

Immunization of Healthcare Workers

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Measles virus replication. TEM X100,000

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One of the many lessons that emerged from our measles outbreak this spring is that health care workers have not kept up with evolving recommendations for immunization and acceptable proof of immunity to important vaccine preventable diseases. Most of us take tuberculosis testing, Hepatitis B vaccines and proof of immunity to rubella as a component of our professional certifications without too much question. However, since a December 1997 publication of the MMWR, there have been increasing recommendations for vaccination of healthcare workers and for acceptable proof of immunity to an expanding array of infectious diseases. In this context, the CDC takes a broad definition of healthcare workers that includes all personnel working in a healthcare facility that may come into contact with that facility's air, with medical wastes or dirty linens, or with patients. These recommendations are meant to apply to outpatient as well as inpatient settings. Following is a summary of currently recommended immunizations for healthcare workers and of acceptable proof of immunity to these diseases.

- **Measles** – acceptable evidence of immunity includes: documented receipt of two doses of live measles containing vaccine after the first birthday at least 28 days apart, lab evidence of immunity or physician diagnosed measles disease. While those born before 1957 are often assumed to be immune due to endemic measles at that time, those without above proof of immunity should be offered one dose of MMR vaccine during an outbreak. The CDC is reviewing whether to make stronger recommendations for healthcare workers born prior to 1957.
- **Mumps** – acceptable evidence of immunity includes: documented receipt of two doses of live mumps containing vaccine, lab evidence of immunity or physician diagnosed mumps disease. While those born before 1957 are often assumed to be immune due to endemic mumps at that time, those without above proof of immunity should be offered one dose of MMR vaccine.
- **Rubella** – acceptable evidence of immunity includes: documented receipt of at least one dose of live rubella containing vaccine or lab evidence of immunity. While those born before 1957 are often assumed to be immune due to endemic rubella at that time, those without above proof of immunity should be offered one dose of MMR vaccine.
- **Varicella** – acceptable evidence of immunity includes: documented receipt of two doses of varicella vaccine given at least 28 days apart, history of varicella or herpes zoster based on physician diagnosis or lab evidence, or laboratory evidence of immunity.
- **Pertussis** - Following the completion of the primary 3 dose series, all healthcare personnel younger than age 65 years should receive a one time dose of Tdap for the pertussis protection.
- **Hepatitis B** - Standard 3 dose series of Hepatitis B vaccine is recommended. Post vaccination serology (anti-HBs) is recommended one to two months following completion of the series, with a one time repeat of the series for non responders. If the HCW is still negative after a second vaccine series, the HCW is considered a non responder to hepatitis B vaccination. These HCWs should be considered susceptible to HBV infection and should be counseled about precautions to

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prevent HBV infection and the need to obtain hepatitis B immune globulin (HBIG) prophylaxis for any known or likely exposure to HBsAg-positive blood.

- **Influenza** – HCW should receive annual influenza vaccine, either trivalent (inactivated) influenza vaccine or live, attenuated influenza vaccine (if non pregnant, healthy and aged 49 years or younger.)

I encourage all of you to look into the issue of healthcare worker immunization in your practice settings – are all of your staff fully protected? There is clearly cost associated with the process of “catching up” to fulfill these recommendations and planning and effort will be needed to fully implement them. Ultimately the standard will likely be that each health-care worker is responsible for maintaining their own immunization/proof of immunity records.



Measles in Europe and Risks for Importation to North America

By Lisa Hulette, Epidemiology Program Manager

As Pima County winds down from its first measles outbreak since the late 1980s, several countries in Europe are experiencing ongoing outbreaks to an extent they have not seen since the mid to late 1990s when current MMR recommendations (2 doses, 1st at 12 months and 2nd before school) were put in place. Measles outbreaks have also been reported in many U.S. states and Canada during 2008. The current increased levels of measles in Europe and North America began in the fall of 2006. Many countries still report having endemic measles that contribute to a yearly worldwide count of greater than 20,000,000 cases (MMWR, 2008). That number is hard to grasp for many of us in the United States who have never seen a case of measles. In order for health care workers and facilities here to really calculate the risks of introduction of vaccine preventable diseases such as measles, it is important to understand the patterns of disease in other countries, and the risk of introduction of a disease that is no longer endemic through increasing international travel. This article will discuss some of the current measles trends in European countries. This information, coupled with history of travel to or from these countries, should allow providers to decrease the time required to suspect measles during the prodrome, before the typical measles rash appears.

In 2008, measles cases have been imported to the United States from Switzerland, Israel, Belgium, India, and Italy. The cases imported from Switzerland, Belgium and Italy all belong to the same D5 genotype. This reflects widespread transmission among these three countries which border each other. This is the same genotype identified in Pima County's index case, a visitor from Switzerland. A recent outbreak in San Diego County was also identified as D5, and linked to travel to Switzerland (MMWR, 2008).

Switzerland has been experiencing a large outbreak since November 2006, with 1,045 cases reported between then and February 2008 (Eurosurveillance, 2008). An article in Eurosurveillance indicates Swiss public health officials are now considering this D5 strain, imported from Southeast Asia, to be “newly endemic” due to a greater than 15 months ongoing outbreak. Among 31 countries reporting to EU VAC.net an electronic surveillance system for vaccine preventable diseases, in 2007 the overall measles case rate per 100,000 population was 0.76. In Switzerland the rate was 14.26. By mid-April 2008, Austrian authorities were reporting 207 cases linked to travel between Austria and Switzerland (Eurosurveillance, 2008). An outbreak of 16 cases related to the D5 genotype and travel from Switzerland was also reported in Southwestern Germany during January and February 2008 (Eurosurveillance, 2008).

Other European countries are experiencing outbreaks caused by a different genotype. D4. Sixteen cases were reported in southern Italy between January and March 2008 (Eurosurveillance, 2008). Austria, Germany and Norway reported 259 cases through the middle of April, all linked to a school and day care center where the majority of students were not vaccinated (Eurosurveillance, 2008). A total of 57 confirmed cases were reported in southern Spain, all linked to two adults who were crew members of a shipping company which traveled between Algeciras, Spain and Tangiers (Eurosurveillance, 2008). The most recently described measles outbreak in Israel, also caused by the D4 strain, included

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491 cases between August 2007 and January 2008. Most cases were linked to three cases imported by ultra-orthodox Jewish community members visiting from London (Eurosurveillance, 2008). Although the source of infection was not identified, other outbreaks caused by the D4 genotype have been reported this year in Romania, France, Denmark, Germany and the United Kingdom.

The outbreak in the United Kingdom has been especially severe, involving greater than 1,200 cases since early 2007. Most of these are also of the D4 strain. British public health authorities are now calling measles endemic in the country after 14 years of no local transmission. Authorities are concerned about a decreasing rate of MMR vaccinations across the United Kingdom, and believe the number of susceptible children is now large enough to support continuous measles transmission (Eurosurveillance, 2008).

EUVAC.NET a European Union surveillance network for vaccine-preventable diseases, preliminary data for 2007 from 31 European countries reported 3,826 measles cases. A recent communication in *Eurosurveillance* called measles in Europe “still a concern” (Eurosurveillance, 2008). With the frequency of travel between the United States and European countries, the risk for measles importation remains high. Health care facilities, in particular, should be on the alert for international visitors presenting with fever and measles prodrome symptoms of cough, coryza, and conjunctivitis. Certainly, patients with rash and fever should be considered as possible measles cases. In the absence of an outbreak, travel history should be obtained on patients with measles like symptoms.

References:

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Reporting an Unexplained Death

By Rod Norrish, Epidemiologist

Since 2004, public health agencies in Arizona have required reporting of all unexplained deaths that were preceded with fever within 48 hours of the death (UNEX). As with other reportable communicable diseases, it is the responsibility of a Health Care Provider, or an administrator of a Health Care Institution or Correctional Facility to report UNEX within 24 hrs of the death. Deaths due to infectious diseases of unknown etiology are investigated to rule out a new/emerging infection, an act of terrorism or any other agent of public health significance.

The public health investigation is separate from the Medical Examiner’s investigation and autopsy and it is not conducted to determine a cause of death but to detect emerging infections or situations where there may be exposed persons in need of post exposure prophylaxis or other situations of public health significance. At least one of the case definition criteria must be met to initiate a public health investigation:

- Hospital/facility-based death, not known cause **and** a history of fever (>100.4 F) **or** temperature < 96.8 F within 48 hours of death.
- Patient reported history of fever within 48 hours of death.
- Clinical suspicion of infectious etiology by a health care provider/medical examiner.
- Unattended death with no obvious cause of death.

UNEX can be reported to the Pima County Health Department at 520-243-7797 or after hours at 520-743-7987.

Syphilis Today

By Brad McKinney, STD/HIV Program Manager

Although most health care providers in practice today have not seen or treated it, syphilis is not a historical disease. Increasingly, it is a current and common sexually transmitted infection in Pima County.

Syphilis is caused by the bacterium *Treponema pallidum*, and can be transmitted by vaginal, anal, or oral sex with direct contact with a syphilis sore, also known as a chancre. Syphilis can also be transmitted during foreplay without penetrative sex, again through contact with a chancre, or through contact with the skin lesions associated with secondary syphilis, such as condylomata lata. Syphilis can also be transmitted by an infected pregnant woman to her fetus.

Who is Infected in Pima County

In the United States, there were over 36,000 cases of syphilis reported in 2006. Between 2005 and 2006, the number of reported Primary and Secondary (P&S) syphilis cases increased 11.8 percent.

However, the picture is different in Pima County. The number of P&S syphilis cases reported in Pima County remains consistently high for a community this size. In 2007, there were 54 P&S cases, or 5.6 per 100,000 in comparison to 3.3 cases per 100,000 nationally.

Nationally, 64% of the reported P&S syphilis cases in 2006 were among men who have sex with men (MSM). While much of national discussion about syphilis prevention and screening has focused on MSM, just 19% of individuals being diagnosed with P&S syphilis in Pima County are MSM. Still a sizable percentage, but syphilis is not isolated to MSM in Pima County.

Primary and Secondary syphilis by gender in Pima County

	2001	2002	2003	2004	2005	2006	2007
Males	12	20	31	27	31	22	31
Females	4	8	16	11	24	12	23
Transgenderers	0	0	0	0	0	0	0
MSM	3	3	16	16	10	8	6
% MSM	25%	15%	52%	59%	32%	36%	19%

US rates of congenital syphilis, after ten years of significant declines, increased 3.7% between 2005 and 2006 (from 8.2 to 8.5 cases per 100,000 live births). Unfortunately, Pima County has one of the nation's highest rates of congenital syphilis at 36.3 per 100,000 live births in 2007, and 53.8 through the first five months of 2008.

Screening

Syphilis has often been called "the great imitator" because so many of its signs and symptoms are difficult to distinguish from other diseases. In part because of the challenges of diagnosis, and the incidence of syphilis in Pima County, the Health Department recommends routine serological syphilis screening for all pregnant women during the first **and** third trimester as well as cord blood sampling at birth. All sexually active individuals with new sex partners should also be screened. Testing is strongly recommended for those who are drug involved, are partners of those drug involved, or are contacts to syphilis.

Treatment

Syphilis is easy to cure in its early stages. Benzathine penicillin G 2.4 million units IM in a single dose can cure a person who has had syphilis for less than a year. Additional doses are needed to treat someone who has had syphilis for longer than a year. For people who are allergic to penicillin, other antibiotics (Doxycycline) are available to treat syphilis. Be aware that treatment will kill the bacterium and prevent further damage, but it will not repair damage already done.

Please use caution when ordering to select Bicillin L-A, not the combination benzathine-procaine penicillin Bicillin C-R given the similarity of their names. A combination of benzathine penicillin and procaine penicillin is not considered appropriate treatment for syphilis, nor is oral penicillin.

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Help is Available

Health care providers wanting more information can visit the CDC's web site where a variety of resources and the latest information about syphilis is available, as well as *Syphilis – the Physician's Guide*. Providers can also call the County's STD/HIV Program at 520-791-7676 to receive more specific guidance and advice from a clinician on duty.



New Vaccine Rules for Pima County Children

By Rod Frable, Communicable Disease Investigator

Effective September 1, 2008, the following new vaccine rules for children will be in effect:

- Meningococcal Vaccine (MV) will be required for all students entering 6th grade and who are 11 years of age or older. As the 6th grader reaches his or her 11th birthday during the 2008 – 2009 school year, he or she will be required to obtain the vaccine.
- Tetanus, Diphtheria, and acellular Pertussis (Tdap) will be required for all students entering 6th grade and who are 11 years of age or older and who have had 5 years passed since their last tetanus/diphtheria (Td) vaccine dose. As the 6th grader reaches his or her 11th birthday during the 2008 – 2009 school year **and** meets the 5 year rule for the last Td vaccine dose, the student will be required to obtain the vaccine.
- Students 11 years and older who are beginning or completing the Td series must receive one dose of Tdap as part of a 3-dose Td series. Students starting the series should receive a Tdap as dose # 1, followed by Td for doses #2 (1 month after dose #1) and #3 (6 months after dose #2).
- Students 11 years and older who are not yet in 6th grade, are required to get a Tdap as their Td booster dose if 10 years have passed since their last Td vaccine dose.
- Students who have received a Tdap vaccine will be required to obtain a Td booster after 10 years. Only 1 dose of Tdap is currently recommended per person, per lifetime.

Children will be required to receive the vaccines described above in subsequent school years as a means to ensure total school population vaccinations. For example, in September 1, 2009 all children entering the 6th grade *and* 7th grade will be required to receive MV and Tdap. In September 1, 2010 all children entering the 6th grade *and* 7th grade *and* 8th grade will be required to receive MV and Tdap and so on.

For more information on these new recommendations please visit the Pima County Health Department at: <http://www.pimahealth.org/> or call the Pima County Health Department, Vaccine Preventable Disease Program at 520-243-7988.

Summary of Selected Reportable Diseases for Pima County (Year to Date)

Enteric Diseases:	January-July 2008	January-July 2007
Amebiasis	3	1
Campylobacter	80	86
Shigella	46	34
Salmonella	90	116
Hepatitis A	9	17
Giardia	25	35
Vaccine Preventable Diseases:		
Pertussis	1	5
Measles	17	0
Mumps	0	0
Rubella	0	0
Tetanus	0	0
H. Influenzae, serotype b (<5 years of age)	0	0
Invasive Diseases:		
Streptococcus pneumoniae	143	122
Streptococcus Group A	17	35
Streptococcus Group B (in infants <90 days old)	7	6
MRSA	186	176
Diseases Involving Central Nervous System:		
Meningococcal Infection	1	4
Aseptic Meningitis	15	18
HIV & Sexually Transmitted Diseases:		
HIV	153	194
Chlamydia	2123	2011
Gonorrhea	274	361
Syphilis	102	97
Granulomatous Infections:		
Tuberculosis	15	25
Coccidioidomycosis	424	459
Vector-Borne & Zoonotic Diseases:		
West Nile Virus	0	0
Animal Rabies	36	28

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Please contact Francelli Lugo at telephone number (520) 243-7797 or by fax at (520) 791-0366 to update your current contact information.

Statistical data for the years 2007 and 2008 reflect communicable disease reports of confirmed, probable, and suspect cases received via the Medical Electronic Disease Surveillance Intelligence System (MEDSIS) from 01/01/2007 to 7/31/2007 and 01/01/2008 to 7/31/2008 respectively. Data are provisional. Report generated on 8/18/2008.