CDC. Preventing Tetanus, Diphtheria and Pertussis Among Adults: Use of Tetanus Toxoid reduces Diphtheria Toxoid and Acellular Pertussis Vaccine: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2006; 55(No.RR17)

ASK *the* EXPERTS

The column in The ITAT Sharp Shooter *newsletter that allows you to get your questions answered by the professionals. We hope it's content will be both informative and helpful.*

Q ***What school requirements changed for the 2007–2008 school year?***

A For child care, the requirement for pneumococcal vaccine (Prevnar) has been reinstated. This is just for children ages 2 months until their second birthday. The number of doses a child needs depends on his or her current age and the number of doses the child has already had. See http://www.cdphe.state.co.us/dc/Immunization/Forms/TABLESONLY.pdf

Children entering kindergarten will need two doses of varicella vaccine in addition to the previous requirements.

Children entering sixth and 10th grades will need to have a booster of tetanus, diphtheria and pertussis vaccine (Tdap) unless they have had a Td or Tdap within the past two years. [(**Note**: Some exceptions can be made for children who are 10 years old and in sixth grade.)]

Answered by Lynn Trefren, RN, MSN,
Tri-County Health Department

Q ***Where can I find the most current vaccine recommendations?***

A Vaccine recommendations in the United States are issued primarily by two national bodies—the U.S. Public Health Service's Advisory Committee on Immunization Practices (ACIP) and the American Academy of Pediatrics (AAP) Committee on Infectious Diseases. To access the most current ACIP recommendations, go to www.cdc.gov/nip/publications/acip-list.htm for statements in alphabetical order or www.immunize.org/acip for statements in chronological order. For the AAP policy statements on immunizations, go to www.immunize.org/aap.

Answered by Immunize.org

Q ***We frequently see new patients who have no immunization records. This is a particular concern with new immigrants. Should we be concerned about "over immunization"?***

A As a general rule, ACIP recommends that people who do not have valid documentation of other vaccinations be revaccinated. Excessive doses of tetanus toxoid (e.g., DTP, DTaP, DT, Tdap or Td) can increase the risk of a local adverse reaction. Serologic testing for immunity is an alternative to vaccination for certain antigens (e.g., measles, rubella, hepatitis A and tetanus). This issue is discussed at length on pages 34–35 in the ACIP's "General Recommendations on Immunization" (*MMWR* 2006; 55 [RR-15]:1–48).

Answered by Immunize.org

Q ***We sometimes encounter patients with foreign vaccination records. Sometimes we suspect the record isn't valid. What should we do?***

A If a provider suspects an invalid vaccination record in any person vaccinated outside the United States, one of two approaches can be taken. Repeating the vaccinations is an acceptable option. Doing so is usually safe and avoids the need to obtain and interpret serologic tests. If avoiding unnecessary injections is desired, judicious use of serologic testing might be helpful in determining which immunizations are needed. This may be particularly helpful in determining tetanus and diphtheria antitoxin levels for children whose records indicate three or more doses of DTP or DTaP. See page 28 in the ACIP's "General Recommendations on Immunization" (*MMWR* 2006; 55 [RR-15]:1–48).

Answered by Immunize.org ✪

Feature Articles

- ACIP Recommended Immunizations and CDPHE's Required School Entry Immunizations—What's the Difference?
- Children and the Recommendations for Flu Vaccine
- Influenza Vaccine Efficacy
- Influenza Update
- National Influenza Immunization Week and "What If ?" Colorado
- Pertussis Vaccination for Healthcare Personnel

This Fall edition of *The ITAT Sharp Shooter* also includes important phone numbers and websites listed throughout.

For questions or information about this *Sharp Shooter* Newsletter and/or the ITAT workgroup, please contact Teri Lindsey, Colorado Department of Public Health and Environment Immunization Program at (303) 692-2732 or Teri.Lindsey@state.co.us.

The ITAT Sharp Shooter

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