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University Health Service

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TO: New Students and Parents
FROM: Jim Zach, MD
UWSP Student Health Service
DATE: February 16, 2009
RE: *2009 – 2010 IMMUNIZATION RECOMMENDATIONS FOR UWSP STUDENTS*

The information included here is based on recommendations from the American Committee on Immunization Practices (ACIP) and the American College Health Association for people living in the United States. The immunizations listed are available at no charge if no cost is stated. More information regarding specific immunizations including Vaccine Information Statements (VIS sheets) are available at www.cdc.gov/vaccines.

ROUTINE IMMUNIZATIONS

Measles/Mumps/Rubella -- MMR

This is an immunization with 3 components. It is recommended that two MMR's be given during childhood. At least 95% of infants properly immunized with one dose of MMR develop adequate protection against measles. The second dose is recommended during the middle childhood years as a booster to protect into later years. University students who have received one MMR should receive a second dose.

Measles is also known as rubeola, two-week measles, and red measles. An adult who contracts measles can suffer serious illness. Outbreaks of measles occur occasionally on university campuses. One of every 1,000 young adults who get measles is likely to die of measles complications. A prior history of having the disease is not a reliable indicator of immune protection because other diseases can mimic measles.

University students occasionally become sick with **mumps** because they were not immunized, or did not become infected, as children. In addition to salivary gland swelling, this virus may cause inflammation and rarely, sterility of the testicles in adolescent or older males.

Ordinarily, **rubella** is not considered a serious disease. However, it can produce extremely serious consequences if it is contracted by a woman during pregnancy when it can cause deformity or retardation of the baby. If you have had rubella then you have natural immunity to it. However, a history of rubella in childhood is not a reliable indicator of immune protection because several childhood diseases can produce a rash similar to rubella.

You may see this abbreviated as **MMRV**. A fourth component can be added to provide protection for **Varicella**, which is the virus responsible for chicken pox, and herpes zoster (shingles).

If there is uncertainty about immune status, a repeat immunization for rubella, measles, or mumps is not harmful. Blood tests are available to determine if you are immune to these diseases; sometimes testing is required before students work or volunteer in medical settings.

Tetanus / Diphtheria / Acellular Pertussis -- Tdap

Tetanus is a potentially fatal neuromuscular illness. Its germs can be found widely in our environment and can infect skin injuries which results in production of disease-causing toxin. If you had the initial series of tetanus immunizations (DTaP series) as a child, then you will need a booster every 10 years. A serious wound may require an early booster after 5 or 6 years. Boosters used to be given as tetanus/diphtheria (Td), but as of 2005 pertussis protection was added to this vaccine (Tdap).

Diphtheria is a serious throat and respiratory infection that can produce a toxin that damages body tissues such as nerves and heart. A booster every 10 years is recommended. Boosters are especially important if planning travel to countries which are having outbreaks of diphtheria.

If you did not receive the DTaP series as a child, it can and should be started as an adult. A dose of **Tdap** vaccine costs \$39 through the Health Service.

Pertussis, also known as whooping cough, has been a resurgent disease in recent years. The cough can be quite severe and last for as long as 3 months. A childhood immunization series (DTaP) induces protection against pertussis; however, the protection begins to wear off during teenage years which contributes to the increasing number of cases seen in schools and universities. If someone with a recent Td history desires to acquire the pertussis immunity, recommendations are to wait 2 years since the last Td to receive a Tdap. Receiving tetanus boosters too soon can result in a very sore, inflamed area at the injection site for a couple weeks due to a hyper-immune response.

Polio (IPV)

If you received the initial series of vaccinations as a child, no booster is needed unless you plan to travel to certain under-developed countries where there may be “wild” polio virus exposure. The recommended form of vaccine for a booster is **IPV** (Inactivated Polio vaccine). This vaccine is not available through the Health Service but we can help arrange an immunization in the community at the Portage County Public Health Department.

Hepatitis B (HBV)

Also known as serum hepatitis, this is a viral liver infection transmitted primarily by blood, semen, and other body fluids. This has potential to become a chronic infection and/or disease. It can be fatal. It can be transmitted to intimate partners and from infected women to their child. *The American Committee on Immunization Practices and the American College Health Association recommend that all children and young adults receive this immunization.* This vaccine is especially important for these high-risk groups:

1. *Sexual contacts of gay, bisexual males, or known Hepatitis B virus carriers,*
2. *Heterosexuals who have multiple sexual partners,*
3. *Household and sexual contacts of known Hepatitis B carriers,*
4. *Health care or other workers exposed to body fluids or people with unpredictable behaviors - this includes teachers and teacher’s aids, daycare workers, home health workers, nursing assistants, or group home workers,*
5. *Injection drug users or their sexual contacts,*
6. *Citizens from high-risk areas such as Asia, Africa, some Caribbean islands, and Eastern Europe and in the US—Alaskan natives and Pacific Islanders,*
7. *Travelers who will be staying in infected areas,*
8. *Pre-professional healthcare students, such as dentistry, medicine, nursing, and medical technology,*
9. *Public-safety workers.*

Students who are 18 years or younger can receive vaccine at no charge because of our participation in a state vaccine program. Students who are 19 years of age pay approximately \$50 for the series. If you are 20 years or older this vaccine is available at the Health Service’s cost, approximately \$90 for a series of 3 shots. Booster doses are not recommended unless one is at high risk of Hepatitis B exposure.

As the number of vaccines continues to climb, some manufacturers of vaccines are combining several childhood immunizations such as Hepatitis A and B, or Hepatitis B with DTaP and IPV with the result of fewer shots for children. This may cause some confusion when you start checking early childhood immunization records. If you are uncertain which immunizations you’ve had based on the notations in your medical record, call your personal clinic or the Student Health Service and ask to speak with a nurse.

Hepatitis A (HAV)

This vaccine provides protection against the most frequent type of hepatitis from a global perspective. It is also known as infectious hepatitis. It is common in developing countries where there are suboptimal sanitation systems. About 50% of cases reported in the United States are acquired in several of our western states. It occasionally causes restaurant related outbreaks due to infected food handlers or from food imported into this country. People may become infected with this virus when traveling abroad or from infected household or sexual contacts. Hepatitis A in adults can produce a serious illness lasting up to 2–6 months with a small risk of death. Recovery from Hepatitis A infection results in lifelong immunity, so people who have had the disease don’t need to be immunized. A blood test can be done to determine if someone has immunity.

Cost for this immunization to students is approximately \$60 for both the first dose and the booster received 6-12 months later. Long-term protection has been demonstrated in 99-100% of recipients of 2 doses at 5-6 years. Duration of protection is not known with certainty at this time but is estimated to be 20 years to lifetime if the series is completed.

Influenza

This virus causes a respiratory infection characterized by sudden onset of high fever, cough, headache, and muscle aches. Influenza is most threatening to the following people and they are, therefore, advised to receive an influenza immunization each autumn.

1. *Immunization is recommended for anyone who wishes to reduce their risk of getting influenza*
2. *A chronic disease of the heart, lung, kidney, or metabolic problem such as diabetes or asthma*
3. *People 50 years or older*
4. *Health care workers (to prevent spread to patients as well as self-protection)*
5. *Pregnant women*
6. *Workers and children who have contact with people at risk for complications from influenza*
7. *Travelers at risk of influenza based on destination and season*

Outbreaks are most common during winter months in the northern hemisphere and all year in tropical areas. The influenza viruses mutate frequently and the immunization needs to be repeated each fall. New formulations of influenza vaccine are made each summer trying to anticipate the viral types that will be causing the disease the next winter. It is 70%-90% effective in preventing infections with the respiratory viruses influenza A and B; the duration of the protection is less than 1 year. There are 2 types of influenza immunizations available: a killed-virus injection and a live-virus nasal spray. The Health Service plans to have about 1,000 doses of the injectable immunization available each fall at no charge to students. Immunizations are also readily obtained from public health clinics and private medical clinics.

The recent influenza seasons had adequate supplies of vaccine and usually good matches between the A strains provided in the vaccine and the influenza that circulated in communities. An important consideration in receiving influenza vaccine is not only the disease protection and reduction of spread to others when you are coughing, but in periods of heightened concern with diseases such as Avian Influenza, having been immunized for ordinary influenza may reduce confusion about what a person with an influenza-like illness may have when presenting to a health care provider following travel.

Varicella

Naturally occurring infections (chicken pox) have become less common as more children are being immunized. We occasionally see new infections of chicken pox at the Health Service. The disease has a higher complication rate and small risk of death when acquired after childhood. Complications include scarring due to bacterial infections of skin lesions, pneumonia, and brain inflammation (encephalitis). It is spread by coughing and blister fluid.

This vaccine can be considered by students who have not yet had chicken pox. Adults receiving this vaccine need 2 injections 4 to 8 weeks apart. Student cost for the vaccine series of two doses is approximately \$150. Varicella has become one of the routine immunizations of childhood and is sometimes combined with measles/mumps/rubella as MMRV.

Proof of immunity or immunization is often required of people training to enter health care fields. This is also true for hepatitis B, measles, mumps, and rubella because of risk of infection to the workers and spread to patients.

A varicella vaccine is available for adults 60 years or older to prevent herpes zoster also known as shingles. Studies have found it reduces the occurrence of shingles by 50% and reduced pain due to shingles by over 60%.

IMMUNIZATIONS FOR WOMEN

Human Papillomavirus Vaccine (HPV)

Genital HPV is the most common sexually transmitted infection in the United States, an estimated 6.2 million persons are newly infected every year. Although the majority of infections cause no clinical symptoms and are self-limited, persistent infection with cancer-causing viral types can cause cervical cancer in women. HPV infection also is the cause of genital warts and is associated with other anogenital cancers including vulva, vagina, anus, and penis. Cervical cancer rates have decreased in the United States because of widespread use of Papanicolaou testing (Pap test) which can detect precancerous lesions of the cervix before they develop into cancer; however, an annual estimate of 10,000 new cases will be diagnosed and approximately 3,700 women will die from cervical cancer in this country.

The quadrivalent HPV vaccine is a mixture of four HPV type-specific VLPs (viral-like particles) prepared from noninfectious proteins of HPV 6, 11, 16, and 18. Clinical trials indicate that the vaccine is highly effective in preventing persistent HPV infection, cervical precancerous lesions, vaginal and vulvar precancerous lesions, and genital warts caused by HPV types 6, 11, 16, or 18 among women who have not already been infected with the respective HPV type. No evidence exists of a therapeutic effect against disease caused by HPV types with which women are infected at the time of vaccination. However, women infected with one or more vaccine HPV type before vaccination would be protected against disease caused by the other vaccine HPV types. Although there are over 40 HPV viral types that infect the genital area of men and women, the 4 types protected for by the HPV vaccine are 16, 18, 6, and 11. Types 16 and 18 cause approximately 70% of the cervical cancer and types 6 and 11 cause approximately 90% of genital warts.

The vaccine is administered by injection as a 3-dose series with the second and third doses administered 2 and 6 months after the first dose. The recommended age for vaccination of females is 9 years to 26 years. Vaccination is not a substitute for routine cervical cancer screening, and vaccinated women should have cervical cancer screenings (pap test) after becoming sexually active. At this time the vaccine is not FDA approved for use in protecting men (and their partners) but research is ongoing. The cost for the 3 shot series at the Health Service is about \$400.

The Health Service can assist low income women who do not have vaccine coverage through their health insurance to receive HPV vaccine at no charge through the Merck Vaccine Patient Assistance program. Contact our front desk staff for more information or visit www.merck.com/merckhelps/patientassistance/home.html.

Reproductive health services including annual exams, pap testing, sexually transmitted infection screening and treatment, birth control, and colposcopy services are available for men and women as needed at cost or at no charge as provided for by the prepaid health fee students pay as part of their tuition. The Student Health Service participates in the Wisconsin Family Planning Waiver which allows women who qualify to receive reproductive health services and birth control at no cost. Contact the Student Health Service for more information or visit www.dhs.wisconsin.gov/DPH_BFCH/MCH/familyplanning.htm.

IMMUNIZATIONS FOR SELECTED AT-RISK PEOPLE

Meningococcal Conjugate Vaccine

This vaccine, brand name Menactra, is an improvement over the prior meningococcal polysaccharide vaccine, Menomune. *Neisseria meningitidis* may cause an infection of spinal fluid and membranes (meningitis) or a blood stream/soft tissue infection (septicemia). This bacteria is the leading cause of bacterial meningitis in children and young adults and has a fatality rate of 10 to 15%. Another 15% can have permanent neurological damage, loss of limbs or other organ damage. There are approximately 3000 cases per year in the US. Outbreaks of meningococcal disease occasionally occur at universities and create considerable concern for students, parents, and medical staff. This bacterial infection is transmitted by inhalation of infected airborne respiratory droplets, kissing, or contact with infected nasal secretions and mucus membranes. The vaccine induces immune protection against four strains (A,C, Y, W-135) at about a 90% effectiveness rate. About 30% of the meningococcal disease is caused by type B (unprotected) in North America, the remaining cases are due to types protected by the vaccine.

Studies have found a 3 to 6 times higher incidence of meningococcal meningitis among students living in residence halls when compared to off-campus students. The incidence in students not living in residence halls is very close to that of the general population, about 1/100,000. The peak years of incidence of meningococcal disease are from 15 to 24.

Menactra is recommended from adolescence through 1st and 2nd year college students living in residence halls who want to reduce their risk for meningococcal disease. The CDC also recommends use of meningococcal vaccine for people who are immunocompromised, do not have functional spleens, for control of outbreaks of certain types of meningococcal disease protected for by the vaccine, and travelers to areas of the world with current epidemics.

The duration of protection of Menactra is considerably longer than the 3 years duration of Menomune, and it is not known whether Menactra boosters will be needed. The vaccine is given as a single injection that induces an immune response in 7 to 10 days. Student's cost through the Health Service is about \$100. If exposure to an infected person occurs, there are antibiotics that can be taken to prevent spread to close contacts such as roommates and family members.

Pneumococcal Disease (PPV)

This bacteria can cause a variety of illness including disseminated invasive infections (blood infections and meningitis), respiratory tract infections such as pneumonia and sinusitis, and middle ear infections. It is transmitted from person to person via respiratory droplets and direct contact. Antibiotic resistant pneumococcal bacteria are becoming more common in the United States and other areas of the world. This vaccine is being recommended for wider use in young adults who are smokers or who have asthma.

The current polysaccharide vaccine (Pneumovax-PPV) protects against 23 strains of *Streptococcus pneumoniae* bacteria. This vaccine is most effective at preventing the potentially fatal invasive pneumococcal infections. These occur at an incidence of 15 to 30 cases per 100,000 in the general population of the United States making it considerably more common than meningococcal disease. It is estimated that 40,000 deaths are due to pneumococcal disease per year, and half of them could have been prevented by use of vaccine. The death rate is highest among elderly and those with other underlying medical diseases.

People who should consider this vaccine include those with heart, lung, liver, or kidney disease, blood, spleen, cochlear implants, or immune system conditions that decrease immunity, alcoholism, and those older than 65. People taking medications that decrease immune responsiveness should also consider this vaccine. A single injection will provide elevation of antibodies for at least 5 years and resulted in 56 % to 81 % effectiveness in preventing invasive disease in several studies. Vaccine cost at the Health Service is about \$160. A single booster after 5 years is the current recommendation.

Rabies

Rabies is a fatal viral infection usually transmitted to people by bites or scratches from infected wild or non-immunized domestic animals. A pre-exposure immunization using three intramuscular injections is available for approximately \$450. Students who might consider getting this include wildlife majors, pre-veterinary students, spelunkers, and travelers likely to have unavoidable contact with animals in underdeveloped areas that have populations of rabies infected animals. If a possible rabies exposure occurs, 2 additional post-exposure immunizations must be given. Persons who are injured (bite or scratch) from a potentially rabid animal need injections with Rabies Immunoglobulin plus 5 doses of rabies vaccine. In the U.S. the most common vectors are wild animals including skunks, raccoons, bats, coyotes, foxes, ferrets; and rarely dogs and cats.

Lyme Disease

Lyme disease is a serious multi-system disease that can cause early symptoms near the time of infection and other symptoms months later affecting the cardiovascular, nervous, and musculoskeletal systems. In 2007 there were over 1800 reported cases in Wisconsin. The actual number of cases was likely much higher. The infecting agent is a bacteria called *Borrelia burgdorferi* that can be transmitted to people, usually by different stages of the deer tick (*Ixodes dammini*) carried by white-footed mice and deer. The Lyme Disease vaccine made available in 1999 created an immune response to a protein present on the bacteria. When antibody-containing blood was fed upon by a tick carrying the bacteria in its gut, the antibodies attack the bacteria before they can be transmitted. The duration of immune protection after completing the series was unknown, but waned after a few years.

The vaccine to prevent Lyme disease, LYMERix, was withdrawn from sale during 2002 due to low sales. People who received the vaccine should still take precautions to avoid tick bites because it provided incomplete protection against Lyme disease, and other diseases can be carried and transmitted by tick bites and the immunization benefit is waning with time. Tick avoidance measures include use of light-colored clothing as a barrier and to better see the ticks, tucking pant cuffs into tops of socks, use of permethrin repellents on clothing, and whole body "tick checks" after exposures. Careful removal of an attached tick before it has begun to swell from feeding on blood can prevent transmission of the bacteria. The incidence of Lyme disease in the area of exposure and whether a tick has actually been feeding should be used in determining if preventive antibiotic treatment consisting of 2 tablets of doxycycline is warranted if someone gets a tick bite. We see several students each year with early Lyme disease. Our regional deer ticks are commonly infected with the Borrelia bacteria. More information on Lyme disease is available at <http://dhfs.wisconsin.gov/communicable/TickBorne/LymeDisease/index.htm>.

Traveler Health Information

UWSP believes that international travel experience is an important part of your life preparation. The Student Health Service works to support that goal whether your travel is related university-sponsored or personal reasons. If you plan to travel in countries other than Canada or Western Europe, talk with the University Health Service front desk (346-4646). They can give you an appointment for information on the specific country(s) you plan to visit through the UWSP Health Service Travel Clinic and provide recommended immunizations, medications, and advice. We provide medical advice and support to the UWSP International Programs office, the Global Environmental Management Education Center (GEM) and other UWSP departments through group travel clinics for students. We subscribe to a computerized travel information service (Travax) to provide you detailed and current information based on your itinerary. In addition, it provides recommendations for avoiding the diseases for which immunizations are not available.

Health information for travelers can also be accessed through the Center for Disease Control (CDC) website www.cdc.gov/travel. This website will provide regional information regarding disease risk but will not provide you with areas of risk within a country, or provide prescriptions for immunizations or medications which are available through the Health Service. We are a CDC approved site for providing yellow fever vaccine recommended for travel to some equatorial regions of Africa and South America.

*www.cdc.gov will get you to the **Center for Disease Control (CDC)** homepage. A wide range of prevention information can be accessed from this site. Additional information regarding immunizations can be obtained from this website: <http://www.cdc.gov/vaccines>.*

*www.who.int is the website for the **World Health Organization of the United Nations**. It provides a wide variety of global health information.*

Avian Influenza Information: *Although there are currently no available immunizations for avian influenza (H5N1), information on this very serious global health threat is available at www.pandemicflu.gov and www.who.int/csr/disease/avian_influenza/en*