

# AU InforMed

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## Key Inforbits

- No Smoking Please: A Nicotine Vaccine
- 2012 CDC Vaccination Updates
- Updated Tdap: Alabama School Requirements
- Traveler's Guide to Vaccines
- Egg allergies and who receives a flu vaccine?



## August is National Immunization Month



### No Smoking Please: Developing a Nicotine Vaccine



<http://www.cikler.com/clipart-2767.html>

What if there was a way to successfully end that bad smoking habit with just a single vaccine? Or better yet, what if there was a way to never become a nicotine addict? Researchers at Weill Cornell Medical College are developing a vaccine against nicotine addiction.<sup>1</sup> A pre-clinical study with mice has shown a decline in nicotine concentrations reaching the brain. The vaccine is designed to utilize the subject's liver to continuously produce an antibody that prevents the delivery of nicotine to the brain and heart. Once the nicotine is presented to the blood, the antibodies start to work by denaturing the nicotine and depleting the levels. "As far as we can see, the best way to treat chronic nicotine addiction from smoking is

to have these PacMan-like antibodies on patrol, clearing the blood as needed before nicotine can have any biological effect," states Dr. Ronald G. Crystal, the study's main investigator, chairman and professor of Weill Cornell Medical College's Genetic Medicine department. Theoretically, it may pave the way for prevention of nicotine addictions in patients who have not developed a response to nicotine.

1. Wood J. Mouse Study May Lead to New Vaccine for Nicotine Addiction [Internet]. Newburyport (MA): Psych Central. 2012 Jun 28 [updated 2012 Jul 02, cited 2012 Jul 02]. Available from <http://psychcentral.com/news/2012/06/28/mouse-study-may-lead-to-new-vaccine-for-nicotine-addiction/40783.html>.

### 2012 CDC Vaccination Updates

#### Tetanus, Diphtheria, and Pertussis (Tdap) vaccination

In February 2012, ACIP (Advisory Committee on Immunization Practices) recommended all adults aged 65 and older receive a Tdap vaccine. Currently there are two marketed Tdap vaccines in the United States: Boostrix<sup>®</sup> and Adacel<sup>®</sup> (Sanofi Pasteur, Toronto, Canada). Only Boostrix<sup>®</sup> is FDA approved for ages 10 through 64 years along with an approval for adults aged 65 years and older. Adacel<sup>®</sup> is FDA approved for ages 11 through 64 years. However, the ACIP states either vaccine choice given at ages 65 years and older should provide protection regardless of which Tdap vaccine is administered.

### **Human papillomavirus (HPV) vaccination**

Previous 2011 CDC vaccination schedules stated males aged 9 through 26 years may receive a Human Papillomavirus quadrivalent (HPV4) vaccination (Gardasil®), but the 2012 vaccination schedule has changed that statement.<sup>2</sup> Now, the 3-dose HPV4 vaccination series is routinely recommended for males aged 11 through 21 years. The HPV4 vaccine is also recommended for men 21 through 26 years old who are immunocompromised, have sex with men, or are HIV positive. If the male patient does not meet any of these criteria, they may still receive the HPV4 vaccination up to 26 years of age.

### **Herpes Zoster vaccination**

Originally the ACIP recommended all patients to receive a herpes zoster vaccination starting at 60 years old and older. In 2012, the FDA extended its approval for the herpes zoster vaccine (Zostavax®) to begin at 50 years of age and older. However, the ACIP still stands by its initial recommendation of herpes zoster vaccinations beginning at 60 years old.<sup>2</sup>

Vaccine	2011 Recommendation	2012 Updated Recommendation
Tdap	<ul style="list-style-type: none"> <li>Ages 65 and older is recommended to receive a Tdap vaccine if in close contact with infants aged 12 months and younger</li> <li>Ages 65 and older <i>may</i> receive a Tdap vaccine if previously unvaccinated regardless of close contact with infants</li> </ul>	<ul style="list-style-type: none"> <li>Ages 65 and older is recommended to receive a Tdap vaccine <i>regardless</i> of close contact with infants aged 12 months and younger</li> <li>Boostrix® and Adacel® can both be given as Tdap vaccines in adults aged 65 and older; currently, Boostrix® is the only one that is FDA approved for this age group</li> </ul>
HPV	<ul style="list-style-type: none"> <li>(Males) Ages 9-26 years <i>may</i> receive an HPV4 vaccination</li> </ul>	<ul style="list-style-type: none"> <li>(Males) Recommended for 11-21 years old</li> <li>(Males) Recommended for 21-26 years old who meet the following criteria               <ul style="list-style-type: none"> <li>Immunocompromised</li> <li>Have sex with other men</li> <li>HIV positive</li> </ul> </li> <li>(Males) Clinically healthy patients <i>may</i> receive the HPV4 vaccination up to 26 years of age.</li> </ul>
Herpes Zoster	<ul style="list-style-type: none"> <li>ACIP recommends all adults aged 60 years old and older to receive a single dose of zoster vaccine regardless of exposure to herpes zoster</li> </ul>	<ul style="list-style-type: none"> <li>FDA approves zoster vaccine for adults starting at age 50 years old</li> <li>ACIP still currently recommends zoster vaccination starting at 60 years old</li> </ul>

- Updated Recommendations for Use of Tetanus Toxoid, Reduced Diphtheria Toxoid, and Acellular Pertussis (Tdap) Vaccine in Adults Aged 65 Years and Older - Advisory Committee on Immunization Practices (ACIP), 2012. Atlanta, GA: Centers for Disease Control and Prevention. 2012 Jun 29; 61(25):468-470.
- Recommended Adult Immunization Schedule - United States 2012 [Internet]. Atlanta (GA): Centers for Disease Control and Prevention. 2012 Feb 03 [updated 2012 Feb 03, cited 2012 Jul 02]. Available from: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6104a9.htm>.

### **Updated Tdap: Alabama School Requirements**

In the past 10 years pertussis, or whooping cough, has become an increasing problem due to its highly contagious nature.<sup>1</sup> It is now a requirement by the Alabama Department of Public Health for all children ages 11 years and older to receive a Tdap vaccine prior to the 2012-2013 school year. This age group applies to children in the sixth, seventh, and eighth grade and will increase by one grade each school year. For example, prior to entering the 2012-2013 school year, sixth, seventh and eighth grade students will require a Tdap vaccine. In 2013-2014, this



requirement will extend to grades sixth through ninth, and up will proceed to include sixth through twelfth grade during the 2016-2017 school year. Each student must obtain a certificate of vaccination.

1. Pertussis information [Internet]. Alabama Department of Public Health. [cited 2012 July 2]. Available from: <http://www.adph.org/Immunization/Default.asp?id=557>.

## **Traveler's Guide to Vaccines**



[http://www.travel-the-world-of-art.com/wp-content/uploads/20\\_6\\_orig.gif](http://www.travel-the-world-of-art.com/wp-content/uploads/20_6_orig.gif)

As pharmacists, we have encounters with many patients who enjoy traveling but may not think about which vaccinations they will need before leaving for vacation. Pharmacists are in a position to counsel patients on which vaccines they will need before traveling to different parts of the world. Here is a summary of different vaccines that patients may need before leaving the country. Immunity can take weeks to develop, so earlier vaccinations are important for transmission prevention.

**Influenza:** The influenza vaccine is a recommended yearly vaccine in the United States; however, it may be necessary outside of America's typical flu season.<sup>1</sup> Patients traveling to the tropics (year-round) or to temperate areas of the southern hemisphere (April-September) should be vaccinated. Keep in mind there is a chance that strains covered in American manufactured vaccines may not represent what is responsible for outbreaks in other countries.

**Hepatitis A:** In 2006, the CDC recommended all children 1 year of age and older to receive a hepatitis A vaccination.<sup>2</sup> However, children who are now seven years of age or older may not have been vaccinated prior to the updated recommendation. If a patient has not received this vaccine, it is recommended especially when visiting intermediate or high risk areas. These include some parts of Asia (including the Middle East), Africa, and South America.<sup>1</sup> Immunity takes 2 to 4 weeks to develop after receiving the first dose of the vaccine.

**Hepatitis B:** In 1991 ACIP recommended all children in the US to receive this vaccine.<sup>1,3</sup> If a patient is traveling to Asia, Africa, or parts of Europe (including Greece, Portugal and Spain), the hepatitis B vaccine is recommended.<sup>1</sup>

**Japanese encephalopathy:** This disease is only common in rural areas of Asia. The vaccine is recommended for patients planning to spend a month or more in the Japanese countryside.

**Meningococcal:** Planning a safari adventure? This vaccine is recommended for those who are traveling to Sub-Saharan Africa, especially in the months from December to June.

**Polio:** While uncommon in the United States, polio still occurs endemically in some countries. These include Nigeria, Pakistan, and Afghanistan. Travelers who are visiting these areas should be vaccinated.

**Typhoid:** The typhoid vaccine is a vaccination needed for certain parts of the world including Asia, Africa, Central and South America, and the Caribbean. It is also available in an oral formulation making it convenient for patients.

**Yellow Fever:** Travelers planning on visiting Sub-Saharan Africa or tropical parts of South America should receive the yellow fever vaccine.

**Measles, Tetanus, Pertussis, Diphtheria:** All patients who are not up-to-date on these vaccines should receive them before leaving the country regardless of their travel destination.<sup>1,4</sup>

1. Advice for Travelers. In: Abramowicz M. Treatment Guidelines from the Medical Letter. 2012 Jun;10(118):45-56.
2. Fiore AE, Wasley A, Bell BP. Prevention of hepatitis A through active or passive immunization [Internet]. Morbidity and Mortality Weekly Report. Atlanta (GA): Centers for Disease Control and Prevention. 2006 May 19 [cited 2012 July 3]. Available from: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5507a1.htm>
3. Achievements in Public Health: Hepatitis B Vaccination --- United States, 1982--2002 [Internet]. Morbidity and Mortality Weekly Report. Atlanta (GA): Centers for Disease Control and Prevention. 2002 June 28 [updated 2002 Jun 28, cited 2012 Jul 02]. Available from <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5125a3.htm>
4. Outbreak Notice: Measles update [Internet]. Atlanta (GA): Centers for Disease Control and Prevention. 2008 Apr 11. [updated 2012 Jun 25, cited 2012 Jul 01]. Available from: <http://wwwnc.cdc.gov/travel/notices/outbreak-notice/measles.htm>.

## **Egg Allergies- Who is a candidate for the influenza vaccine?**

Previously, the influenza vaccine was contraindicated in patients with any type of allergic reaction to the vaccine. Now, due to increased safety, the vaccine is only contraindicated if a severe allergic reaction occurs, such as anaphylaxis. All currently available influenza vaccines are manufactured using chicken



eggs. In recent studies, patients who had egg allergies could tolerate ovalbumin concentrations up to 1.4 mcg/mL without experiencing severe reactions. It is currently unknown whether concentrations below this level can cause anaphylactic reactions. Fluvirin<sup>®</sup> is a common brand of the influenza vaccine which contains  $\leq 2$  mcg/mL of ovalbumin.<sup>2</sup> Also, depending on the season and lot number, the ovalbumin concentration may vary.<sup>1</sup> “Skin prick testing” was a method used in a few of the studies referenced by the CDC. This means that patients were given 10% of the total dose, then if no reaction occurred within 30 minutes, the remainder was given. This method does not seem to be necessary, however, since neither full doses nor split doses led to anaphylaxis in the studies.

### **Recommendations Regarding Persons with Egg Allergies<sup>1</sup>**

- Patients should remain on site for 30 minutes after receiving the vaccine
- Those with minor reactions (urticaria) may receive the vaccine
- Individuals with more severe reactions (angioedema, shortness of breath, etc.) should be referred to an allergy specialist
- Treatment for anaphylaxis should always be available at the immunization site
- In patients with severe reactions (anaphylaxis), the vaccine is contraindicated

1. Prevention and control of influenza with vaccines: recommendations of the advisory committee on immunization practices (ACIP), 2011. 2011 Aug 26. [cited 26 Jun 2012]. Available from: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6033a3.htm>
2. Influenza Virus Vaccine: Fluvirin<sup>®</sup>2011-2012 formula [Internet]. 2012 Jan 23. [cited 3 Jul 2012]. Available from: <http://www.fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm123694.pdf>.



### **The last “dose” ...**

“Our goal is not to completely eradicate the infection - that would be very difficult - but to produce a vaccine that will prevent not infection but disease.”

~Luc Montagnier (French virologist) (1932-)

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