Mahoning County

DISTRICT BOARD OF HEALTH

Annual Summary of Reportable Infectious Diseases
in Mahoning County, 2003

We are pleased to present this sixth in a series of annual infectious disease summaries in which we characterize disease reports for the year, offer commentary on some emerging pathogens and diseases of ongoing concern to the community, and provide current requirements and guidance for disease reporting.

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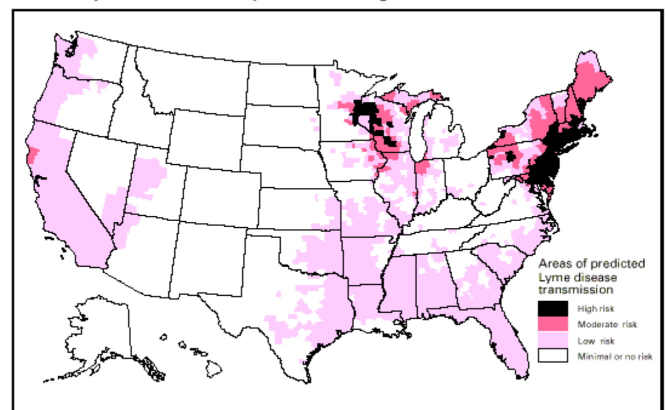
Lyme Disease

Lyme disease was first recognized in 1977 when a group of children in Lyme, Connecticut came down with an apparently infectious disease associated with arthritis and rash. Careful investigation showed that this disease was caused by a bacteria, Borellia burgdorferi, that was passed from person to person by the bite of small ticks whose usual hosts were deer (and in certain areas mice). As it often turns out, Lyme disease was not really a new disorder. Doctors in Europe had at least partially recognized its existence in the 1940s and earlier. And, of course, the disease isn't restricted to Lyme, Connecticut. Common in parts of northern Europe, Lyme disease is now found in many parts of the United States including Ohio. As was the case in 2002, we have had at least one person with Lyme disease in Mahoning County in 2003 whose disease was potentially transmitted by a tick bite within the county. Many of the small number of reported Lyme cases in Mahoning County seem likely to have been acquired in New York or other areas of known high prevalence. The map below, published May, 2004 by the U.S. Centers for Disease Control and Prevention shows where Lyme cases have come from in recent years:

Northeastern Ohio borders on parts of New York and Pennsylvania with relatively high predicted risk for Lyme transmission. It seems likely that our region is at some risk for Lyme disease as well. The common clinical findings of Lyme disease should be well known to all local physicians. Classical Lyme disease presents with an expanding red rash (erythema migrans) which may be associated with pruritis. The rash may develop central clearing. There may be no associated symptoms, or the rash may be accompanied by fever, myalgias, arthralgias, and malaise. Incubation period varies from a few days to a month or more after tick bite, and many persons with Lyme disease don't recall bites or tick contact. Especially in the early spring, Lyme disease may be spread by "seed tick" nymph forms which are pinhead size. Like adult ticks, they drop off humans after feeding and may never be noticed because of their diminutive size.

National Lyme disease risk map with four categories of risk



Note: This map demonstrates an approximate distribution of predicted Lyme disease risk in the United States. The true relative risk in any given county compared with other counties might differ from that shown here and might change from year to year. Risk categories are defined in the accompanying text. Information on risk distribution within states and counties is best obtained from state and local public health authorities.

If the rash does not appear or is not noticed, Lyme disease may progress into a disseminated form after a number of weeks or even months. Common presentations of systemic Lyme disease include Bell's palsy (sometimes bilateral), other forms of polyradiculo/neuritis, aseptic meningitis, fatigue and myalgia, or frank arthritis. The arthritis associated with Lyme disease may be painless and often involves the knee. Rare serious complications include myocarditis which may manifest as heart block of varying degree. Testing for Lyme antibodies is rarely necessary in the presence of a typical rash but may be helpful in the disseminated stage. Rheumatologists are often opposed to serological testing of individuals

who have nonspecific joint symptoms, concerned that false positive testing is more likely than useful results. The more specific the presentation the more useful testing may be. A history of tick bite or contact probably increases the significance of positive testing. According to CDC experts: "Test initially with a sensitive first test, either an enzyme-linked immunosorbent assay (ELISA) or an indirect fluorescent antibody (IFA) test, followed by testing with the more specific Western immunoblot (WB) test to corroborate equivocal or positive results from the first test." Polymerase chain reaction (PCR) testing is available, but it has not yet been sufficiently standardized to be useful as a diagnostic tool. Treatment of early Lyme disease with 3-4 weeks of doxycycline or amoxicillin is usually curative. Disseminated Lyme disease can be more difficult to treat and expert consultation may be needed.

Prevention of this disorder is key, and persons who are outside in brushy areas where tick bites might occur need to use precautions. These include application of long-acting permethrin (Permanone and other brands) to clothing and tucking pants into socks and boots to prevent ticks' access to skin. Personal inspection (including looking for very small ticks) should be carried out after outdoors activities. Single dose antibiotic treatment after tick bites has been shown effective in reducing Lyme risk, but in most cases treatment is not indicated because of the relatively low risk of acquiring Lyme disease.

Lyme disease is only rarely reported from northeastern Ohio, but based on the experiences of our neighbors to the east we are likely to see more of this troubling disorder in coming years.

Food-Borne Illness

As in recent years, infections with Salmonella, Shigella, Campylobacter, and Hepatitis A continue to be prevalent in Mahoning County. In 2003, as you will recall, we saw a large outbreak of Hepatitis A centered in Western Pennsylvania but with numerous cases in Ohio including several in Mahoning County. This epidemic was traced to green onions that had probably been contaminated during cleaning. Careful attention to food preparation safety and hand hygiene will contribute to decreased incidence of these disorders.

Hepatitis C

This is the first year in which we have reported Hepatitis C cases in this summary. 2003 was the fifth year that Hepatitis C has been a Class A reportable disease. While Hepatitis C is the third most common reported disease in this year's summary (after gonorrhea and chlamydia) reported cases are *prevalent* rather than *incident*. This means that testing has detected a chronic disease process that might have been discoverable in the past – rather than a newly occurring disorder. At the same time, the risk factors for Hepatitis C (today primarily injection drug use or transmission of infected mother to baby) remain more common than ideal here in Mahoning County. The CDC gives the following list of indications for testing:

PERSONS	RISK OF INFECTION	TESTING RECOMMENDED?
Injecting drug users	High	Yes
Recipients of clotting factors made before 1987	High	Yes
Hemodialysis patients	Intermediate	Yes
Recipients of blood and/or solid organs before 1992	Intermediate	Yes
People with undiagnosed liver problems	Intermediate	Yes
Infants born to infected mothers	Intermediate	After 12-18 mos. old
Healthcare/ public safety workers	Low	Only after known exposure
People having sex with multiple partners	Low	No*
People having sex with an infected steady partner	Low	No*

*Physician consultation recommended.

While the blood supply is very safe today, some experts suggest that Hepatitis C may still be transmitted once in about 100,000 blood transfusions. The relative success of treatment with Interferon and Ribaviron has made testing of high risk persons desirable. A positive enzyme linked immunoassay (EIA) test should be followed with definitive RIBA testing. PCR is sometimes also used for confirmation. Treatment may not be necessary for all persons who test positive for Hepatitis C, but individual treatment decisions are made based on

clinical factors and liver histology. A variety of public health recommendations can be made to persons testing positive for Hepatitis C. Among these are avoiding liver toxins such as alcohol or acetaminophen. Persons with Hepatitis C should also avoid superinfection with Hepatitis A or B by appropriate vaccination and with the remaining "alphabet soup" of hepatitis viruses though avoidance of blood-borne disease risk factors. Consumption of inadequately cooked seafood can lead to Vibrio vulnificans – a bacterial infection that may prove fatal in the presence of chronic liver disease associated with Hepatitis C.

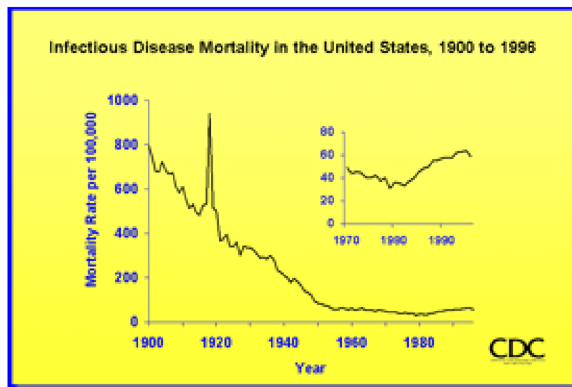
Finally, persons with Hepatitis C can take specific precautions that can reduce the potential of spread to others. Among these precautions are not sharing with others any objects that may be contaminated with blood. While self-evidently this means needles and syringes, it also refers to razor blades and toothbrushes.

Hepatitis C is currently a Class A reportable disease in Ohio. Your clinical reports are very important to us. Physician offices can report communicable diseases, animal bites, and any disease observations of concern 24 hours a day/7 days a week through the District Board of Health disease reporting "warm line" at 330-270-2855. After-hours calls to the warm line will lead to a response through our Health Alert Network pager.

Pandemic Influenza

The publicity given to avian influenza in the most recent influenza season (2003-4) has served to emphasize the importance of pandemic influenza. While so far the avian flu has been almost entirely restricted to birds, there has been much concern that co-infection of humans (or pigs) with avian and human influenza might lead to a strain with avian features along with human contagiousness. This scenario led to world-wide influenza pandemics in 1957 and 1968. Avian/human reassortment seems likely to have been involved in the 1918 pandemic, though evidence for this rests exclusively on RNA analyses. While the two most recent pandemics were together responsible for about 100,000 US deaths, the 1918 pandemic was a catastrophe of an entirely different order of magnitude.

At least 500,000 US deaths were attributed to pandemic influenza in 1918, and the world-wide toll may have reached 50 million. The staggering impact of pandemic influenza can be seen in the graph reproduced in the next column. This graph shows a dramatic decline in infectious disease mortality from the years 1900-1980 with a small AIDS-related rise in the 80s, and a huge peak of mortality in 1918 due to pandemic influenza:



Dr. Jeffrey Taubenberger of the Armed Forces Institute of Pathology has recently cloned influenza RNA exhumed from persons who died of pandemic influenza in 1918. Further studies published this year in *Science* confirm the likelihood that the 1918 pandemic *was* of avian origin. Precisely how this origin led to its extraordinary ability to cause death predominantly in persons 18-45 remains a mystery. The majority of these deaths were due to viral infection and ARDS-like illness, not bacterial super-infection. While we don't know how effective today's neuraminidase inhibitors would prove in combating a new world-wide pandemic of avian-derived influenza, we can be sure that antibacterial treatments would have little effect on initial mortality.

Writing in *Science* this year, Webby and Webster observed: "**In 2003, highly pathogenic strains of avian influenza virus, including the H5N1 and H7N7 subtypes, again crossed from birds to humans and caused fatal disease. Direct avian-to-human influenza transmission was unknown before 1997. Have we responded to these threats by better preparing for emerging disease agents, or are we continuing to act only as crises arise?"**

These authors raise critically important questions. While our preparedness relies on WHO and CDC leadership in identifying candidate strains for vaccine development, the Mahoning County District Board of Health is prepared once again this fall to mount a community-wide mass vaccination program. Our goal is to join with the medical and hospital community to ensure that the protection of immunization extends to as many persons as is possible. **We urge you to work with us to help provide immunization to as many Mahoning County residents as possible. Call us with any questions or suggestions** (330-270-2855)**.**

Joe Diorio, M.S., Linda Ewing, R.N., M.S.N., Larry Frisch, M.D., M.P.H., Matthew Stefanak, M.P.H.
Mahoning County District Board of Health

“Class A” Reportable Diseases in Mahoning County, 2003

	General Health District*	Youngstown	Struthers	Unknown	Total	Number Confirmed	Median Age (y)	Age Range	% Male
AIDS					11	11	43	27-55	46
Campylobacteriosis	13	7	1		21	20	40	1-71	48
Chlamydia	186	575	23	3	717	717	20	12-58	19
Cryptosporidiosis	2	1	2		5	5	53	12-82	60
E. coli 0157H7	3				3	3	9	3-37	33
E. coli, unspecified	3				3	3	55	61-80	100
Encephalitis, primary viral	1	1			2	1	21	9-33	100
Encephalitis – West Nile	2				2		76	73-79	50
Giardiasis	4	2	1		7	7	19	44m-19y	86
Gonorrhea	40	394	17		452	452	21	12-68	42.7
Haemophilus influenzae (invasive disease)	1	2			3	3	41	7m-90y	67
Hepatitis A	3				3	3	58	36-84	67
Hepatitis B	3				3	3	31	22-39	67
Hepatitis C	38	96			134	134	46	41d-78y	58
HIV					22	22	40	19-54	68
Kawasaki disease	2				2	1	5	1-9	50
Legionnaires’ disease		1			1	1	59	-	100
Lyme disease	2				2	2	19	10-27	100
Meningitis, aseptic	9	5			14	4	17	17m-74y	58
Meningitis, meningococcal	2				2	2	44	19-67	50
Meningitis, other bacterial	2	1	1		4	2	32	30-56	75
Rabies – (in animals)	2				2	2	-	-	-
Streptococcal toxic shock syndrome		1			1	1	36	-	100
Salmonellosis	9	6			15	15	6	5m-92y	47
Shigellosis	3	1			4	4	35	33m-46y	25
Streptococcal disease, invasive Group A	3	2			5	5	53	38-89	60
Streptococcal infection, Group B - neonatal	1				1	1	2wks	1	100
Streptococcus . pneumoniae, drug resistant	5	1			6	6	60	7-84	33
Streptococcus pneumoniae, invasive	2	1			3	3	1	1-2	33
Syphilis		6			6	6	36	23-48	67
Tuberculosis	1	3			4	4	55	32-81	50

** Mahoning County townships, villages, and the cities of Canfield and Campbell*

Know your ABCs: A Quick Guide to Reportable Infectious Diseases in Ohio

From Ohio Administrative Code 3701-3-02, 3701-3-05 and 3701-3-12

Phone numbers for reporting in Mahoning County:

Youngstown 330-743-3333 Struthers 330-755-7977 All other cases and after hours 330-270-2855

Diseases by class, with reporting requirements

Class A Diseases

(1) diseases of major public health concern because of the severity of disease or potential for epidemic spread - - report to the board of health of the health district in which the case resides by telephone immediately upon recognition that a case, a suspected case, or a positive laboratory result exists.

Anthrax	Diptheria	Plague	Smallpox
Botulism, foodborne	Measles	Rabies, human	Viral Hemorrhagic Fever
Cholera	Meningococcal disease	Rubella (not congenital)	Yellow Fever

Any unexpected pattern of cases, suspected cases, deaths or increased incidence of any other disease of major public health concern, because of the severity of disease or potential for epidemic spread, which may indicate a newly recognized infectious agent, an outbreak, epidemic, related public health hazard or act of bioterrorism.

(2) diseases of public health concern needing timely response because of potential for epidemic spread -- report by the end of the next business day after the existence of a case, a suspected case, or a positive laboratory result is known.

Chancroid	Hantavirus	Pertussis	Syphilis
Cyclosporiasis	Hemolytic uremic syndrome	Poliomvelitis (including vaccine-associated cases)	Tetanus
Dengue	Hepatitis A	Psittacosis	Tuberculosis, including multi-drug resistant tuberculosis (MDR-TB)
E.coli O157:H7 and Other enterohemorrahagic (Shiga toxin-producing) *E.coli*	Legionnaires' disease	Q fever	Tularemia
Encephalitis: LaCrosse, St. Louis, West Nile, and other arthropod-borne	Listeriosis	Rubella, congenital	Typhoid fever
Foodborne disease outbreaks	Lymphogranuloma Venereum	Salmonellosis	Waterborne disease outbreaks
Granuloma inguinale	Malaria	Shigellosis	
Haemophilus influenzae (invasive disease)	Meningitis, aseptic including lymphocytic choriomeningitis & viral meningeoncephaltis	*Staphylococcus aureus*, with resistance or intermediate resistance to Vancomycin (VISA, VRSA)	
	Mumps		

(3) diseases of significant public health concern -- report by the end of the work week after the existence of a case, a suspected case, or a positive laboratory result is known.

Amebiasis	Encephalitis, post-infection	Meningitis, including other bacterial	*Streptococcus pneumoniae*, invasive disease
Botulism, wound	Giardiasis	Mycobacterial disease, other than tuberculosis	Toxic shock syndrome (TSS)
Botulism, infant	**Gonococcal infections**	Pelvic inflammatory disease, gonococcal	Toxoplasmosis (congenital)
Brucellosis	**Hepatitis B. including delta hepatitis**	Reye syndrome	Trichinosis
Campylobacteriosis	Hepatitis C	Rheumatic fever	Tularemia
Chlamydia infections (nonspecific urethritis, cervicitis, salpingitis, neonatal conjunctivitis, pneumonia, & lymphogranuloma venereum)	Hepatitis D	Rocky Mountain spotted fever	Typhus fever
Creutzfeldt-Jakob disease	Hepatitis E	Streptococcal disease, group A, invasive	Vibriosis
Cryptosporidiosis	Hepatitis, acute viral, undeterminable etiology	Streptococcal B in newborn	Yersiniosis
Cytomegalovirus (congenital)	Herpes (congenital only)	Streptococcal toxic shock syndrome (STSS)	
Ehrlichiosis	Kawasaki Disease (mucocutaneous lymph node syndrome)		
Encephalitis, other viral	Leprosy		
	Leptospirosis		
	Lyme disease		

Class B Diseases - the number of cases is to be reported by the close of each working week.

Chickenpox	Herpes-genital	Influenza

Class C Diseases - report an outbreak, unusual incidence, or epidemic by the end of the next working day.

Blastomycosis	Scabies	Outbreak, usual incidence, or epidemic of other infectious diseases of known etiology not categorized as Class A or Class B or Class C
Conjunctivitis, acute	Sporotrichosis	
Histoplasmosis	Staphylococcal skin infections	
Nonsocomial infections of any type	Toxoplasmosis	
Pediculosis		

Except as otherwise required for the Class A(1) diseases, reports of cases and suspect cases and positive laboratory results shall be in writing, and shall include the name and address of the case, suspect case or person from whom the specimen was taken. A Board of Health may accept verbal reports by telephone or other electronic systems approved by the Director within the same time limitations. Reports shall include supplementary information relevant to the case or laboratory report as needed to complete official surveillance forms provided or approved by the Director.

Cases of AIDS (acquired immune deficiency syndrome), AIDS-related conditions, and confirmed positive tests for HIV (human immunodeficiency virus) must be reported on forms and in a manner prescribed by the Director of Health.