Volume 3, Issue 2

Summer 2006

OHIO DEPARTMENT OF HEALTH
BUREAU OF INFECTIOUS DISEASE CONTROL

Infectious Diseases Quarterly

New Law Requires Case-based Reporting of Varicella

by Shannon A. Rowe, MPH, Immunization Epidemiologist

Beginning Jan. 1, 2006, varicella became a case-based reportable disease in Ohio. It is considered a Class A(3) reportable disease, which is to be reported by the end of the work week. Since that time, almost 3,000 cases (2,935 through March 18, 2006) have been reported to the Ohio Disease Reporting System. This compares to 2,036 cases reported in all of 2005 when chickenpox was a Class B reportable disease, reportable in aggregate form by the end of the work week (Ohio Administrative Code 3701-3-02 & 3701-3-13). The majority of these cases have been reported to local health districts by school nurses who most likely will not report during non-school months. Thus, lower reporting during non-school months is anticipated. Health care provider reporting throughout the year is encouraged, to not miss cases. More analysis is warranted to thoroughly describe varicella occurrence in Ohio and is planned for later this year.

Chickenpox

Chickenpox, or varicella zoster virus, is a member of the *herpes virus* family. The incubation period ranges 10 – 21 days following exposure. Incubation could be as long as 28 days if the person has received varicella zoster immune globulin or any blood products. Incubation could be shorter for immunocompromised individuals. The prodrome is mild, usually with one to two days of fever or malaise before rash develops except in children in which the rash is the first sign of disease. A person with varicella is contagious during this phase of disease. During days two through 10 of infection, blister-like vesicles appear, starting on the trunk and face, then spreading to larger areas. Other features of the disease include itching, fatigue, fever and headache. The blisters dry, crust over and form scabs. At this point the person is not contagious and can return to work or school. Transmission is through contact with vesicular fluid or respiratory secretions of

Inside this issue:

Protection against Recreational Water-borne Illnesses	5
Elimination of Tuberculosis in Ohio Prisons	7
A Tick is Not Just a Tick	9
RECALLING ADOLESCENTS IN NEED OF HEPATITIS B VACCINE	14
ADULTS NEED VACCINATIONS TOO!	15

infected people.

Complications

Complications of the disease include dehydration from vomiting, diarrhea, fever and possible exacerbation of asthma. Persons with chickenpox generally must miss work or school for five to six days. Secondary bacterial infections of the skin can also occur, as well as pneumonia, septicemia, encephalitis, hospitalization and death.

Congenital varicella syndrome can result from maternal infection during pregnancy. The risk of congenital abnormalities, which appears to be approximately 2 percent, may extend through the first 20 weeks of pregnancy. Onset of maternal varicella between five days before and two days after delivery may result in overwhelming infection of the neonate and a fatality rate as high as 30 percent. Some complications the infant may experience include atrophy of the extremities with skin scarring, low birth weight and eye or neurologic abnormalities. If a pregnant woman is exposed and not certain of her disease or vaccination history, she should consult her physician immediately to have a titer drawn.

Varicella Vaccine

Varicella vaccine was licensed by the Food and Drug Administration in 1995. It is a live virus that has been attenuated (weakened cell-culture adaptation) and is unable to reproduce much when introduced into the body. Persons 12 months to 12 years of age who have not had chickenpox should receive one dose. Persons 13 years of age or older who have not had chickenpox should receive two doses, four to eight weeks apart.

Varicella vaccine is 70-90 percent effective against varicella infection and 95 percent effective against severe disease. Although the vaccine is safe even if a person has already had varicella, a titer may verify disease history. Ninety-five percent of people who have titers due to uncertain disease history do have titers indicating a positive disease history.

A small percentage of vaccinated persons will get breakthrough disease when exposed. Breakthrough disease is usually mild with fewer than 50 vessicles and no fever. These people are still contagious and should be excluded from school or work until lesions crust or no new spots are forming.

Varicella vaccine is further recommended for adolescents and adults who are susceptible and at high risk of exposure or severe illness. Persons in this group include teachers of young children, persons in institutional settings, military personnel, women of childbearing age and international travelers. Susceptible persons who are likely to expose persons at high risk for severe illness, such as health care workers or family members of immunocompromised persons, should also receive varicella vaccine.

Some contraindications to varicella vaccine include severe allergic reaction to a vaccine component, severe allergic reaction to a prior dose of vaccine or moderate or severe acute illness. Women should avoid pregnancy for at least one month following receipt of varicella vaccine. Because of the potential inhibition of the response to varicella vaccination by passively transferred antibodies, varicella vaccine should not be administered for three to 11 months after antibody-containing blood products.

There have been only three reported cases of disease resulting from the receipt of vaccine, out of 21 million doses of vaccine administered. All three of those persons infected were immunocompromised. Vaccine recipients should avoid use of aspirin for six weeks after receiving varicella vaccine because of the association between aspirin use and Reye syndrome following chickenpox.

Prior to vaccine introduction in 1995, chickenpox occurred in cycles which peaked in the winter and spring and resulted in 11,000 hospitalizations and 100 deaths per year in the United States. Vaccination of school-aged children reduces the incidence and severity of varicella disease. In 1999, the Advisory Committee on Immunization Practices (ACIP) updated varicella vaccine recommendations to include vaccination requirements for child care and school entry. Thirty-six states have already implemented the requirement at some grade level. In 2006, in accordance with ACIP, varicella vaccination requirements will

be phased in for Ohio children, requiring children entering kindergarten to have proof of varicella vaccination or disease history.

Pilot Project for Case-based Reporting

To assess the occurrence of breakthrough varicella disease during the 2004 – 2005 school year and to suffice case-based reporting requirements, the Ohio Department of Health Immunization Program collected data from 134 school districts in 55 counties across Ohio (see Map 1, next page). A case of varicella was defined as a first occurrence of acute, generalized maculopapulovesicular rash, without other cause (Council of State and Territorial Epidemiologists, 1998), in a school student and at least one of the following: 1) physician diagnosis of varicella; 2) school nurse diagnosis of varicella; or 3) parental description consistent with varicella when clinician examination was absent.

Information collected included report date, onset date, birth date, severity of disease, vaccination status and vaccination date. The severity of disease was measured by the number of spots observed on the ill person. Severity level I occurs when fewer than 50 spots can be easily counted within 30 seconds. Severity level II occurs when there are 50-500 spots or if the spots do not fit in Severity level I or III. Severity level III occurs when more than 500 spots can be counted or normal skin can not be seen due to close clumping of blisters.

Results from Project

During the 2004 – 2005 school year there were more than 1,600 reports of varicella by participating school districts. The majority of cases reported (vaccinated and unvaccinated) were ages 6 – 9 years. Of all reported cases whose dates of birth and vaccination status were known, 45 percent had received varicella vaccine. Only 20 percent of cases who had the most severe disease had been vaccinated (see table 1).

Table 1. Varicella Cases Reported by Schools Participating in ODH Pilot Project by Spot Severity and Vaccination Status, Ohio 2004-2005

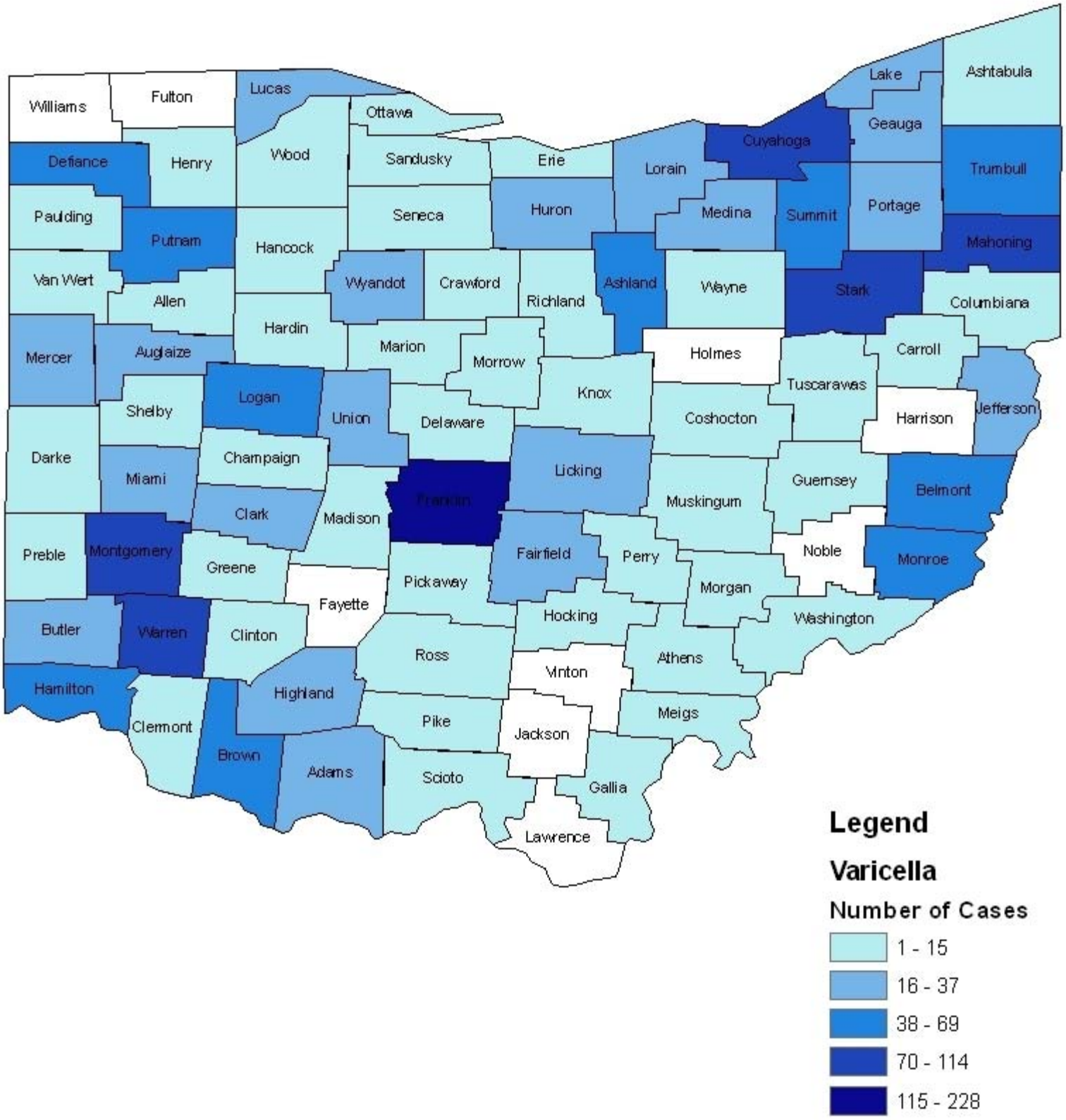
Spot Severity	Number of Cases	Percent Vaccinated
I	812	66%
II	585	26%
III	80	20%
Unknown	164	22%
Total # of cases	1,641	45%

Table 2 shows the effects of waning immunity on varicella disease. The majority of cases reported had varicella vaccine three or more years prior to disease onset in both the 3- to 5-year and 6- to 9-year age groups. These cases also had the mildest spot severity.

Table 2. Time Between Vaccination (Vx) and Disease Onset by Age Group and Spot Severity, Reported by Schools Participating in ODH Pilot Project, Ohio 2004-2005

	Age 3 - 5 Years (n)			Age 6 - 9 Years (n)		
	Length of Time After Vx			Length of Time After Vx		
Spot Severity	< 1 Year	1 - 2 Years	3 - 5 Years	< 1 Year	1 - 2 Years	3 - 5 Years
I	2	8	45	9	12	40
II	0	0	9	2	3	7
III	0	0	2	0	0	1
Unknown	0	0	2	1	0	1

Number of Reported Chickenpox Cases in Ohio, January 1 - February 25, 2006



New Law Requires Case-based Reporting of Varicella—continued

References

1. The Chickenpox Vaccine: Answers to Parents' Questions. Retrieved February 9, 2006, from VZV Foundation 24 E 64th St. New York, NY 10021 Web site: http://www.vzvfoundation.org/chickenq&a.html (1996).
2. Centers for Disease Control and Prevention. Epidemiology and Prevention of Vaccine-Preventable Diseases. Atkinson W, Hamborsky J, Wolfe S, eds. 8th edition. Washington, DC: Public Health Foundations, (2004).
3. Childhood Illnesses in Pregnancy: Chickenpox and Fifth Disease. Retrieved February 9, 2006, from March of Dimes Birth Defects Foundation. Web site: http://wwwmarchofdimes.com/professionals/681_1185.asp (2006).

Protection against Recreational Water-borne Illnesses: Risk, Response, Reporting

by MaryKay Parrish, MS, Bureau of Infectious Disease Control, Steven Binns, MA, RS, and Barry Rice BS, Bureau of Environmental Health

Risk

- Two 10-year-olds tell a lifeguard that "poop" is floating in the "winding river" feature of the water park.
- A distraught parent calls a swim club manager. "My child takes swimming lessons in Suzie Schwimmer's 10 a.m. toddlers' class. She has bloody diarrhea and is in the hospital. The pediatrician thinks she is ill because she swam in YOUR pool."
- A concerned swim coach states one of her swim team members "threw up in the pool."
- A diver hits his head on the board and blood is in the pool.

Is there a risk of disease in these situations?

How can local health departments provide effective guidance for action?

Response

Local health departments can provide pool operators with guidance regarding the management of fecal, vomit and blood accidents in disinfected recreational water venues to ensure Ohioans have a safe and healthy swim this summer. The Centers for Disease Control and Prevention information listed below can be reviewed and adapted for use within your health jurisdiction.

1. **Response to Fecal Accidents in Disinfected Swimming Venues**
   http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5020a7.htm
   http://www.cdc.gov/healthyswimming/fecalacc.htm
2. **Response to Vomit and Blood Accidents in Disinfected Swimming Venues**
   http://www.cdc.gov/healthyswimming/pdf/bloodandvomit.pdf
   http://www.cdc.gov/healthyswimming/pdf/bloodandvomit.htm
3. **Response to Body Fluids on Pool Deck Surfaces**
   Body fluids including blood, feces and vomit are all considered potentially contaminated with blood-borne or other pathogens. Therefore, spills of these fluids on the pool deck

should be cleaned up and the contaminated surfaces disinfected immediately. This information is from http://www.cdc.gov/healthyswimming/bodyfluidspill.htm

Appropriate Disinfectants

Bleach

One of the most commonly used chemicals for disinfection is a homemade solution of household bleach and water. Because a solution of bleach and water loses its strength quickly, it should be mixed just before each cleanup to make sure it is effective. Because improper handling of chlorinated disinfectants could cause injury, appropriate occupational safety and health requirements should be followed.

http://www.cdc.gov/healthyswimming/ph_chlorine.htm

Recipe for Bleach Disinfecting Solution:
9 parts cool water
1 part household bleach
Add the household bleach to the water. Gently mix the solution.

Other Disinfectants

A listing of other approved commercial disinfectants can be found at

http://www.epa.gov/oppad001/chemregindex.htm and http://www.fda.gov/cdrh/ode/germlab.html

Reporting

Please note that fecal incidents, accidents and injuries are required to be reported on the Ohio Weekly Operation Report (WOR) that the pool operator is required to maintain. The WOR must provide details, including time, date, location, description of the incident, pool conditions, activities going on and contact information. For questions about the WOR or swimming pool regulations, local health districts should contact the Bureau of Environmental Health at (614) 466-1390.

If the local health jurisdiction suspects a water-borne disease outbreak (WBDO), it should contact the Bureau of Infectious Disease Control (614) 466-0265. Two criteria must be met for an event to be defined as a WBDO:

1) Two or more persons must have experienced a similar illness after either ingestion drinking water or exposure to water encountered in recreational settings. This criterion is waived for single cases of laboratory-confirmed primary amebic meningoencephalitis and for single cases of chemical poisoning if water quality data indicate contamination by the chemical[1]

AND,

2) Epidemiologic evidence must implicate water as the probable source of the illness.

Waterborne outbreaks (confirmed, probable or suspect) are a Class A(2) reportable diseases in Ohio. Class A(2) diseases are required to be reported by the end of the next business day after the existence of a case, suspect case or positive laboratory result is known (Ohio Administrative Code (OAC) 3701-3-02).

References

1. The Centers for Disease Control and Prevention Web site: http://www.cdc.gov
2. Yoder, J et al. Surveillance for Waterborne Disease Outbreaks Associated with Recreational Water 2001-2002. *Surveillance Summaries*, October 22, 2004. MMWR 2004; 53 (No. SS-8):1-22.

Elimination of Tuberculosis in Ohio Prisons

by John Gardner, RN, BSN, CCHP, and Ramon Perez, RN, MPH, Ohio Department of Rehabilitation and Corrections and Maureen Murphy, RN, Ohio Department of Health, Bureau of Infectious Disease Control

Tuberculosis (TB) poses a unique challenge today in correctional environments. Inmate populations continue to increase and prison overcrowding makes an outbreak of TB an increasingly serious threat. Incarcerated persons are a population long recognized as being at higher risk for TB than the general population. Of the 14,517 reported cases of active TB in the United States in 2004, 3.4 percent (n=492) were residents of correctional facilities at the time of diagnosis.

Because TB is spread through the air, a single infectious person can place many others who share the same air at risk for infection. Standard infection control procedures consist of the immediate isolation of infectious patients to interrupt the person-to-person transmission of TB and prompt initiation of directly observed therapy with an adequate medication regimen to render the patient non-infectious. This usually occurs within the first two to three weeks of treatment.

A key component of the Ohio Department of Rehabilitation and Correction (ODRC) TB control plan is the use of serial skin testing. Monitoring the prison population with base-line, then annual, tuberculin skin tests (TSTs) allows the infection control practitioner of a facility to carefully monitor the population for recent and/or ongoing transmission. However, placing and reading TB skin tests on the entire state prison population is no easy task. ODRC operates 32 institutions throughout Ohio, with an inmate population averaging approximately 44,000. Three of these institutions are reception centers; two for males and one for females. The average population per institution is 1,375. Of the total inmate population, 93 percent are male and 7 percent are female. The racial and ethnic distribution varies considerably among institutions; racial breakdown among ODRC prisons is 48.92 percent black, 48.45 percent white, 2.26 percent Hispanic and 0.37 percent other.

Since 2004, ODRC has sought to place and read annual TSTs on every inmate in custody within the Ohio prison system. Within 24 hours of arrival at ODRC reception centers, trained medical personnel administer initial TSTs using the Mantoux method. The TST is administered by the intradermal injection of 0.1 ml of 5 tuberculin units of purified protein derivative (PPD) solution into the left or right volar forearm in accordance with established ODRC protocol. The TST results are read and documented after 48 to 72 hours by palpation and measurement of induration. Offenders entering ODRC institutions are routinely screened by trained clinicians for symptoms of TB disease, i.e. productive cough (> 3 weeks), chest pain, hemoptysis, weight loss, night sweats and fever. In addition to baseline screening, the TST is also performed as part of annual surveillance for all inmates with previously negative tests, as a diagnostic test when TB is clinically suspected and during contact investigations of active TB cases to assess transmission of *M. tuberculosis*. Interpretation of the TST, and indications for antibiotic treatment, are determined following current Ohio Department of Health (ODH) and Centers for Disease Control and Prevention (CDC) guidelines. For those inmates who have had contact with someone known to have active TB and all immunocompromised inmates, a result of at least 5 mm is considered a positive TST. For all other inmates, 10 mm or greater is considered positive.

Standardization

The decision to implement standardized statewide testing for TB in Ohio prisons was made after consultation with the ODH TB Program. Between 2001 and 2003, analyses of the current testing practices were conducted and thoroughly evaluated. It was found that although established guidelines had been in place, each of the 32 institutions had the option of testing on an annual or monthly basis. The annual testing was not standardized on any particular date throughout ODRC and the monthly testing was performed by birth date. Inmates going out to court and transferring to other facilities within the system were of greatest concern, first because of the possibility of exposure while waiting at the county jail for their court appearances and secondly, the increased

possibility of being omitted from testing when transferring to a different facility. It was determined that these problems could be mitigated through the use of a standardized test date for all inmates in the state prison system.

Results

ODRC elected to help close the loop in TB surveillance in 2004 with the initiation of department-wide TB testing of staff and inmates during a two-week period in September 2004. TB testing of all correctional staff during this time frame was paramount to the success of our TB elimination efforts.

This massive undertaking utilized the Critical Incident Management (CIM) structure within each of ODRC's 32 institutions. A focus group developed the protocol to guide the institutions through this process. Representatives from Security, Administration, Health Care, Unit Management, Food Service and ODH all worked together in developing strategies and protocols to accomplish this objective. The Incident Command Structure (ICS) format was used for planning this program. ODRC's application of the ICS is the CIM; the CIM structure was used for this large undertaking, as all ODRC personnel are trained in this management tool during preservice education and annual emergency drills.

The mass TB testing program consisted of cessation of all inmate movement during the designated testing week, with the exception of inmates going to county jails for court hearings. Each institutional health care administrator oversaw planning, preparation, and implementation of the testing process. All institutional and central office staff were tested the week prior to inmate testing. Non-essential activities in each institution ceased during the inmate testing period. Inmate testing was planned over a three-day period in September. Day one consisted of testing for all inmates within ODRC's 32 institutions. Normal institutional operations resumed on day two, with the exception of inmate transfers, and TB test reading and documentation were completed on day three. All health care staff were trained in the administration and reading of TB skin tests using CDC training tools prior to testing. All previously positive inmates were identified prior to mass testing. Annual screening for signs or symptoms for active disease is completed on all previous positives. New positives identified during annual testing were evaluated by institutional physician staff for signs or symptoms of active TB disease and started on treatment with isoniazid for latent TB infection. Contingency plans for inmates refusing testing were disseminated to institutional managing officers prior to testing. Counseling and education for resistant inmates eliminated the need to use force on any inmates during testing.

On Sept. 21, 2004, ODRC implemented its system-wide TB testing protocol. A total of 43,569 inmates were tested/evaluated for TB in one day. Male inmates constituted 94 percent (n=40,842) and females 6 percent (n=2,727) of those tested. Previously positive patients accounted for 8 percent (n=3,320), and 159 newly documented positive patients were identified and medically evaluated by the institutional clinicians. No active cases of TB disease were identified and 159 patients were placed on preventive treatment.

2004 ODRC TB Skin Testing Results

During the following year, annual skin testing took place on Oct. 4, 2005. This time, a total of 43,965 inmates were tested/evaluated for TB in one day. Again, previously positive patients accounted for 8% (n=3,517), and 132 newly documented positive patients were identified and medically evaluated by the institutional clinicians. No active cases of TB disease were identified, and 132 patients were placed on preventive treatment.

2005 ODRC TB Skin Testing Results

Since 2003, only one active case of TB disease has been reported in the ODRC prison system. Standardized testing and vigilant surveillance have played a large part in preventing TB in this high-risk population. The National Institute of Medicine recently highlighted the vital role of U.S. correctional systems in the nation's future TB control efforts. Despite the primary role of ensuring public safety, U.S. jails and prisons are becoming an essential component of the public health infrastructure. In Ohio, ODRC and the ODH will

Elimination of Tuberculosis in Ohio Prisons—continued

continue their collaborative effort to control TB within the prison system, thereby protecting the public at large.

References

1. Controlling TB in Correctional Institutions 1995 http://www.cdc.gov/nchstp/tb/pubs/corrections/introduction.htm
2. CDC. Prevention and control of tuberculosis in correctional facilities: recommendations of the Advisory Council for the Elimination of Tuberculosis. MMWR Jun 7, 1996 / 45(RR-8); 1-27
3. CDC. Reported tuberculosis in the United States, 2003 Atlanta, GA: U.S. Department of Health and Human Services, CDC, http://www.cdc.gov/nchstp/tb/surv/surv2003/PDF/Surv_Report_2003_small.pdf
4. Bureau of Justice. Corrections Statistics. http://www.ojp.usdoj.gov/bjs/correct.htm
5. Targeted tuberculin testing and treatment of latent tuberculosis: the official statement of the American Thoracic Society. Available from: URL: http://www.thoracic.org
6. Ending neglect: the elimination of tuberculosis in the United States. Washington: Institute of Medicine, National Academy Press; 2000.

A Tick is Not Just a Tick by Robert A. Restifo, Public Health Entomologist, Zoonoses Program

"I had a tick jump off the tree in the front yard and land on my head." "I have deer in the back yard. When will my kids get Lyme disease?"

Tick Myths and Facts

It is a myth that ticks climb trees and jump off onto our heads. Parasites such as ticks that feed only on blood want to ensure they get a blood meal with the smallest amount of energy expended. Ticks climb onto a blade of grass or low shrub (no more than three feet off the ground), usually along an animal run, hold a pair of legs outstretched and wait for an animal to brush by. They then climb on and crawl upward until they find a suitable place to insert their mouthparts and tap into a capillary. Because they crawl upward, they frequently are found on our heads, thus the basis for the myth.

Ticks do not disperse far from where they hatch from the eggs, maybe 30 to 40 feet. That means an animal has to literally walk into the tick habitat to pick them up. They also like to hang out along paths, the edges of woods and animal runs. They do not run or fly; they crawl. They can; however, be carried long distances on animals or inanimate objects.

Once on a host animal, ticks may crawl around for several hours looking for a suitable feeding spot. Ticks can be found on clothing four to six hours after being in tick habitat. This allows for time to conduct visual "tick checks" every couple of hours to remove them. Wearing light-colored clothing, long pants and tucking pant cuffs into the sock tops and shirts into pants, prevents ticks from crawling under clothing and makes it easier to see and remove them. Do a thorough check while bathing that night to ensure all ticks are found and removed.

Ticks do not burrow into the skin. They insert their mouthparts into the skin and tap into a capillary, just like mosquitoes. However, tick mouthparts are short and stubby, with backward projecting teeth that hold the mouthparts firmly in the skin. They are very slow about feeding. Adults take two to five

days to get a full meal. The larvae and nymphs take only one to two days. Many species also secrete what scientists call "cement," a glue-like substance which holds the mouthparts in even more firmly. If an imbedded tick is removed properly, the cement will be removed attached to the mouthparts. This looks like a piece of skin has been removed but is just the cement plug.

Mating occurs on the host animal. Once a female has found a suitable feeding spot, she inserts her mouthparts. Before feeding, she exudes a pheromone that attracts a male. When the male finds the female, he drops a sperm pack, picks it up with two of his mouthparts and inserts the pack into the genital opening on the ventral side of the female. He frequently stays in this position until the female finishes feeding and drops off the host onto the ground. This ensures that his sperm fertilizes the eggs. The female then deposits her eggs, all 2,000-5,000 of them, into the soil and then dies. The eggs may hatch that year, or, usually, survive the winter and hatch early the next spring.

All life stages and both males and females feed on blood. Blood is their only source of nourishment. Only the females become very large. Because the males have a hard, inflexible scutum that covers the entire dorsal surface, they cannot expand greatly and, thus, do not take a large meal and get big. In some species, a fully fed female is about the size of a small grape.

Ticks are outdoor animals. With the exception of a few species, they do not survive in buildings for more than a couple of days; they dry out and die. They will not reproduce in buildings and will not crawl into buildings looking for a host. They are carried in on clothing or pets. In many cases, Fido, the family "tick taxi," will bring ticks into the house after romping in the fields. The easiest way to remove ticks from a building is to vacuum them. It is not worth the risk to spray a pesticide in a building to kill ticks.

There are two major groups of ticks - soft ticks and hard ticks. The **soft ticks** do not have hardened areas on their bodies and are parasites of birds, bats and a few mammals. There are about 26 species in the United States, with only one species of soft tick in Ohio, *Carios kelleyi.* This is a parasite of bats and can occasionally be found in caves and other structures where bats roost and/or colonize, but they do not pose much of a problem in Ohio.

Hard ticks have hardened plates on them, the principal plate being the scutum covering about half the dorsum in females and the entire dorsum in males. There are 57 species known to occur in the United States, including 12 in Ohio. The major ticks in Ohio are the American dog tick, *Dermacentor variabilis*, the lone star tick, *Amblyomma americanum*, and the black-legged tick (also called the deer tick), *Ixodes scapularis*.

The most abundant tick is the American dog tick, sometimes called the wood tick. Adults occur seasonally, from April through July. The immature stages (larvae and nymphs) feed on small rodents but will occasionally get on larger animals. The adult ticks feed on medium-size animals, including dogs, cats and humans. This species is the major vector of Rocky Mountain spotted fever (RMSF) in Ohio. According to Zoonoses Program data, less than 2 percent of the ticks tested since 1983 have been infected with the spotted fever rickettsia.

The next most abundant tick is the lone star tick. Established populations have been found in the past five to seven years in southern Ohio. Many specimens we identify are hitchhikers on migrating birds and travelers. This tick is abundant in the southern United States from Oklahoma and Texas to the East Coast, with Ohio at the northern edge of its range. It is not yet common enough in Ohio to be considered a problem.

The black-legged tick, *Ixodes scapularis*, was originally named *Ix. dammini* from the northeastern United States. It has since been proven to be just a regional variation of *Ix. scapularis*, a species known from the southeast. It is most common east of the Mississippi River. It is very abundant from southern Maine through Virginia. It is also common in areas of northern Illinois, Minnesota, northern Wisconsin and the Upper Peninsula of Michigan. It is believed that individual black-legged ticks are being carried into the state on migrating birds, travelers and their pets, and that populations have not yet become established here. The black-legged tick is the vector of

A Tick is Not Just a Tick —continued

Lyme disease, human anaplasmosis (previously called human granulocytic ehrlichiosis) and babesiosis, and can be co-infected with two or more of these pathogens.

Tickborne Diseases in Ohio

Ohio has a long history of RMSF cases. Ohio Department of Health (ODH) case data date back to 1956. Although the infection rate is low, the huge numbers of the American dog ticks produced annually make it the principal vector.

Lyme disease (not "Lime's disease") is an enigma in the state. The ODH Zoonoses Program receives 150 or so case reports each year, of which only about 65 fit the Centers for Disease Control and Prevention case criteria. Historical data indicate that about half the cases had significant travel history outside of Ohio. To date, only 21 specimens of the black-legged tick have been received at the Zoonoses Program with supporting evidence that they came from Ohio. The Zoonosis Program has never identified an established population of black-legged ticks nor have we ever isolated the bacterium that causes Lyme disease from any animal – human, mouse or tick – in Ohio.

Other tick-borne diseases found in Ohio are two forms of ehrlichiosis and possibly babesiosis. Human monocytic ehrlichiosis was first described in 1987. The disease occurs primarily in the southeastern and south central United States and is primarily transmitted by the lone star tick, *Amblyomma americanum*. Human granulocytic ehrlichiosis, recently renamed human anaplasmosis, was first described in 1994. It is transmitted by the black-legged tick (*Ixodes scapularis*) and the western black-legged tick (*Ixodes pacificus*) in the United States.

Personal Protection

Avoid tick habitats if possible (tall grass and weeds, animal burrows). Remove mice, squirrels, bats and other animals that are in attics and crawl spaces and close entry holes. When outdoors in tick habitat, wear light-colored long pants. Tuck pant cuffs into sock tops and shirts into pants to keep ticks on the outside of clothing. Apply insect repellent to pant legs and sock tops. Do a visual check every hour or two and remove any crawling ticks. At night do a thorough check. If it is not convenient to launder the clothes worn that day, put them in the dryer on high heat for 20-30 minutes.

Tick Removal

It is important to remove ticks as soon a possible after being in the field. Research has indicated the longer a tick is allowed to feed, the higher the risk of disease transmission if the tick is infected. Crawling ticks are easy to remove; feeding ticks are more difficult. DO NOT use hot matches, cigarettes, petroleum jelly, meat tenderizer or other chemicals to remove ticks. Do use a pair of tweezers or, if tweezers are not available, fingers protected with tissue or rubber gloves. Grasp the tick as close to the skin as possible and pull firmly straight out. Do not twist or jerk the tick, as this will break the mouthparts off and leave them in the skin. This could be a source of a secondary infection. Dispose of the tick by flushing it or placing it in a jar (old pill bottle or baby food jar) half filled with rubbing alcohol. Wash the bite site with soap and water or an antiseptic. This is also the method for removing ticks from dogs, cats and other animals. When finished, WASH YOUR HANDS.

Ticks are a common part of our environment, especially in new housing developments built in old farm fields. Like mosquitoes, ticks are found in Ohio every year. A little awareness and some easy precautions will make outdoor activities more enjoyable and less risky.

For more information about ticks, tick-borne diseases and tick control, look on the ODH Web site:

http://www.odh.ohio.gov

or contact the Zoonoses Program at (614) 752-1029.

The Ohio Department of Health HIV/Hepatitis C Integration Project

by Kathleen Koechlin, RN, MPH, PhD, and Jeff Vasiloff, MD, MPH

Hepatitis C virus (HCV) is the most common chronic blood-borne infection in the United States, affecting an estimated 3.9 million people; 2.7 million are estimated to be chronically infected. Some subpopulations, such as the incarcerated and homeless, were not included in the calculation of these estimates, so these data are likely an underestimate of the true prevalence.[1] HCV infections are insidious in that they are frequently asymptomatic and therefore often remain undiagnosed until the time when the infected person requires expensive medical care related to cirrhosis, end-stage liver disease and/or hepatocellular carcinoma. An undiagnosed infection may result not only in the progression of the disease, but also in the unintentional transmission of the virus to others.

The Ohio Department of Health (ODH) HIV/HCV Integration Project began in July 2003 as a way to increase awareness, education and counseling and testing for those at risk for HCV in Ohio. Twelve sites around the state agreed to participate in this pilot project. The integration concept was derived from the fact that many of the risk factors and prevention messages for HIV and HCV are the same, and HIV counseling and testing sites use comprehensive, risk-modifying educational counseling and programs that have been shown to be effective in finding new disease and preventing transmission. This program has been well received and continues today with 15 sites currently offering HCV counseling and testing. Counselors assess risk factors for HCV during the same counseling session related to HIV and/or sexually transmitted diseases (STDs). If a client reports a HCV risk factor, the counselor discusses HCV risk and offers testing.

The table on the next page summarizes the HIV/HCV Integration Project HCV testing since the program began (July 1, 2003, through Sept. 30, 2005). More than 8,600 screening tests have been performed with 457 clients (5.3 percent) confirmed to have been exposed to HCV. As can be seen in the table, the sites vary in the percent of positive tests. The median percent positive is 9.6 with a range of 3.5 to 16.9 for sites that have performed at least 22 tests. This is likely due to differences in populations targeted for testing: some sites offer testing to all clients while other sites use risk factor-based criteria. Currently a risk assessment tool is being developed that will encourage more targeted and consistent testing among the sites. By better targeting those at risk, funds will be available for sites in other areas of the state to offer testing. This will allow for the identification of more Ohioans with HCV before long-term damage has occurred and will provide awareness among those infected so they will not unknowingly transmit the disease to others.

HIV counseling and testing sites, STD clinics and drug and alcohol treatment centers interested in participating in the HIV/HCV integration project should contact the hepatitis C coordinator at (614) 644-2714.

The Hepatitis C Program at ODH is also looking for ways to reach out to physicians and other clinicians in private practice to encourage more thorough screening for HCV risk factors and appropriate testing. In addition, the program is striving to educate those responsible for reporting HCV so reporting is thorough and includes demographics and risk factors. Innovative tools for assessing risk in already too busy offices are available. Anyone interested in a free educational in-service about HCV and assessing risk should contact the hepatitis C coordinator. For questions about reporting HCV, providers can call (614) 466-1388.

Through HIV/HCV Integration Project efforts, earlier detection of HCV will provide HCV-positive Ohioans the opportunity to impact their health by taking active steps to prevent long-term liver damage. Earlier detection will also provide the opportunity for affected individuals to learn how to prevent transmission of the virus to others. Ultimately, as more Ohioans are identified with past or present HCV and more are reported by the medical community to ODH via the local health departments, surveillance data will become more complete. This will allow sound data to guide funding requests and the allocation of current and future resources to care for those with chronic hepatitis and its complications.

Table 1. Hepatitis C Testing at HIV/HCV Integration Sites, July 1, 2003-Sept. 30, 2005.

Site*	Number of anti-HCV tests	Number of positive anti-HCV screening tests (%)	Total tested and confirmed positive for HCV (%)
A	627	23 (3.7)	20 (3.2)
B	170	17 (10.0)	14 (8.2)
C	1,107	124 (11.2)	106 (9.6)
D	83	14 (16.9)	9 (10.8)
E	370	14 (3.8)	8 (2.2)
F**	3	0 (0.0)	0 (0.0)
G	1,928	95 (4.9)	75 (3.9)
H***	1	1 (100.0)	1 (100.0)
I	208	23 (11.1)	20 (9.6)
J	639	59 (9.2)	52 (8.1)
K	623	90 (14.4)	76 (12.2)
L	2,694	94 (3.5)	66 (2.4)
M	138	11 (8.0)	9 (6.5)
N	22	3 (13.6)	1 (4.5)
Total	8,613	568 (6.6)	457 (5.3)

* = one site started testing after Sept. 30, 2005, and is therefore not included in this table
** = new site *** = site no longer participating

References

1. Alter MJ, Kruszon-Moran D, Nainan OV, McQuillan GM, Gao F, Moyer LA, Kaslow RA, Margolis HS. The prevalence of hepatitis C virus infection in the United States, 1988 through 1994. *N Engl J Med*. 1999;341:556-62.

RECALLING ADOLESCENTS IN NEED OF HEPATITIS B VACCINE

As we all know, many parents stop taking their children to the doctor for well care after the first few years. Instead, they limit their visits to instances when the child is sick or injured or in need of immunizations to meet school requirements.

For the 2006-2007 school year, Ohio law requires that all children entering kindergarten through seventh grade complete a three-dose series of hepatitis B vaccine. Regrettably, this leaves many adolescents and young teens, who are not covered by the hepatitis B requirement, vulnerable to this serious disease—just at a time when they may start to engage in the very behaviors that will place them at risk.

It is important for physicians to remember that responsible patient care includes the administration of all vaccines for which a child is eligible—even when the vaccine is not required for school entry. Health practitioners who care for adolescent and teen patients should always have a system in place to recall those children who have not yet completed the hepatitis B vaccine series. This practice will not only protect these at-risk children from the lifelong consequences of hepatitis B. It will also serve to bring them back to their medical home for other needed care and reduce the incidence of hepatitis B overall.

For a complete copy of the Recommended Childhood and Adolescent Immunization Schedule, please visit the Centers for Disease Control and Prevention's Web site at http://www.cdc.gov/nip/recs/child-schedule.pdf.

For additional information regarding hepatitis B or other vaccine-preventable diseases, please contact the ODH Immunization Program at (614) 466-4643.

ADULTS NEED VACCINATIONS TOO!

When most people think of immunizations, the first thing that comes to mind is childhood vaccinations. Unfortunately, this often applies to health care professionals as well. Although certain vaccines are recommended for adults by the Centers for Disease Control and Prevention (CDC), countless physicians fail to offer them to their patients.

Each of the diseases listed below can be prevented—or the severity of the illness substantially reduced—through vaccination. Health care professionals with adult patients should become familiar with the Recommended Adult Immunization Schedule and vaccinate accordingly. A complete copy of the adult schedule is available through the CDC's National Immunization Program (NIP) Web site at http://www.cdc.gov/nip/recs/adult-schedule.htm.

Influenza

Influenza kills. Every year in the United States, an average of 36,000 people die and 200,000 are hospitalized from flu-related illness. Despite the statistics, less than half of all persons for whom the vaccine is recommended receive an annual shot (only one-third of health care providers). Influenza vaccine should be given to all persons 50 years of age and older; persons with medical or occupational indications; pregnant women; residents of nursing homes and long-term care facilities; children 6 to 23 months of age; and all household contacts and caregivers of the elderly, children 0 to 23 months of age, and other persons at high risk of complications from influenza.

Pneumococcal Disease

Together, pneumonia and influenza are the seventh-leading cause of death in the United States (the fifth-leading cause of death for persons 65 and older). Each year, pneumococcal disease accounts for 500,000 cases of pneumonia, 60,000 cases of bacteremia and 3,300 cases of meningitis. Up to 40,000 Americans die every year from pneumococcal pneumonia—a figure that could be cut in half through the use of pneumococcal vaccine. All persons aged 2 through 64 with medical or other indications should receive one dose of pneumococcal polysaccharide vaccine. A one-time booster dose after five years is indicated for all persons with medical indications and all persons over the age of 65 who received their first dose prior to age 65. A single dose of pneumococcal vaccine is recommended for most unvaccinated persons aged 65 and over.

Hepatitis B

Hepatitis B is a serious liver disease that can lead to cirrhosis, hepatocellular carcinoma and even death. Each year, the virus kills more than 250,000 people worldwide and is second only to tobacco among known human carcinogens. In the United States, an estimated 1.2 million people are chronic carriers and more than 5,000 of these individuals die annually from chronic liver disease. The disease is spread through the blood and body fluids of an infected person. Transmission can occur through various means, including high-risk behavior (e.g., injection drug use, multiple sex partners, men having sex with men); living in the same household with an infected person; on-the-job transmission (e.g., health care and public safety workers who are exposed to blood); from mother to infant during childbirth (perinatal transmission); and through certain blood products or hemodialysis. Fortunately, a safe and effective vaccine is available to prevent hepatitis B and the lifelong consequences of chronic infection. It has been called the first anti-cancer vaccine because 80 percent of all primary liver cancer is attributed to hepatitis B infection. Prophylaxis with hepatitis B immunoglobulin is also available for those who have been exposed to the virus.

Tetanus, Diphtheria, Pertussis

Approximately 11 percent of reported cases of tetanus and 10 percent of reported cases of diphtheria are fatal. Nearly all of the cases occur in persons who have never been vaccinated or who have completed a primary series but have not received a booster in the past 10 years. Because recovery from these illnesses does not confer permanent immunity and waning immunity occurs even after vaccination, a tetanus-diphtheria (Td or Tdap) booster should be given to adults every 10 years, regardless of a history of either disease.

For additional information regarding these and other vaccine-preventable diseases, please contact the Ohio Department of Health Immunization Program at (614) 466-4643.

ODH Infectious Diseases Quarterly is published by the Bureau of Infectious Disease Control of the Ohio Department of Health.

Director of Health: J. Nick Baird, MD

Assistant Director of Health: Anne Harnish, MPA

Assistant Director of Health: James A. Pearsol, M.Ed.

Chief of the Division of Prevention: Deborah Arms, RN, PHD

Chief of the Bureau of Infectious Disease Control: Barbara Bradley, RN, MS

Editor: Amy Bashforth, MPA

Designer: Beverly Henderson

For questions or comments or to add a free subscription,

e-mail amy.bashforth@odh.ohio.gov

or call 614-466-0261.

Ohio Department of Health

Bureau of Infectious Disease Control

246 North High Street

P.O. Box 118

Columbus, OH 43216-0118

http://www.odh.ohio.gov