MINNESOTA DEPARTMENT OF HEALTH

DISEASE CONTROL NEWSLETTER

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West Nile Virus in Minnesota: 2003 Update

West Nile virus (WNV) was first documented in Minnesota in July 2002. (See "West Nile Virus: An Update for Minnesota Medical Providers" in the June 2003 issue [vol. 31, No. 4] of the *Disease Control Newsletter* for a review of 2002 surveillance findings and a discussion of WNV epidemiology.) Since then, the Minnesota Department of Health (MDH) and other agencies have continued WNV surveillance efforts and worked to clarify the local field ecology of the virus. During 2003, Minnesota was on the eastern edge of a large WNV outbreak in the Great Plains states.* Most of the 9,858 cases (including 262 fatalities) reported nationally in 2003 occurred in a small number of these states (Colorado, Nebraska, North Dakota, South Dakota, Texas, and Wyoming). A summary of national surveillance data for 2003 can be found at the Centers for Disease Control and Prevention (CDC) Web site (www.cdc.gov/ncidod/dvbid/westnile/index.htm). This update describes Minnesota WNV surveillance findings for 2003.

Human Case Surveillance

In 2003, 148 human cases of WNV disease were reported among residents of 56 Minnesota counties (Figure 1). Ninety-nine (67%) of 148 case-patients were diagnosed with West Nile fever (WNF), the less severe form of the disease; 25 (17%) had aseptic meningitis; and 24 (16%) had encephalitis. Four elderly WN encephalitis patients (median age, 83 years; range, 73-86 years) died from their illness. While many patients reported temporary numbness in their extremities, no cases of acute flaccid paralysis were identified. Ninety-five (64%) case-patients were male. The overall median case-patient age was 47 years (range, 2-96 years). WN encephalitis patients tended to be older (median, 74 years; range, 38-96 years), but WN meningitis patients were younger (median, 38 years; range, 2-80 years). The earliest case-patient had onset of symptoms on June 18; the latest, on October 1 (Figure 2). Similar to 2002, the peak in illness onset was from August 15, 2003 through September 15, 2003 (107 of 148 [72%] cases).

Most cases occurred among residents of western and central Minnesota (Figure 1), but not all of these patients became exposed to infected mosquitoes near their residences. Twenty-three (16%) case-patients traveled outside of Minnesota during the entire 2 weeks (the possible incubation period for WNV disease) prior to the onset of the illness. Most of these people traveled to other Great Plains states. Another 16 (11%) case-patients traveled to other states during part of the 2-week period prior to illness onset; thus, they may have been exposed either in Minnesota or outside the state. Many of these people regularly traveled to North Dakota or South Dakota. After excluding cases in which exposure to the virus may have occurred outside of Minnesota, WNV disease incidence rates were significantly higher in western and southwestern Minnesota than in eastern Minnesota, including in the Twin Cities Seven County Metropolitan Area (Figure 3).

Because 23 transfusion-associated WNV cases were identified in the United States during 2002, the blood products industry and the Food and Drug Administration created a program to screen all units of donated blood in the United States during 2003 with a newly established WNV nucleic acid test (NAT). As of January 2004, 1,027 presumptive viremic donors (PVDs) had been identified nationally in 2003 (from 6.2 million donations), and 6 probable cases of transfusion-associated WNV infection were found in blood recipients. Twenty-three PVDs were Minnesota residents. Five of them subsequently developed WNF. There has been no evidence of transfusion-associated WNV infections in Minnesota to date.

Equine Surveillance

During 2003, the first evidence of WNV in Minnesota was an equine WN case in Crow Wing County; its reported onset was April 10. This case was the first reported evidence in 2003 of WNV transmission to mammals in the United States. Unfortunately, equine WN

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*The Great Plains include parts of 13 states: Colorado, Iowa, Kansas, Minnesota, Missouri, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Oklahoma, and Texas.

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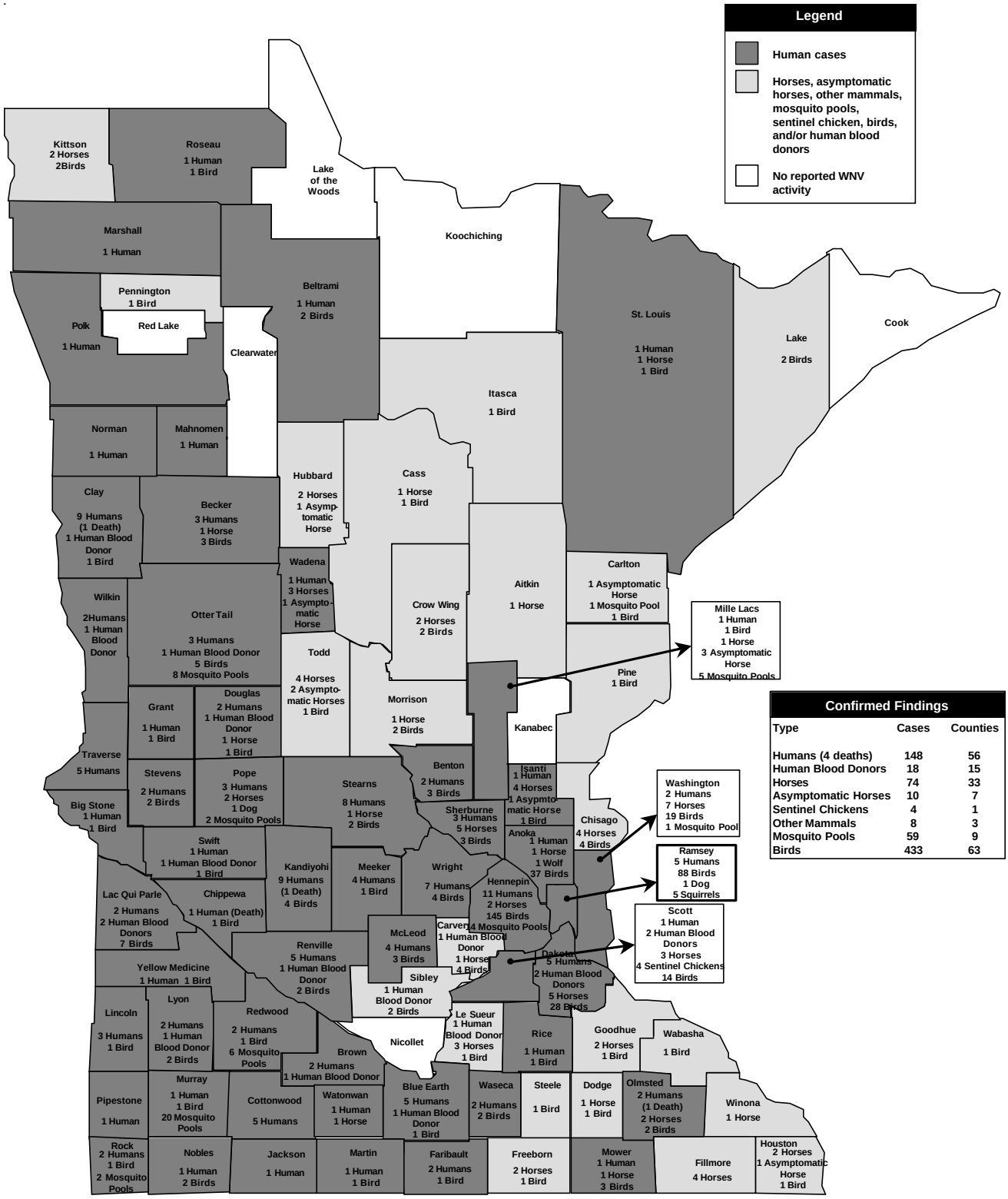
Figure 1. WNV-Positive Monitoring Findings, Minnesota, 2003*



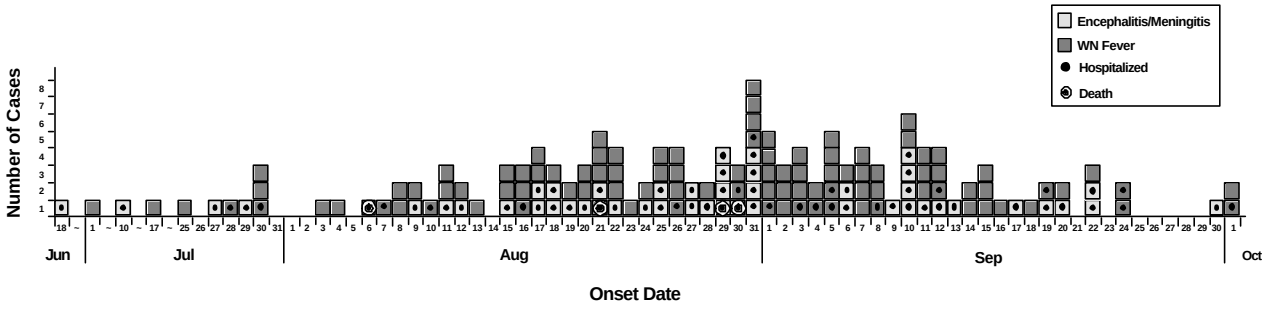
Confirmed Findings

Type	Cases	Counties
Humans (4 deaths)	148	56
Human Blood Donors	18	15
Horses	74	33
Asymptomatic Horses	10	7
Sentinel Chickens	4	1
Other Mammals	8	3
Mosquito Pools	59	9
Birds	433	63

*WNV indicates West Nile virus.

Map Interpretation: Geographic variation of WNV-infected humans, horses, chickens, mosquitoes, and birds reflect, in part, population density, awareness of West Nile fever, location of farms and stables, location of mosquito traps, and total number of birds submitted for testing.

Figure 2. Human WNV Cases by Date of Illness Onset, Minnesota, 2003 (n=148)*



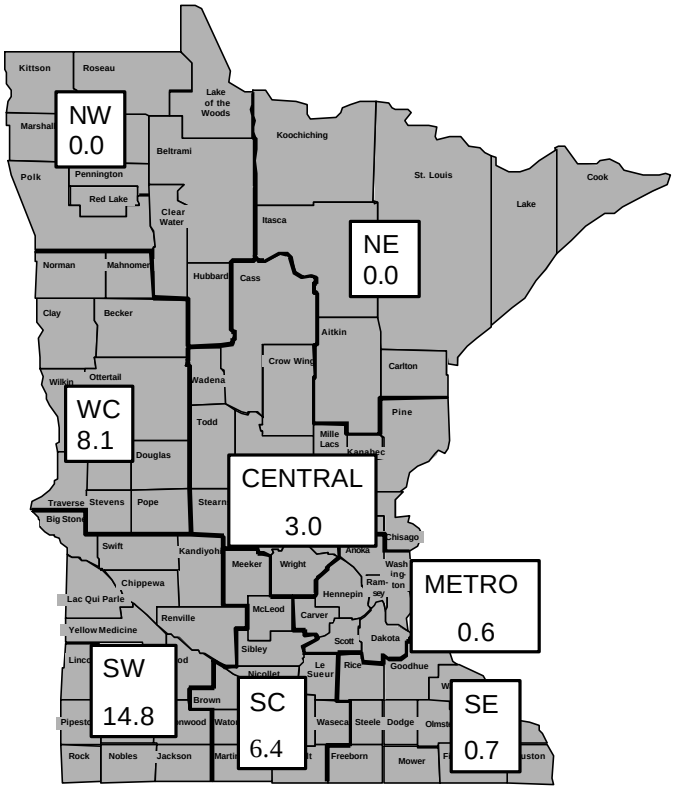
*WNV indicates West Nile virus.

surveillance data were not very useful for human risk assessment purposes in 2003, largely because WNV activity in Minnesota horses during 2003 (74 reported cases) was much reduced from 2002 (992 reported cases). Several factors likely combined to substantially reduce reported case numbers in horses, including widespread usage of the WNV equine vaccine, a greater number of horses which have built up natural antibody protection to WNV disease, and changes in diagnosis and/or reporting of equine WNV. The majority of cases reported in 2003 occurred in unvaccinated horses that lived in counties just north and/or east of the areas of highest WNV activity in humans (Figure 1). Equine WN cases peaked in late August through early September, the same time that onset of illness peaked in humans.

Avian Surveillance

During 2003, MDH continued an effort to determine areas of WNV activity by identifying dead WNV-infected wild birds. Because several bird species (e.g., American Crow, Blue Jay) are very susceptible to the virus and are rapidly killed by it, MDH has encouraged the public to report suspected bird cases to its epidemiology staff, either via the phone or through the MDH Web site at www.health.state.mn.us/divs/idepc/diseases/westnile. In 2003, as in 2002, the public reported thousands of dead birds (9,713, including 5,850 American Crows and Blue Jays). Of these birds, 754 were obtained for virus testing. The first WNV-infected bird of the year was identified on June 12. In July, the epizootic in birds increased substantially. MDH ultimately identified 433 WNV-infected birds. This total included 325 (79%) of 414 American Crows tested and 54 (47%) of 114 Blue Jays (Figure 1). WNV was found in birds from 63 counties across the state. On average, WNV-infected birds were found 30 days prior to illness onset of the first human case in a given county (2 to 3 weeks prior to human exposure). However, WNV-infected birds were found in 28 counties that did not have human cases. Also, 18 counties had human cases but no WNV-positive birds (or infected birds were not found until after the human cases had occurred). Thus, the resulting predictive values of WNV-positive birds predicting subsequent human illness in a county were low (positive predictive value, 48%; negative predictive value, 55%). This may be due, at least in part, to the transmission of the virus among birds by bird-feeding mosquitoes that rarely (if ever) feed on humans and logistical problems in acquiring birds from non-metro counties for testing. (See discussion below.)

Figure 3. Incidence of Locally Acquired West Nile Virus Infection by Minnesota Department of Health District, 2003 (Rate per 100,000 persons)



Mosquito Surveillance

During 2003, MDH tested over 99,000 mosquitoes (divided into 6,436

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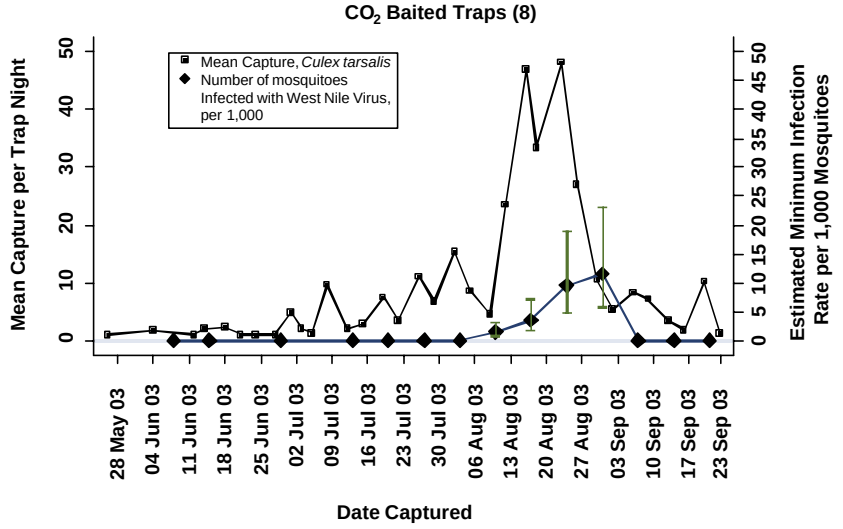
Figure 4. *Culex tarsalis* Mean Capture per Trap Night and Estimated Minimum Infection Rates, West Central Minnesota, 2003



species-, site-, and date-specific "pools") for WNV. Fifty-nine pools of mosquitoes from 9 counties tested positive for the virus. Forty-two of 59 WNV-positive pools were *Culex tarsalis*, the suspected primary vector of WNV in Minnesota and many western states. Sixteen of the 17 remaining positive pools were other *Culex* genus mosquitoes that likely serve as vectors of the virus among birds, but seldom feed on humans. The final WNV-positive mosquito pool was *Aedes vexans*, a common pest of humans in Minnesota. The statewide minimum field infection rate of *Cx. tarsalis* was 3.6 infected mosquitoes per 1,000 mosquitoes (95% confidence interval, 1.8 to 7.2). However, infection rates were higher in mosquitoes from west central and southwestern Minnesota trapping sites, and peaked during the last week of August (Figure 4). In several parts of west central and southwestern Minnesota, *Cx. tarsalis* numbers and infection rates peaked just prior to the peak of human cases, in mid to late August (Figure 4).

Predictions for 2004 and Beyond

The field ecology of WNV is extremely complex. It is difficult to predict how many people will become infected with WNV in Minnesota or in the rest of North America in 2004. The virus appears to be established throughout Minnesota; it will probably be present in the state to some extent every year. The disease risk to humans, however, will likely continue to be higher in central and western Minnesota, where *Cx. tarsalis* is most abundant. The risk is also likely to be highest from August through mid-September. Ultimately, the risk in any given year will be largely dependent on: 1) the weather (warm weather, with timely wet and dry conditions, enhances the production of vector mosquitoes), 2) the presence of the virus in mosquitoes and susceptible birds that can act as reservoirs for the virus, and 3) human behavior patterns (the level of outdoor activity at dusk and dawn, when *Cx. tarsalis* is active, and the relative amount of personal measures taken by people to protect themselves from the vector mosquitoes).

Immunization Practice Improvement Program 2003 Summary of Findings

Background

Each year the Minnesota Department of Health (MDH) distributes $12 million to $15 million in federally purchased vaccine to nearly 800 clinics in Minnesota. It is the MDH's responsibility to assure that this vaccine is administered to eligible children, that it is handled and stored properly, and that wastage is minimized. In addition, MDH is committed to assuring that health care providers adhere to federal laws regarding vaccination documentation, provide risk/benefit information to patients prior to vaccination, and report any adverse events following vaccination. MDH also assists providers in identifying practices that, if improved, could raise immunization rates.

The MDH Immunization Practices Improvement (IPI) program was developed in 2001 to meet federal requirements for on-site clinic visits and to provide technical consultation and immunization resources to clinics.

Methods

As part of the IPI visit, specific immunization practice information is collected in order to direct the consultation and provide clinic-specific feedback. MDH has developed 2 tools to collect this information: the Provider Questionnaire and the IPI Visit Checklist. The Provider Questionnaire collects information on vaccine management, immunization practice standards, clinical practices, and patient eligibility screening. The staff member who manages the clinic's vaccine completes the questionnaire prior to the site visit.

The on-site assessor, from either the state or local health department, completes the IPI Visit Checklist during the site visit. The checklist collects information on observations of the vaccine storage units, temperature logs, presence of common immunization resources, documentation of immunization information on 5 medical records, and presence and datedness of vaccine risk/benefit information, commonly known as Vaccine Information Statements (VISs).

A 50-chart review is conducted at selected clinics, and the data are entered into a software program called CASA (Clinic Assessment Software Applications), designed by the Centers for Disease Control and Prevention. Up-to-date status is evaluated at age 24 months, based on the presence of

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the following antigens: 4 diphtheria, tetanus, acellular pertussis (DTaP); 3 polio; 1 measles, mumps, rubella (MMR); 3 *Haemophilus influenzae* type b (Hib); and 3 hepatitis B (4:3:1:3:3). Clinics that participate in CASA receive a report at the time of the IPI visit. Within the report, clinic-specific issues are identified and discussed, and the assessor works with the clinic staff to identify practice changes that are realistic and easy to implement.

All data described in this article are aggregate data used to identify practice trends and education and resource needs. We report here the data from the 2003 site visits.

Results

Since 2001, IPI program staff have visited 570 clinics. During 2003, 209 clinics received visits. Of those visits, 64% were to private clinics; 22% to public-based practices, such as rural health centers or tribal health practices; and the remainder (14%) to local health departments.

Figure 1. Vaccine Management Indicators Immunization Practices Improvement Program, Minnesota Department of Health, 2003

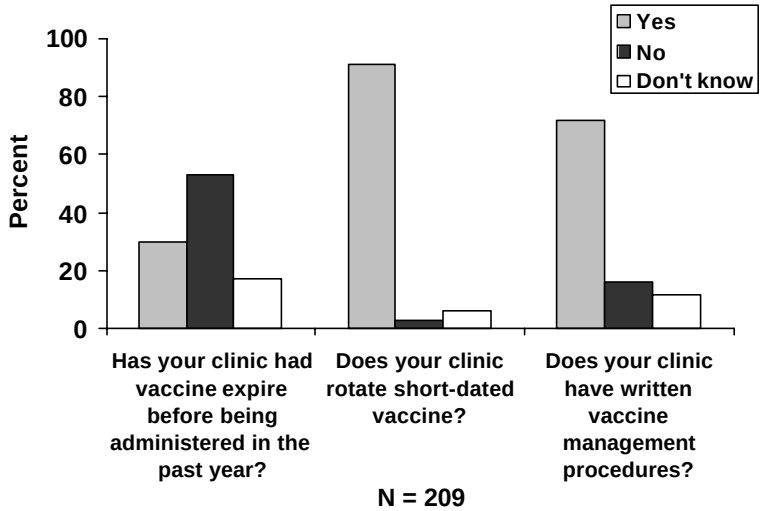
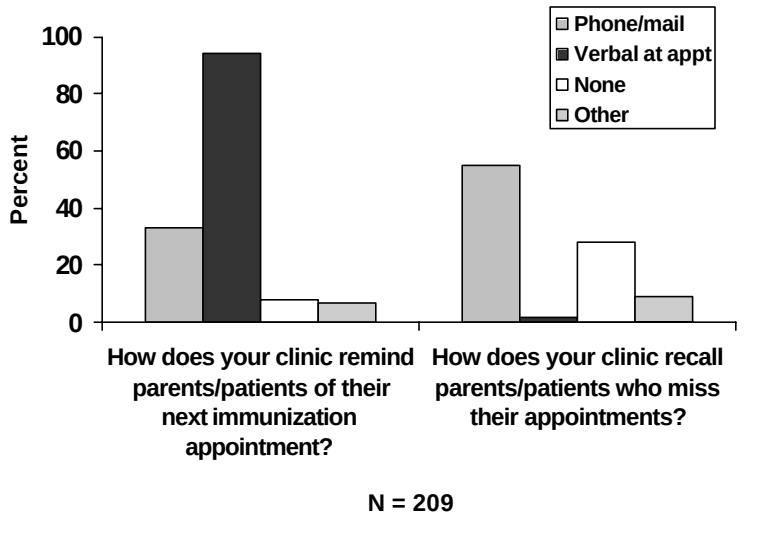


Figure 2. Reminder/Recall Activities Immunization Practices Improvement Program, Minnesota Department of Health, 2003



Assessors found that 9% of evaluated clinics were not storing their vaccine properly. Although temperature logs are dutifully filled out once (65%) or twice (32%) daily, action is not taken when the refrigerator temperatures fall below 32º F. This may be due to: 1) the incorrect assumption that "colder is better" for vaccines, or 2) the need to decrease the refrigerator temperature to accommodate varicella storage requirements. Temperatures of 32º F or lower will damage inactivated vaccines (e.g., influenza, pneumococcal conjugate vaccine [PCV7], DTaP). Conversely, freezers storing varicella vaccine often cannot maintain the required temperature of 5º F or colder. Identification of mishandled vaccine has necessitated revaccination of hundreds of patients. MDH has modified the standard temperature log to aid the recorder in identifying when to take action.

In general, clinics demonstrate a good understanding of vaccine management and have incorporated practices that minimize vaccine waste (Figure 1). Clinical immunization practices are varied. Providers regularly assess a child's immunization status when they present to the clinic (74%); however, only 58% of clinics reported regularly assessing adults. Ninety percent of clinics had a staff person designated to inform others of changes in immunization recommendations. Only 67% of clinics have a written procedure for handling an anaphylaxis event. Many cite the presence of a physician in the clinic area or the use of 911 as a reason for not having a protocol. Fewer clinics reported pre-filling syringes in 2003 (70%) when compared to 2001-2002 (84%). Use of newer vaccines is increasing; 72% of clinics routinely provide varicella vaccine (up from 67% in 2001-2002) and 73% PCV7.

Improving immunization rates is a challenge faced by all primary care providers. Minimizing missed opportunities, utilizing reminder/recall systems, and addressing vaccine safety issues are essential strategies for maintaining and increasing immunization rates. There is much room for improvement in the area of reminder/recall (Figure 2). Most providers (94%) give verbal reminders about future visits at the time of the current appointment, but do not

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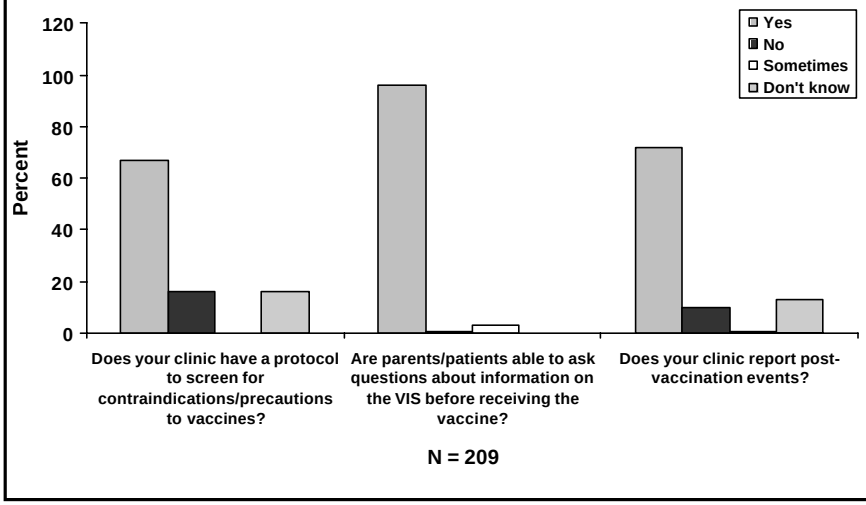
provide a reminder closer to the next scheduled visit. Of the 209 clinics visited in 2003, 104 (50%) are using the Minnesota Immunization Information Connection (MIIC) to assist in reminder/recall activities.

According to the last statewide immunization assessment, providing all immunizations when they are due would have increased Minnesota childhood immunization rates by 8%. (See "A Statewide Retrospective Survey of Immunization Rates in Children Entering Kindergarten in 2001-02" in the September/October 2003 issue [vol. 31, no. 6] of the *Disease Control Newsletter.*) Providers remain hesitant to administer all needed shots in a single visit; 46% defer some immunizations to avoid multiple injections. Almost half (49%) of clinics defer vaccination for minor illnesses, such as colds; convalescing illness treated with antibiotics; mild diarrhea; or recent exposure to an infectious illness despite absence of symptoms. Because 40% of clinics require that patients have a medical exam before receiving immunizations, vaccination can be further delayed.

Forty-one (20%) of the 209 clinics consented to having their immunization rates assessed within their 24- to 35-month-old pediatric population. The average immunization coverage level for the 4:3:1:3:3 series was 75%, with a range of 7% to 100%. Varicella rates, which were also assessed, had an average coverage level of 73%. Pneumococcal rates could not be assessed accurately due to recurring vaccine shortages.

Figure 3. Vaccine Safety Program Immunization Practices Improvement Program, Minnesota Department of Health, 2003



The natural evolution of a successful immunization program results in a shift in focus from vaccine-preventable diseases to concerns of vaccine safety; as disease incidence decreases, greater attention is placed on vaccine adverse events. Risk/benefit communication and practices are critical to maintaining public confidence in immunizations. Providers have done a tremendous job providing basic risk/benefit materials; 89% of clinics provide VISs to their patients at each immunization encounter. However, assessors found that 30% of practices had 2 or more outdated VISs. As a result, providers now receive a complete packet of current VISs during the IPI visit. Screening for vaccine contraindications and reporting adverse events are also important vaccine safety practices. Findings show that providers are incorporating these activities into their immunization practices (Figure 3).

Conclusion

On-site clinic visits have provided MDH with a better understanding of how well providers adhere to immunization practice standards. There continue to be gaps in practice, specifically the need to reduce missed opportunities and to utilize reminder/recall systems. Ongoing scrutiny of vaccine storage and handling is necessary to minimize mishaps. Analysis of future IPI data will assist MDH in evaluating the effectiveness of on-site clinic visits in improving immunization practice. Clinic staff have provided overwhelmingly positive feedback regarding the technical consultation and resources provided at the IPI visit. To schedule an IPI visit for your clinic you can call the MDH Immunization Program at (612) 676-5100 or 1-800-657-3970.

Sustained Increase in Early Syphilis in Minnesota

In 2003, 92 cases of early syphilis (primary, secondary, and early latent syphilis) were reported to the Minnesota Department of Health (MDH), compared to 82 cases in 2002 and 49 cases in 2001 (Table 1). From 2002 to 2003, therefore, the rate of early syphilis in the state increased 12%, following a 67% increase from 2001 to 2002. Minnesota is not alone in this upward trend, as many states across the country are experiencing similar increases, specifically among men who have sex with men (MSM).

In Minnesota, as elsewhere, most of the increase in early syphilis cases has occurred in metropolitan areas. Of the 92 early syphilis cases reported to the Minnesota Department of Health (MDH) in 2003, 74 (80%) cases were reported in Hennepin and Ramsey counties compared to 18 (20%) cases reported elsewhere in the state. In addition, the majority of the non-metropolitan area cases became infected while visiting a metropolitan area. With 62 (67%) cases, Hennepin County had the highest number of syphilis cases in the state. According to a report by the Centers for Disease Control and Prevention (CDC), Minneapolis ranked 12th in syphilis rates among major U.S. cities in 2002, compared to the ranking of 30th in 2000.

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Majority of Cases Among MSM

Of the 92 cases of primary, secondary, and early latent syphilis reported to MDH in 2003, 83 (90%) were males, including 71 cases among MSM (Table 2). The majority of the MSM cases occurred among men aged 30 to 49 years. Persons currently at highest risk for syphilis infection are MSM who have unprotected sex with multiple or anonymous partners. The circumstances that may contribute to risk include the ease of finding sex partners through bars/clubs and the Internet, and the impact of alcohol and drugs, such as methamphetamines, on decision-making skills.

Table 1. Early Syphillis Cases by Gender and Stage at Diagnosis, Minnesota, 2001-2003

	2001		2002		2003	
	n	(%)	n	(%)	n	(%)
Total	49	(100)	82	(100)	92	(100)
Male	27	(55)	70	(85)	83	(90)
Female	22	(45)	12	(15)	9	(10)
Primary	8	(16)	23	(28)	14	(15)
Secondary	25	(51)	36	(44)	33	(36)
Early latent	16	(33)	23	(28)	45	(49)

Of the syphilis cases reported among MSM, 30 (42%) were also infected with human immunodeficiency virus (HIV). Cases of syphilis among individuals with HIV may be missed or diagnosed at a later stage because many syphilis symptoms, such as rash, fever, and malaise, can be mistaken for HIV medication reactions. The risk of dual infection is particularly concerning because syphilis not only increases the risk of acquiring or transmitting HIV infection by 2 to 5 times, it also has been implicated in causing unusual serologic responses among HIV-infected persons. According to the CDC's 2002 sexually transmitted diseases (STDs) treatment guidelines,[1] HIV-infected individuals with early syphilis may be at increased risk for neurologic complications and may have higher rates of syphilis treatment failure. It is critical that MSM be supported in their risk-reduction strategies for reducing HIV transmission. These strategies, however, may not be as effective in reducing the transmission of syphilis, particularly if such strategies include having unprotected sex only with other HIV-infected partners.

The most commonly reported symptoms of syphilis include primary chancre, generalized body rash, malaise, and lymphadenopathy. Other symptoms can include palmer/planter rash, uveitis, and neurologic complications. MDH has seen an increase in the percentage of cases reported during the disease's early latent stage as compared to its primary and secondary stages. Forty-five (49%) cases of syphilis reported in Minnesota in 2003 were diagnosed during the early latent stage compared to 23 (28%) cases reported in 2002. This increase highlights the importance not only of building greater awareness of syphilis symptoms among MSM, but also of stressing the importance of routine screening.

CDC 2002 STD Treatment Guidelines for MSM

On March 8, 2004, the CDC released a "Dear Colleague" letter,[2] which calls upon public health programs and private health care providers to offer comprehensive STD prevention services for MSM. It states that MSM are at increased risk for multiple STDs (HIV, syphilis, chlamydia, gonorrhea, and hepatitis A and B) and attributes the increased risk to unsafe sexual practices. The nationwide increase in syphilis among MSM is highlighted.

The letter encourages physicians to follow the CDC's 2002 STD treatment guidelines. Those guidelines recommend that clinicians routinely assess the STD risk for all male patients, including routinely asking about the gender of patients' sex partners. Clinicians are also advised to routinely conduct STD/HIV risk assessment and to provide client-centered prevention counseling for all MSM, regardless of HIV status. At a minimum, the following STD prevention services should be provided:

- Annual counseling and testing for HIV
- Annual screening for syphilis, gonorrhea, and chlamydia
- Vaccination against hepatitis A and B

Syphilis screening every 3 to 6 months is recommended for MSM who have multiple or anonymous sexual partners, who have sex in conjunction with illicit drug use, or whose sex partners participate in these activities. The guidelines also note that such screening is recommended regardless of the patient's reported history of condom use.

Due to the risk of false-positive nontreponemal tests for syphilis, the CDC treatment guidelines state that a presumptive diagnosis is possible with 2 types of serologic tests: 1) nontreponemal tests (e.g., VDRL, RPR) and 2) treponemal tests (e.g., FTA-ABS, TPPA). The guidelines do warn that individuals infected with HIV may have atypical serologic test results, such as unusually high, low, or fluctuating titers. Serologic tests for syphilis should be interpreted as usual, but if the tests are nonreactive or the interpretation is unclear and the clinical symptoms are consistent with syphilis, alternative tests (e.g., darkfield, DFA, biopsy) may be helpful. HIV-infected individuals co-infected with syphilis may be at increased risk for neurologic complications. The recommendation is that HIV-infected patients with neurologic or ophthalmic involvement have their cerebrospinal fluid (CSF) examined (i.e., CSF-VDRL, protein level, leukocyte count).

All persons exposed within 90 days preceding the diagnosis of an early syphilis case in a sexual partner might also be infected, even if seronegative; therefore, they should be treated presumptively. Those exposed more than 90 days before the diagnosis of early syphilis in a sexual partner should be treated presumptively if test results are not available immediately or if the opportunity for follow-up is uncertain. The time periods for identification of at-risk sex partners include:

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- 3 months plus duration of symptoms for primary syphilis;
- 6 months plus duration of symptoms for secondary syphilis; and
- 1 year for early latent syphilis.

The preferred drug treatment for all stages of syphilis is penicillin G, but the preparations used, their dosage, and their length of treatment depend on the stage and clinical manifestations of the disease. For more specific information, consult the CDC 2002 treatment guidelines. Adults diagnosed with primary, secondary, or early latent syphilis should be treated with benzathine penicillin G (2.4 million units IM in a single dose). These patients should be reexamined clinically and serologically at 6 and 12 months following treatment. The failure of nontreponemal test titers to decline 4-fold within 6 months after treatment is indicative of probable treatment failure. HIV-infected individuals should be evaluated more frequently (at 3, 6, 9, 12, and 24 months after therapy). Adults with penicillin allergy can be treated with either doxycycline (100 mg orally twice daily for 14 days) or tetracycline (500 mg 4 times daily for 14 days). Patients who have latent syphilis of unknown duration should be managed as if they have late latent syphilis. Adults diagnosed with late latent syphilis (characterized by seroreactivity without other evidence of disease and with an infection that occurred more than 1 year prior) should be treated with benzathine penicillin G, 7.2. million units total, administered as 3 doses of 2.4 million units IM each at 1-week intervals.

Table 2. Characteristics of Male Early Syphilis Cases Reported in Minnesota, 2003

	Number	Percent
Total Male Cases	83	100
Stage at Diagnosis		
Primary	13	16
Secondary	30	36
Early Latent	40	48
Residence		
Hennepin	60	72
Ramsey	9	11
Other	14	17
Race/Ethnicity		
White	58	70
Black	9	11
American Indian	2	2
Asian	2	2
Other	8	10
Unknown	4	5
Hispanic or Latino*	4	5
Sexual Orientation		
MSM†	71	86
Heterosexual	9	11
Risk Category (not mutually exclusive)		
Anonymous Sex	31	37
No/Infrequent Condom Use	36	43
New Partner in Last 90 Days	25	30
Prostitution	1	1
Crack Use	4	5
Methamphetamine Usse	9	11
Popper Use	4	5
Venues Where Meet Partners (not mutually exclusive)		
Internet	20	24
Personal Ad/Phone Line	8	10
Bar/Club	20	24
Sex Party	4	5
HIV Co-infection		
Among all Males	30	36
Among MSM†	30	42

*Hispanic or Latino cases are also included in Race/Ethnicity categories above.
†MSM indicates men having sex with men.

Reporting Syphilis Cases

The current syphilis epidemic in Minnesota challenges public health programs and private health care providers to work together to improve comprehensive STD prevention services for MSM. When clinicians encounter a new syphilis case, reporting the infection to MDH within 1 working day is essential to halting disease progression and transmission. Cases can be reported to the MDH at (612) 676-5223.

The MDH encourages clinicians to remind patients who have a reactive syphilis test that the disease is a reportable infection and that an MDH employee will contact them confidentially to help them identify strategies for notifying their sexual partners of their potential exposure. It is essential that individuals diagnosed with syphilis understand the importance and urgency of notifying all sexual partners so their partners are able to receive appropriate testing and treatment.

For information on reporting syphilis cases, visit www.health.state.mn.us/divs/idepc/dtopics/reportable/syphilis.html. For more information about syphilis, visit the MDH syphilis Web site at www.health.state.mn.us/divs/idepc/diseases/syphillis, or contact Patricia Constant, the MDH syphilis prevention coordinator, at patricia.constant@health.state.mn.us.

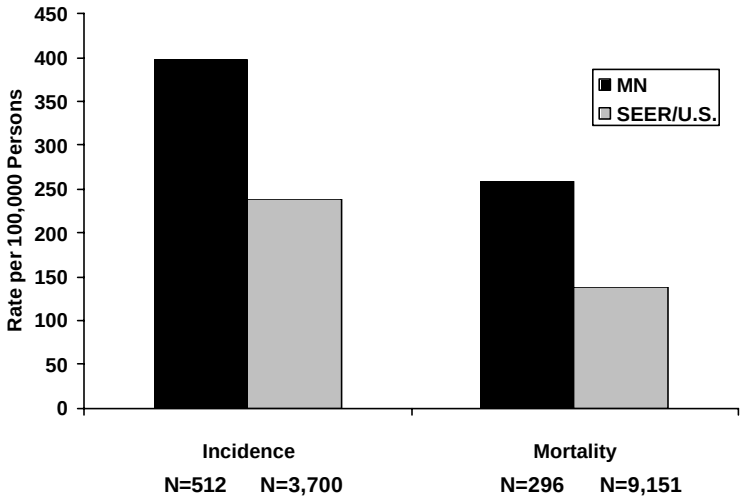
References:

1. Centers for Disease Control and Prevention. Sexually transmitted diseases treatment guidelines 2002. *MMWR*. 2002;51(RR-6):1-78. Available at: www.cdc.gov/mmwr/pdf/rr/rr5106.pdf.
2. Centers for Disease Control and Prevention. 'Dear Colleague' letter highlighting the 2002 STD Treatment Guidelines recommendations for MSM. March 8, 2004. Available at: www.cdc.gov/ncidod/diseases/hepatitis/msm/index.htm.

Cancer Rates Among American Indians in Minnesota

According to the 2000 Census, an estimated 3 million American Indians and Alaska Natives (AI/ANs) live in the United States, including 62,673 in Minnesota.[1] Although AI/ANs account for less than 1% of the U.S. population, they experience a disproportionate burden of many chronic diseases, especially diabetes and heart disease, as well as injuries.[2,3] National data have indicated that AI/ANs have an overall lower cancer risk than other racial and ethnic groups.[4] However, a recent report from the Centers for Disease Control and Prevention showed large geographic variations in cancer mortality among AI/ANs and demonstrated that Northern Plains Indians have mortality rates for several common cancers that are about twice those among American Indians in the Southwest.[5] Incidence data from the Minnesota Cancer Surveillance System (MCSS) and mortality data from the Minnesota Center for Health Statistics confirm that AI/ANs in Minnesota suffer a disproportionate burden of cancer.

Figure 1. Cancer Incidence and Mortality Rates Among American Indians, Minnesota and SEER/U.S., 1996-2000*



*Age-adjusted to the 2000 U.S. standard population; includes Hispanic American Indians.

Sources: Minnesota Cancer Surveillance System (MCSS) and *SEER Cancer Statistics Review, 1975-2000*

Over the 5-year period 1996-2000, the overall cancer incidence rate among AI/ANs in Minnesota was 66% higher and cancer mortality was 88% higher than among AI/ANs represented in national data (Figure 1). The risk of developing and dying from lung cancer in Minnesota AI/ANs was more than 2 times higher compared to national data (Table 1). Likewise, colorectal cancer incidence and mortality rates among AI/ANs in Minnesota were twice as high as among AI/ANs represented in national data. The incidence rate of breast cancer among AI/AN women in Minnesota was 14% lower than among AI/AN women represented in national data, but their mortality rate was 62% higher. Prostate cancer incidence and mortality rates among AI/AN men in Minnesota were 2 times higher than among AI/AN men represented in national data.

National cancer incidence rates for AI/ANs are based on data from the 12 geographic regions of the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) program, which represents about 21% of AI/ANs in the United States; however, 75% of AI/ANs in the SEER 12 regions come from New Mexico, California, and Alaska. As a result, SEER incidence rates for the AI/AN population are strongly influenced by the cancer rates among these 3 states and may present a biased picture of the cancer burden among AI/ANs nationwide. Since a national cancer registry does not exist, incidence rates for this population in the United States as a whole are not available.

The reasons for these disparities in cancer among AI/ANs are not well understood. The higher rates of cancer among AI/ANs in Minnesota compared to national data for AI/ANs may be associated in part with the elevated prevalence of smoking in this population. AI/ANs report the highest prevalence of current smoking among the major racial and ethnic groups in the United States[6]; however, cigarette smoking among AI/ANs is highest among Northern Plains Indians and lowest among those living in the Southwest.[7] Data for Minnesota are consistent with the national picture of cigarette smoking. Based on data from the Minnesota Behavioral Risk Factor Surveillance System for 1996-2000, American Indians were more than twice as likely as other racial and ethnic groups to report that they currently smoke.

Complete and accurate assessment of racial and ethnic differences in cancer risk in Minnesota is limited by several factors, including unknown accuracy of population estimates, incomplete or inaccurate reporting of race and ethnicity on medical records and death certificates, and the relatively small size of populations of color. The MCSS is working to address the issue of race misclassification on medical records by performing linkages of tumor registry data with data from the Indian Health Service. Such linkages will likely result in an increase in cancer rates for AI/ANs in Minnesota as cancer patients whose race/ethnicity previously was unknown or misreported are identified as American Indians.

Health disparities in underserved and minority populations are of critical concern for medical and public health professionals. Cancer Plan Minnesota, a statewide initiative to develop a comprehensive cancer control plan, is making strides to further understand and address these issues. Cancer

continued...

Plan Minnesota has established a Health Disparities Committee, which has been charged specifically with providing a framework for action to reduce inequities in the burden of cancer among all Minnesotans. To participate or to learn more about Cancer Plan Minnesota, visit www.cancerplanmn.org, email compcancer@health.state.mn.us, or call Elizabeth Moe, project coordinator, at (612) 676-5220.

Additional information on Minnesota cancer rates by race and ethnicity can be found in "Minnesota Cancer Facts and Figures 2003," a joint publication of the American Cancer Society, the MCSS, and Cancer Plan Minnesota. This report is available on the Internet at www.cancerplanmn.org.

Table 1. Incidence and Mortality Rates Among American Indians for the Most Common Cancer Sites, Minnesota and SEER/U.S., 1996-2000

	Incidence*		Mortality*	
Type of Cancer	**MN**	**SEER†**	**MN**	**U.S.**
All Cancer Sites Combined	398.0 (359.8, 440.2)	239.6 (231.3, 248.2)	259.4 (227.3, 295.9)	138.0 (135.0, 144.1)
Lung and Bronchus	88.9 (71.5, 110.3)	33.1 (29.9, 36.5)	89.4 (71.3, 111.7)	37.2 (35.7, 38.8)
Colon and Rectum	68.6 (51.9, 89.6)	34.7 (31.5, 38.2)	36.5 (24.6, 52.9)	14.7 (13.7, 15.8)
Breast (female)	49.9 (34.3, 72.2)	58.0 (53.0, 63.4)	24.1 (12.9, 42.9)	14.9 (13.7, 16.2)
Prostate	125.1 (88.9, 175.2)	53.6 (47.3, 60.8)	46.2 (24.5, 83.4)	21.9 (19.7, 24.2)

*Rate per 100,000 persons, (95% confidence interval), age-adjusted to the 2000 U.S. standard population

† SEER (Surveillance, Epidemiology and End Results program) 12 regions

Sources: Minnesota Cancer Surveillance System (MCSS) and *SEER Cancer Statistics Review, 1975-2000*

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Antimicrobial Susceptibilities of Selected Pathogens, 2003

On the following pages is the *Antimicrobial Susceptibilities of Selected Pathogens, 2003* (aka the Minnesota Department of Health [MDH] Antibiogram), a compilation of antimicrobial susceptibilities of selected pathogens submitted to MDH during 2003 in accordance with Minnesota Rule 4605.7040. Because a select group of isolates is submitted to MDH, it is important to read the notes entitled "Sampling Methodology" and "Trends, Comments, and Other Pathogens."

We hope the MDH Antibiogram will serve as a "Thank You" for the work that laboratorians, infection control practitioners, and providers do to support public health in Minnesota. We appreciate feedback on this initiative.

The MDH Antibiogram is available on the MDH Web site at: www.health.state.mn.us/divs/idepc/dtopics/antibioticresistance/antibiogram.html). Limited laminated copies can be ordered from: Antibiogram, Minnesota Department of Health, Acute Disease Epidemiology Section, 717 Delaware St. SE, Minneapolis, MN 55414 or by calling (612) 676-5414.

Antimicrobial Susceptibilities of Selected Pathogens, 2003

MINNESOTA MDH DEPARTMENT OF HEALTH

Sampling Methodology
† all isolates tested
* ~1 isolate tested per week at MDH
‡ ~10% sample of statewide isolates received at MDH
§ isolates from a normally sterile site

		Campylobacter spp.[1*]	*Salmonella* Typhimurium[2†]	Other *Salmonella* serotypes (non-typhoidal)[2‡]	*Shigella* spp.[‡]	*Neisseria gonorrhoeae*[3]	*Neisseria meningitidis*[4†§]	Group A *Streptococcus*[†§]	Group B *Streptococcus*[5§]	*Streptococcus pneumoniae*[6†§]	*Haemophilus influenzae*[7†§]	*Mycobacterium tuberculosis*[8†]
	Number of Isolates Tested	60	119	39	10	145	29	169	289	567	52	172
		% Susceptible										
ß-lactam antibiotics	amoxicillin									96		
	ampicillin		70	87	0			100	100		63	
	penicillin						93	100	100	86		
	cefuroxime sodium					100				88	98	
	cefotaxime							100	100	91	100	
	ceftriaxone		94	95	100	100	100					
	meropenem						100			90	100	
Other antibiotics	ciprofloxacin	84[1]	99	100	100	100	100				100	
	levofloxacin									99		
	azithromycin										100	
	erythromycin	97						98	71	84		
	clindamycin							100	85	97		
	chloramphenicol		75	92	80		100			99	98	
	gentamicin	95										
	tetracycline	40								95	98	
	trimethoprim/sulfamethoxazole		94	97	20		72			80	85	
	vancomycin							100	100	100		
TB antibiotics	ethambutol											96
	isoniazid											83
	pyrazinamide											94
	rifampin						100				100	97
	streptomycin											86

	Trends, Comments and Other Pathogens	
1	***Campylobacter* spp.**	Ciprofloxacin susceptibility was determined for all isolates (n=818). Only 37% of isolates from patients returning from foreign travel were susceptible to quinolones. Susceptibilities were determined using 2003 NCCLS breakpoints for *Enterobacteriaceae*. Susceptibility for erythromycin was based on an MIC ≤ 4 µg/ml.
2	***Salmonella enterica* (non-typeable)**	Antimicrobial treatment for enteric salmonellosis generally is not recommended.
3	***Neisseria gonorrhoeae***	The 145 isolates tested comprised approximately 5% of total gonorrhea cases reported in 2003. All isolates were also susceptible to spectinomycin and 97% were susceptible to azithromycin. Five isolates (3%) had "decreased susceptibility" to azithromycin using provisional breakpoints (zone size ≤ 30 mm). Among 218 isolates tested through another surveillance system (GISP), 5 isolates were resistant to ciprofloxacin.
4	***Neisseria meningitidis***	Provisional CDC breakpoints: MIC ≤ 0.06 µg/ml considered susceptible, MIC of 0.12 - 0.5 µg/ml considered "less susceptible" for penicillin. In 2003, 1 isolate had an MIC of 0.12 and 1 had an MIC of 0.25 µg/ml for penicillin.
5	**Group B *Streptococcus* (GBS)**	All (20/20) early-onset infant, 94% (15/16) of late-onset infant, 75% (3/4) of maternal, and 87% (251/289) of invasive, non-infant, non-maternal GBS case isolates were tested. 84% (32/38) of infant and maternal case isolates were susceptible to clindamycin and 79% (30/38) were susceptible to erythromycin. All 289 isolates had an MIC of ≤ 0.5 µg/ml to cefazolin.
6	***Streptococcus pneumoniae***	The 567 isolates tested represented 93% of 607 total cases. 6% (32/567) had intermediate susceptibility and 8% (47/567) were resistant to penicillin. Reported above is the proportion of case isolates susceptible by meningitis breakpoints for cefotaxime (intermediate=1.0 µg/ml, resistant ≥ 2.0 µg/ml); by nonmeningitis breakpoints (intermediate=2.0 µg/ml, resistant ≥ 4.0 µg/ml) 99% (562/567) of isolates were susceptible. Isolates were screened for high-level resistance to rifampin at a single MIC; all were ≤ 2 µg/ml. 12% (70/567) of isolates were resistant to two or more antibiotic classes and 8% (47/567) were resistant to 3 or more antibiotic classes.

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7	***Haemophilus influenzae***	Although 36% of the isolates were ampicillin-resistant, 100% were susceptible to amoxicillin-clavulanate, which contains a ß-lactamase inhibitor. All ampicillin-resistant isolates produced ß-lactamase. Three isolates were non-susceptible (intermediate or resistant) to 2 more antibiotic classes.
8	***Mycobacterium tuberculosis* (TB)**	National guidelines recommend initial four-drug therapy for TB disease, at least until first-line drug susceptibility results are known. Thirty-seven (88%) of the 42 drug-resistant TB cases reported in 2003 were in foreign-born persons, including 4 (80%) of 5 multidrug-resistant (MDR-TB) cases (i.e., resistant to at least INH and rifampin). Four (80%) of five MDR-TB cases were resistant to all five first-line TB drugs.
	Methicillin-resistant *Staphylococcus aureus* (MRSA)	Of 200 community-associated MRSA isolates tested in 2002 (2003 results pending), 79% were susceptible to ciprofloxacin, 86% were susceptible to clindamycin, 40% were susceptible to erythromycin, 98% were susceptible to gentamicin, 99% were susceptible to trimethoprim/sulfamethoxazole, 100% were susceptible to rifampin, 90% were susceptible to tetracycline, 100% were susceptible to linezolid, and 100% were susceptible to vancomycin. 50% (44/88) of erythromycin-resistant/clindamycin-susceptible isolates had inducible clindamycin resistance.
	Bordetella pertussis	All 57 isolates tested were susceptible to erythromycin using provisional CDC breakpoints.
	***Escherichia coli* O157:H7**	Antimicrobial treatment for *E. coli* O157:H7 infection is not recommended.

Dianne Mandernach, Commissioner of Health

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