

Minnesota Department of Health  
**Infectious Disease Epidemiology, Prevention  
and Control Division** (IDEPC)

**2012**  
*Annual Report*



I am pleased to introduce the first annual report of the Infectious Disease Epidemiology, Prevention and Control Division (IDEPC) at the Minnesota Department of Health. Our mission is to protect, maintain, and improve the health of all Minnesotans. In our division, we monitor the occurrence of infectious diseases, develop strategies for preventing and controlling disease, and work to put those strategies into action. All Minnesotans are served by the work of IDEPC.

Organizationally, IDEPC is divided into three sections: the Acute Disease Investigation and Control (ADIC) Section, the Immunization, Tuberculosis and International Health (ITIH) Section, and the STD and HIV Section. Additionally, we have eight field epidemiologists working in district offices across the state.

This is an exciting and important time to work in the area of infectious disease.

Today's infectious disease challenges are broader and more complex. The diversity of organisms and their ability to evolve and adapt to changing populations, environments, and technologies creates ongoing threats to health as well as challenges to disease prevention and control activities. International travel and immigration has created the potential for rapid transmission of infectious diseases such as pandemic influenza and measles; antibiotic resistance has made treatment of STDs more difficult; changes in climate can cause infectious diseases to emerge in new areas; human encroachment on wilderness areas increase the contact with zoonotic and vectorborne diseases such as Lyme disease and West Nile; and racial and ethnic health disparities continue for many diseases, including HIV.

I am grateful for a dedicated staff in IDEPC; their hard work, skill and professionalism ensure Minnesota is ready to meet the infectious disease challenges of the future.

I invite you to read our annual report to learn more about the work of our division during 2012.



Kristen R. Ehresmann, RN, MPH  
Director

Infectious Disease Epidemiology, Prevention and Control Division

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# Infectious Disease by the Numbers

## Every day, on average:

801 calls in 2012 (an average of 2 each day) are answered by the foodborne illness hotline.

A new syphilis case is reported every 26 hours.

A new HIV infection is diagnosed every 28 hours.



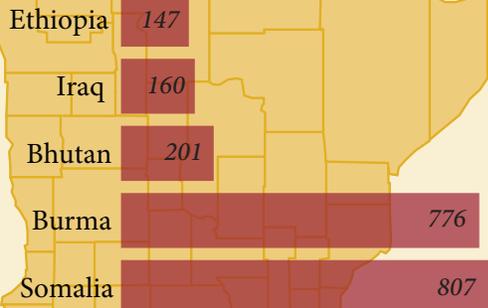
**1/2** hour: 18,048  
A chlamydia diagnosis

**2** hours: 4,485  
A pertussis case reported

**3** hours: 3,082  
A gonorrhea diagnosis

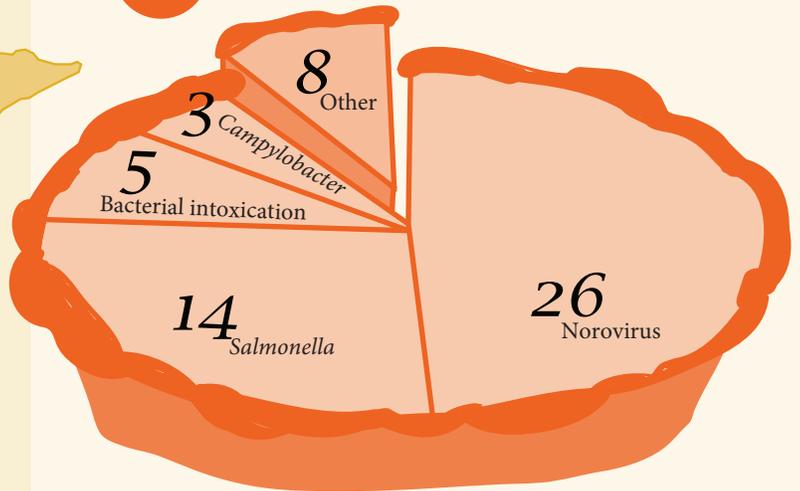
**4** hours: 2,264  
A refugee arrives in MN

## 25 Top 5 countries of origin for MN refugees



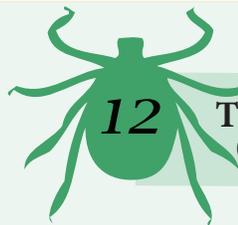
## 21 Counties refugees settled in across MN

## 144 Foodborne outbreaks investigated



## 21 Counties refugees settled in across MN

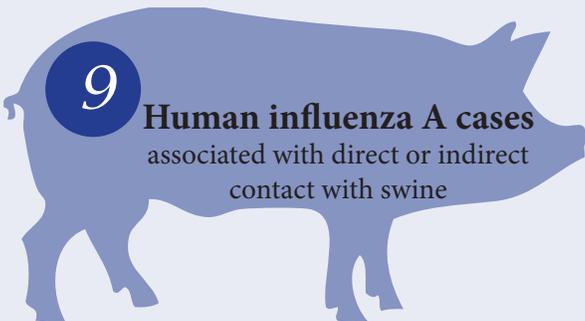
## 12 Tick species in MN (2 commonly feed on humans)



**33** % of adult black-legged ticks and 20% of nymphs, infected with Lyme disease bacteria (based on MDH field studies)

**5** different tick-borne diseases are associated with blacklegged ticks (Lyme disease, babesiosis, human anaplasmosis, one form of human ehrlichiosis, and Powassan disease)

## 9 Human influenza A cases associated with direct or indirect contact with swine



# Highlight of Partnerships

Partnerships are critical to our success. Through our wide network of partners, we are better able to protect, maintain and improve the health of all Minnesotans. Collaborations at the local, state, and federal levels help us prevent and control infectious disease in Minnesota. We work at the local level to provide technical assistance and resources, we work at the state level to ensure effective coordination and use of resources, and we work with our federal partners to ensure the health protection needs of Minnesota are understood. We will continue to develop new partnerships as we face new and emerging public health threats.

## Partners:

### Local and state government

Law enforcement  
Local public health agencies  
Public safety  
Tribal health agencies

### Federal agencies

Centers for Disease Control and Prevention  
Federal Bureau of Investigation  
Homeland Security  
US Department of Agriculture  
US Environmental Protection Agency  
US Food and Drug Administration  
US Park Service  
US State Department

### National organizations

American Immunization Registry Association  
American Veterinary Medical Association  
Association of Public Health Laboratories  
Association of Refugee Health Coordinators  
Association of State and Territorial Health Officials  
Association of Women's Health, Obstetric and Neonatal Nurses  
Council of State and Territorial Epidemiologists  
Council to Improve Foodborne Outbreak Response  
Environmental Health Specialists Network  
Hispanic Health Network  
Infectious Diseases Society of America  
National Association of County and City Health Officials  
National Association of Refugee Health Coordinators  
National Association of State Public Health Veterinarians  
National Institute for Occupational Safety and Health  
National Tuberculosis Controllers Association  
National Tuberculosis Nurse Coalition  
National Wildlife Service

MN hospitals, clinics, laboratories, and health care providers  
Community-based organizations  
Schools, child care centers, and day cares  
Long-term care facilities, adult care centers, and assisted living  
Medical Examiner and Coroner's offices

## Partners continued

### State and regional organizations

148th Air National Guard Wing  
Academy of Pediatrics-MN Chapter  
Aging Services of MN  
Care Providers of MN  
Governmental HIV Administration Team  
Local Epidemiology Network of Minnesota  
Local Public Health Association  
Midwest AIDS Training and Education Center  
MN Academy of Family Physicians  
MN AIDS Project  
MN Alliance for Patient Safety  
MN Association of School Administrators  
MN Cancer Alliance  
MN Child Care Association  
MN Chlamydia Partnership  
MN Coalition for Adult Immunization  
MN Collaborative Healthcare-Associated Infection Network  
MN Community Measurement  
MN Council of Health Plans  
MN Environmental Health Association  
MN Health Strategy & Communications Network  
MN Hospital Association  
MN Integrated Food Safety Center of Excellence  
MN Licensed Family Child Care Association  
MN Medical Association  
MN Non-profit Communications Network  
MN Nurses Association  
MN Perinatal Organization  
MN Pharmacy Association  
MN Recreational Water Advisory Committee  
MN Veterinary Medical Association  
MN-Association for Professionals in Infection Control  
Natural Resources Research Institute  
Occupational Health Nurses of MN  
School Nurses Organization of MN  
University of MN School of Public Health  
Upper Midwest Agricultural Safety and Health Center

## Advisory Committees, Task Forces, Workgroups:

- Antimicrobial Stewardship Program Steering Group
- Community Cooperative Council on HIV/AIDS Prevention
- Immunization Rulemaking Advisory Group
- MDH Food Safety Center
- Metro Immunization Nurse Group
- Metro Refugee Health Task Force
- MN Healthcare-Associated Infections Prevention Advisory Group
- MN Immunization Practices Advisory Committee
- Pharmacy Advisory Group
- Tuberculosis Advisory Committee
- Tuberculosis Nursing Interest Group
- Worksite Vaccination Advisory Committee

# DCN Annual Summary

## 2011 Disease Summary Data, from the Disease Control Newsletter Annual Summary Cases of Selected Communicable Diseases Reported by District of Residence

Disease	District (population per U.S. Census 2009 estimates)									
	Metropolitan (2,810,414)	Northwestern (153,218)	Northeastern (320,342)	Central (715,467)	West Central (229,186)	South Central (286,956)	Southeastern (486,517)	Southwestern (218,293)	Unknown Residence	Total (5,220,393)
Anaplasmosis	201	121	106	280	32	7	30	5	0	782
Arboviral disease										
LaCrosse	0	0	0	0	0	0	1	0	0	1
West Nile	2	0	0	0	0	0	0	0	0	2
Babesiosis	12	14	6	25	8	0	6	1	0	72
Campylobacteriosis	464	15	45	159	57	49	142	64	0	995
Cryptosporidiosis	47	6	37	31	39	16	87	44	0	307
<i>Escherichia coli</i> O157 infection	68	1	4	28	11	7	19	8	0	146
Hemolytic uremic syndrome	5	0	0	4	0	1	1	1	0	12
Giardiasis	386	17	53	59	18	9	55	24	65	686
<i>Haemophilus influenzae</i> disease	34	2	3	11	2	2	12	5	0	71
HIV infection other than AIDS	217	1	5	9	1	7	4	4	0	248
AIDS (cases diagnosed in 2010)	137	0	6	12	3	3	9	2	1	173
Legionellosis	20	0	1	0	1	2	7	0	0	31
Listeriosis	2	1	0	0	1	0	2	0	0	6
Lyme disease	510	81	119	314	43	17	108	9	0	1,201
Meningococcal disease	7	0	0	1	1	0	0	0	0	9
Mumps	2	0	0	0	0	0	0	0	0	2
Pertussis	595	16	33	305	17	50	88	39	0	1,143
Salmonellosis	418	19	25	88	24	30	76	21	0	701
Sexually transmitted diseases	12,207	295	716	1,311	311	564	1,253	338	765	17,760
<i>Chlamydia trachomatis</i> - genital infections	11,320	273	845	1,358	343	552	1,133	346	728	16,898
Gonorrhea	1,840	26	60	114	25	28	76	23	91	2,283
Syphilis, total	321	2	6	14	1	3	10	2	7	366
Primary/secondary	124	1	0	6	0	3	3	0	2	139
Early latent*	111	0	3	3	0	0	1	2	1	121
Late latent**	86	1	3	5	1	0	6	0	4	106
Congenital	0	0	0	0	0	0	0	0	0	0
Other***	0	0	0	0	0	0	0	0	0	0
Shigellosis	76	1	0	5	0	0	3	2	0	87
<i>Streptococcus pneumoniae</i> disease	244	35	49	100	24	40	47	43	0	582
Streptococcal invasive disease - Group A	115	8	23	21	16	11	26	11	0	231
Streptococcal invasive disease - Group B	293	22	41	60	22	30	49	18	0	535
Toxic shock syndrome (Staphylococcal)	3	0	0	0	0	1	0	0	0	4
Tuberculosis	102	4	2	6	4	0	13	6	0	137
Viral hepatitis, type A	14	0	4	1	1	1	2	4	0	0
Viral hepatitis, type B (acute infections only, not perinatal)	14	0	0	3	1	0	1	1	0	20
Viral hepatitis, type C (acute infections only)	8	0	5	3	1	0	0	1	0	18

\* Duration ≤1 year  
 \*\* Duration >1 year  
 \*\*\* Includes unstaged neurosyphilis, latent syphilis of unknown duration, and latent syphilis with clinical manifestations

**County Distribution within Districts**  
 Metropolitan - Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, Washington  
 Northwestern - Beltrami, Clearwater, Hubbard, Kittson, Lake of the Woods, Marshall, Pennington, Polk, Red Lake, Roseau  
 Northeastern - Aitkin, Carlton, Cook, Itasca, Koochiching, Lake, St. Louis  
 Central - Benton, Cass, Chisago, Crow Wing, Isanti, Kanabec, Mille Lacs, Morrison, Pine, Sherburne, Stearns, Todd, Wadena, Wright  
 West Central - Becker, Clay, Douglas, Grant, Mahnomon, Norman, Otter Tail, Pope, Stevens, Traverse, Wilkin  
 South Central - Blue Earth, Brown, Faribault, LeSueur, McLeod, Martin, Meeker, Nicollet, Sibley, Waseca, Watonwan  
 Southeastern - Dodge, Fillmore, Freeborn, Goodhue, Houston, Mower, Olmsted, Rice, Steele, Wabasha, Winona  
 Southwestern - Big Stone, Chippewa, Cottonwood, Jackson, Kandiyohi, Lac Qui Parle, Lincoln, Lyon, Murray, Nobles, Pipestone, Redwood, Renville, Rock, Swift, Yellow Medicine

# A Day in the Life of a Disease Investigation: An Outbreak Associated with a Hotel Waterpark

The day starts like any other day, when a call comes in... a concerned citizen reports that six of eight persons from two separate households had become ill after swimming at an indoor waterpark in St. Louis County 16 days earlier. Based on the described symptoms, profuse watery diarrhea and cramping, we suspected the illness was cryptosporidiosis. Cryptosporidiosis is caused by the parasite *Cryptosporidium*, and the infection is spread through stool and is highly resistant to chlorine.

An investigation was started immediately. We contacted management of the waterpark to inform them about the potential outbreak and to let them know that MDH Environmental Health Specialists would visit the waterpark to assess conditions and interview staff regarding recent illness and job duties. Waterpark management voluntarily closed the facility so it could be super-chlorinated in order to inactivate *Cryptosporidium*. Upon further inspection, the waterpark was found to have been operating at high combined chlorine levels, indicating that the chlorine that was present in the water was not acting as an effective disinfectant.

Guests who visited the waterpark during the time in question were contacted. Our investigators interviewed and collected illness histories and exposure information from 229 guests. This is what we learned:

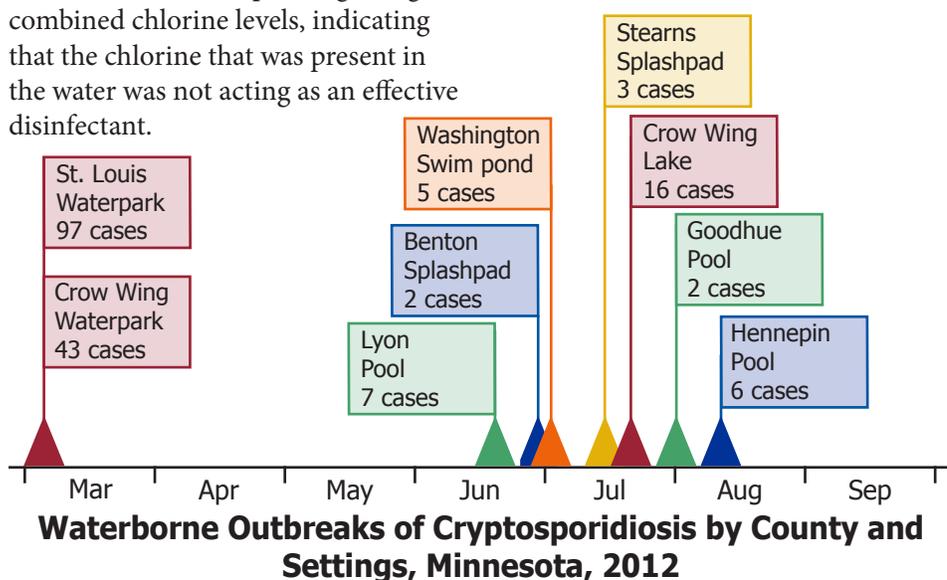
- 97 cases of cryptosporidiosis were identified (22 with stool specimens that tested positive for *Cryptosporidium*).
- Swim dates of March 3 to March 25 were reported.
- The median incubation period was eight days for the 32 cases who only swam at the waterpark once in the 14 days prior to illness onset.
- The median duration of illness was seven days for the 47 cases who had recovered by the time of interview.
- 35 of the 86 cases with known information reported visiting a health care provider for their illness, including one case who was hospitalized for three days.

On a broader scale, this outbreak illustrates a trend of increasing numbers of waterborne disease outbreaks, particularly from man-made venues.

On March 27, the super-chlorination was completed and the waterpark reopened. Anyone with symptoms of gastrointestinal illness was told by staff not to enter the waterpark until two weeks after their symptoms had resolved. Signs were also posted at the waterpark alerting guests not to swim if they were experiencing diarrhea.

As with many outbreaks, even though many ill persons were identified, it is likely many more were affected whom we were unable to contact or alert. Ill persons were exposed over a period of three weeks. Had we not received a call from a concerned citizen, the outbreak almost certainly would have continued. Due to the prompt actions of MDH disease investigation staff, we were able to identify the source while transmission was occurring and intervene to prevent further illness.

On a broader scale, this outbreak illustrates a trend of increasing numbers of waterborne disease outbreaks, particularly from man-made environments. A record number of nine waterborne outbreaks of cryptosporidiosis occurred in 2012. In response to this trend, “Healthy Swimming Workshops” were developed to provide education on the consistent use of effective prevention measures in all recreational water venues. Over 150 aquatic professionals have received training thus far.



# Much Ado About Flu

**Surveillance** - the systematic collection, analysis, interpretation, and dissemination of health data on an ongoing basis. Surveillance is conducted to identify potential public health threats or patterns of disease occurrence and risk in the community.

(As defined by Minnesota Public Health Data Access)

What's the big deal about flu? Everyone gets it and gets over it, right?

Unfortunately this isn't the case. While it is true that influenza infection sickens thousands of Minnesotans each year and most recover there are many that are hospitalized, and still others that die as of result of flu. Influenza is a particularly challenging disease because it is difficult to predict the course it will take; will it be able to spread easily, will it cause severe disease in a specific population or age group, how much of a match is the vaccine to the current strain? These are all questions we try to answer using the various surveillance systems we've put into place.

Through our partnership with providers, labs, health care facilities, and schools, our surveillance systems help continually monitor and assess the impact of influenza in Minnesota. It also means we stay on top of emerging trends including:

- Assessing the burden and severity of influenza infections in our state.
- Detecting severe influenza outcomes such as death in vulnerable populations.
- Monitoring the changing epidemiology of influenza disease from year to year.
- Identifying resistance to influenza antiviral medications.
- Evaluating the compatibility and effectiveness of influenza vaccine against circulating strains.
- Assisting health care providers with patient diagnosis of acute respiratory illness.

As a result of our robust surveillance systems we are able to disseminate the data. We do this through a report, *Weekly Influenza and Respiratory Activity*. The report offers graphs and charts of current influenza trends in Minnesota for the previous week. The report is used widely by local public health and health care providers to help direct messages to their patients about prevention and severity of the influenza season. Newspaper and TV use it to inform the public.

We also use the data to help guide us in educating the public about the current influenza season. Tailoring materials to help the public make informed decisions on how to prevent the flu, when to see a doctor, or how to care for yourself and others when ill.

**Influenza Disease Surveillance – the systematic collection, analysis, interpretation, and dissemination of influenza disease data on an ongoing basis.**

Surveillance is conducted to identify potential influenza disease threats or patterns of influenza disease occurrence in the community.

**Fight<sup>the</sup> Flu**

**Cover your cough!**

**Wash your hands.**

**Stay home when sick.**

**Get vaccinated.**

Your city or county public health department

Find a Flu Shot Clinic near you at [www.mdhflu.com](http://www.mdhflu.com)

MINNESOTA MDH DEPARTMENT OF HEALTH

Fight the Flu 09/11 ICR141-3093

# Combatting the Chlamydia Epidemic through Partnerships

In Minnesota, over 90 different infectious diseases are reported to the Minnesota Department of Health. Chlamydia is the **most** reported infectious disease in Minnesota. In 2012 alone, just over 18,000 cases were reported to MDH with numbers almost tripling in the past 15 years. Seventy percent of chlamydia cases are in persons under the age of 25. Most people infected with chlamydia are unaware of their infections because a large majority of cases are asymptomatic. Chlamydia is easily treatable with antibiotics but without testing and treatment females can develop tubal pregnancies, chronic pelvic pain, and both females and males can become infertile.

With the number of chlamydia infections growing, we realized that it was time to be creative and cultivate new partnerships to address this public health epidemic. To this end, we convened the first Minnesota Chlamydia Partnership (MCP), a group of individuals and organizations interested in collectively exploring new ways to address this problem. The purpose of the MCP is to raise awareness and to develop an action plan. The Minnesota Chlamydia Strategy is the culmination of those efforts.

## Guiding Principles of the Minnesota Chlamydia Partnership

- Minnesota community members will develop and own the plan; all tactics will have a “home.”
- Affected communities are involved in creating and implementing the Strategy.
- Focus on sustainable changes.
- Everyone’s voice counts equally.
- Leverage available resources within the Minnesota Chlamydia Partnership.
- Utilize both community-based participatory research and evidence-based research when creating and/or planning possible actions.
- Programming and actions must be gender inclusive.
- Activities to eradicate and prevent chlamydia and gonorrhea must be part of a broader vision of sexual health.



MINNESOTA  
CHLAMYDIA  
PARTNERSHIP

In 2011, the MCP released the *Minnesota Chlamydia Strategy: Action Plan to Prevent and Reduce Chlamydia in Minnesota* which offers communities ideas for ways they can impact the epidemic and its underlying causes. The MCP also produced a nationally recognized publication, *A Special Report: Chlamydia Prevention*, a smaller user-friendly version of the action plan.

Did you know that chlamydia is the most reported disease in Minnesota?

In 2012 alone, over 18,000 cases were reported to MDH with numbers almost tripling in the past 15 years.

In 2012, Kandiyohi County Public Health and the Coalition for Healthy Adolescent Sexuality in Willmar were awarded funding for a community demonstration project to address chlamydia in greater Minnesota. The end goal is to develop a toolkit that other rural areas can use to address chlamydia in their communities. Most recently, a consortium of four Minnesota health plans and Stratis Health became new partners. Together we are exploring ways to work together to raise public and provider awareness about chlamydia and the need for increased screening, diagnosis, and treatment.

# Responding to a Rise in Syphilis

Nearly eradicated a decade ago, syphilis has made a comeback among men who have sex with men (MSM) in several cities across the U.S. including the Twin Cities. This alarming rise in syphilis cases prompted us to take action against one of the most dangerous STDs. Syphilis left untreated can lead to blindness, brain damage, heart problems, and death.



To call attention to the situation, we focused our initial strategy on the development of a public awareness campaign for MSM. The goal was to provide education and increase screening and treatment among undiagnosed cases by partnering with a community-based clinic.

Thanks to funding from the CDC and through a competitive bid, we contracted with the local advertising firm Russell Herder to design a public awareness campaign. The campaign, **Stop Syph Minnesota**, was designed based on input from focus groups with MSM and included print, web, social media, indoor advertising, and community outreach. The campaign was highly successful and received a national award and recognition. The campaign tripled the number of men diagnosed during the campaign period compared to the pre-campaign period.

As the public awareness campaign was concluding and in an effort to keep the momentum going, we partnered with Hennepin County Public Health Clinic's Red Door Services to implement the Syphilis Elimination Program. Red Door Services is located in downtown Minneapolis and the largest public health STD clinic in the state. It is the number one reporter of new syphilis cases and has a reputation of providing quality and culturally sensitive care for MSM. Through the Syphilis Elimination Program, Red Door Services provided

clinical services and health education to MSM at risk of acquiring or spreading syphilis.

Red Door Services also maintained the **Stop Syph Minnesota** website, a resource for educating the target population about syphilis and access to screening.

Syphilis left untreated can lead to blindness, brain damage, heart problems and death.

Successful education and awareness activities implemented by Red Door Services included: quarterly presentations at MSM-focused events and/or agencies; one-on-one educational sessions for referred clients from the clinic website or from community-based organizations; group level educational sessions; and community outreach at non-traditional settings including a MSM serving chemical and sexual dependency treatment center and a multi-service center for people living with HIV/AIDS.

In 2012 our partner, Red Door Services, provided a total of 795 syphilis tests at clinics and community venues and 200 hours of online syphilis prevention outreach and education.

The screenshot shows the Stop Syph Minnesota website. At the top is a navigation menu with links: Home, What is Syphilis?, Red Door Events, Diagnosed with Syphilis, and Request an Appointment. Below the navigation is a large image of a man's face with the text "Syphilis can come in a Beautiful Package" overlaid. To the right of the image is a section titled "What is StopSyphMN?" which includes a list of "What can you do?" with three items: 1. If you test regularly for HIV, get tested for Syphilis around the same time. 2. If you have multiple sexual partners consider being tested every 3 months. 3. Become a community activist by telling your friends to get tested too. Below this is a section titled "HIV and Syphilis" with text explaining the connection between the two. At the bottom right is a "REQUEST AN APPOINTMENT" section with contact information for Hennepin County Public Health Clinic Red Door Services and two buttons: "Request an Appointment" and "Contact Us".

# HIV/STD Partner Services and Care Link Services Programs

To be a disease investigator requires a little bit of diplomacy and empathy, among other skills. Our disease investigators use these skills every day to provide guidance and outreach to persons affected by HIV or other sexually transmitted diseases such as syphilis, gonorrhea, or chlamydia.



This is important because we want to prevent the spread of these diseases and their potential to cause serious health consequences. We are able to do this through two direct service outreach programs.

## **Partner Services Program:**

Our specially trained investigators discreetly locate persons who are unaware of and/or untreated for their disease and refer them to medical care. We also interview persons with HIV and syphilis to identify, locate, and refer their partners to medical care. In 2011, the Partner Services Program served 2,618 infected individuals and their partners.

## **Care Link Services:**

Data show that only 50 percent of the 7,516 people living with HIV in Minnesota receive ongoing medical care. Through Care Link Services, we contact persons who appear to not be receiving HIV medical care and assist them to arrange and maintain specialized care including treatment with drugs to reduce their infectiousness to others. Additionally, these services help to reduce the risk of transmitting HIV to others.

# Reaching Out: Hepatitis Symposium

**Hepatitis- 1:** inflammation of the liver 2: a disease or condition marked by inflammation of the liver. Hepatitis comes from ancient Greek *hepar* or *hepato* meaning 'liver' and suffix *-itis* denoting 'inflammation' (Mirriam-Webster Dictionary)

While the origin of the word hepatitis may be ancient, the disease continues to exist today. In Minnesota, 21,064 persons are known to be living with hepatitis B and 39,303 with hepatitis C. Of all the different hepatitis types (A, B, C, D, and E), B and C can cause the life-long liver issues including liver damage, cirrhosis, cancer, and sometimes death.

With so many people living with hepatitis, we thought it was important to create an opportunity for health

care providers to exchange information and network with others in the state addressing hepatitis. From that, the Minnesota Statewide Viral Hepatitis Symposium was born.

Since 2008 MDH has sponsored the annual symposium, a forum for building awareness and promoting open discussion of hepatitis prevention, care, and treatment across disciplines. This one to two day event provides continuing education and has reached nearly 800 public health and social service professionals, clinicians, advocates, chemical health, and corrections staff.

The symposium planning committee, made up of community advocates, clinical staff, and public health

personnel, strives to bring experts from around the country, as well as local providers, who understand the community needs. Themes for the event have included diverse populations affected by hepatitis, harm reduction, and integration of prevention and treatment systems.

The partnerships created through the symposium have brought awareness and recognition of hepatitis as a serious disease to the forefront. Without the symposium acting as a "connecting forum," partnerships and collaborations with the American Liver Foundation, Midwest AIDS Training and Education Center, Harm Reduction Coalition, and the Hepatitis C Support Project to name a few, may never have happened.

# Fungal Meningitis: Ready to Respond

In late September, the Tennessee Department of Health investigated fungal meningitis in a patient who had received epidural steroid injections at a surgical care center. This began one of the most unprecedented health events in U.S. history whereby over 14,000 patients in 23 states had received injections with a contaminated drug, methylprednisolone acetate (MPA), prepared by the New England Compounding Center (NECC, in Framingham, Massachusetts). The MPA was contaminated with fungus and bacteria due to terrible lapses in safety and hygiene during production. NECC violated multiple federal and state laws. The Centers for Disease Control and Prevention (CDC) confirmed the predominant pathogen as *Exserohilum rostratum*, a plant fungus that rarely infects humans. To date, approximately 700 patients have developed meningitis, spinal infections, or joint infections with 45 of them having died of infections from the contaminated drug.

In Minnesota, one pain management clinic system had unknowingly used contaminated MPA exposing approximately 1,000 of its patients. MPA and other steroids are often injected directly into spinal and joint spaces for relief of chronic pain.



Fungal meningitis images courtesy CDC.

We were notified by CDC in early October on a Thursday of this affected Minnesota clinic, and recognizing that the clinic did not have enough staff to immediately notify all the exposed patients, we worked Friday through Monday to notify them as quickly as possible. We talked to them by phone, evaluating any symptoms, and advised them to go to an emergency department or their physician if they



This event underscores the need for public health to be ready to respond to any emerging or novel threat, whether it is a massive failure in pharmaceutical safety, bioterrorism, or an emerging pathogen.

were exhibiting certain symptoms that might indicate a fungal infection. These clinic patients were already fragile, suffering with pain, and the news we were giving them was frightening. It was a dramatic race against time for us to locate and notify them since Tennessee was reporting patients who quickly developed strokes or died within hours or days after first symptoms appeared.

We had to alert the clinical community and pass on information that was being developed “on-the-fly” by CDC including interim diagnostic and treatment guidelines. We also alerted other clinics about the discovery of additional contaminated medicines produced by NECC and its sister facility that they should immediately stop using them. We sought and investigated disease cases, secured patient specimens for testing by us and the CDC, ultimately finding 12 cases. We had to get rapidly changing information out to the public, affected patients, clinicians, laboratories, hospitals, and clinics. We kept abreast

of the situation with many conference calls and webinars with CDC, other state health departments, the U.S. Food and Drug Administration, and our own Board of Pharmacy.

This was an unusual health emergency, and our active participation was very valuable. CDC reports that there was a dramatic decrease in the 30-day case-fatality rate among meningitis patients diagnosed after the outbreak was recognized and public health action initiated.

This event underscores the need for public health to be ready to respond to any emerging or novel threat, whether it is a massive failure in pharmaceutical safety, bioterrorism, or an emerging pathogen. It also shows that an adverse event occurring anywhere in the world can have major consequences to the health of Minnesotans and that extensive partnerships between public health, the medical community, media, regulators, and the public leads to successes such as highlighted here.

# Emerging Issues: Health Care Associated Infections and “Super Germs”

Health care-associated infections (HAI), infections acquired by patients during the course of their treatment, represent an expanding health threat and significant patient safety issue. An estimated 1 in 20 hospitalizations result in an HAI and they add approximately \$30 billion annually to health care costs. With an increasingly frail patient population and technologically intense treatments, HAI will continue to increase.

As consumers have become more engaged in safety and accountability of health care providers, the disclosure of HAI rates by hospitals has become more common. In 2011, the Centers for Medicare and Medicaid Services (CMS) started to require reporting of certain HAI by several types of health care facilities in order to receive full cost Medicare or Medicaid reimbursement. HAI rates for health care facilities are posted publicly on the CMS website.

While preventing HAI is challenging, it is further complicated by the emergence of antibiotic resistance or “super germs.” The availability of effective antibiotics to treat life-threatening infections was once taken for granted, but infections are now caused by bacteria resistant to most, if not all, available antibiotic drugs. Unfortunately, there are few drugs in the development pipeline, and continued emergence of resistant bacteria is expected unless we change how these antibiotic drugs are used. Of great concern is the emergence and spread of carbapenem-resistant Enterobacteriaceae (CRE), the so-called “super germs.” This group of bacteria has developed resistance to most available antibiotics including carbapenems, the last line of treatment for these infections. National data suggest a recent marked increase in CRE. CRE infections are associated with high mortality rates, up to 40 percent. Also, CREs can spread their resistance mechanisms to other bacteria. Fortunately, at this time CRE are currently limited to health care settings and are not yet in the general community.



We lead HAI prevention efforts by:

- Coordinating the Minnesota HAI Advisory Group.
- Partnering with the Association for Professionals in Infection Control and Epidemiology-MN Chapter to develop recommendations for the control of CRE in acute care and long-term acute care hospitals and long-term care facilities.
- Providing infection prevention consultation to health care facilities statewide as we are one of few state public health laboratories with the technical capacity to identify certain types of CRE.
- Acting as one of four lead organizations in the Collaborative HAI Network which supports implementation of the State HAI Prevention Action Plan, HAI prevention initiatives, and measurement strategies.
- Collaborating with infection preventionists, hospital administrators, infectious disease physicians, laboratorians and others have been crucial for success. CREs have the potential to spread widely within health care settings; infection prevention and control strategies have been shown to minimize their spread.

Drug resistance anywhere is drug resistance everywhere.

Antibiotic overuse increases the development of drug-resistant germs and limits treatment options for infections.

You have a role in preventing antibiotic resistance.

# Changing Geographic Range of Vector-Borne Disease

Slow and steady wins the race? Not on our watch!

Watch out, ticks and mosquitoes are on the move, looking for new areas to live and multiply. The good news, we're on it. We've been able to observe their slow and steady spread across Minnesota because of our consistent, centralized surveillance methods for tracking vector-borne diseases. This kind of tracking has allowed us to annually evaluate each disease to identify changing patterns in case demographics, symptoms, testing, incidence, and exposure.

In addition, new or emerging tick-borne diseases such as Powassan disease, human ehrlichiosis, Rocky Mountain spotted fever, and tularemia have been detected by MDH in recent years. Historically, most Minnesotans diagnosed with a tick-borne disease either live in or traveled to forested areas in east-central Minnesota or western Wisconsin. However, in recent years the geographic distribution of blacklegged ticks (aka deer ticks; vectors of most tick-borne disease agents in Minnesota) and reported blacklegged-transmitted diseases have expanded to wooded areas in regions

where they were not found previously (figure). Mosquito-borne disease risks also changed substantially with the arrival of West Nile virus (WNV) to the state in 2002. Periodic outbreaks of disease caused by this African virus have been detected in Minnesota, especially during warmer than normal summers.

Vector-borne disease risk has increased dramatically in Minnesota since the 1980's.

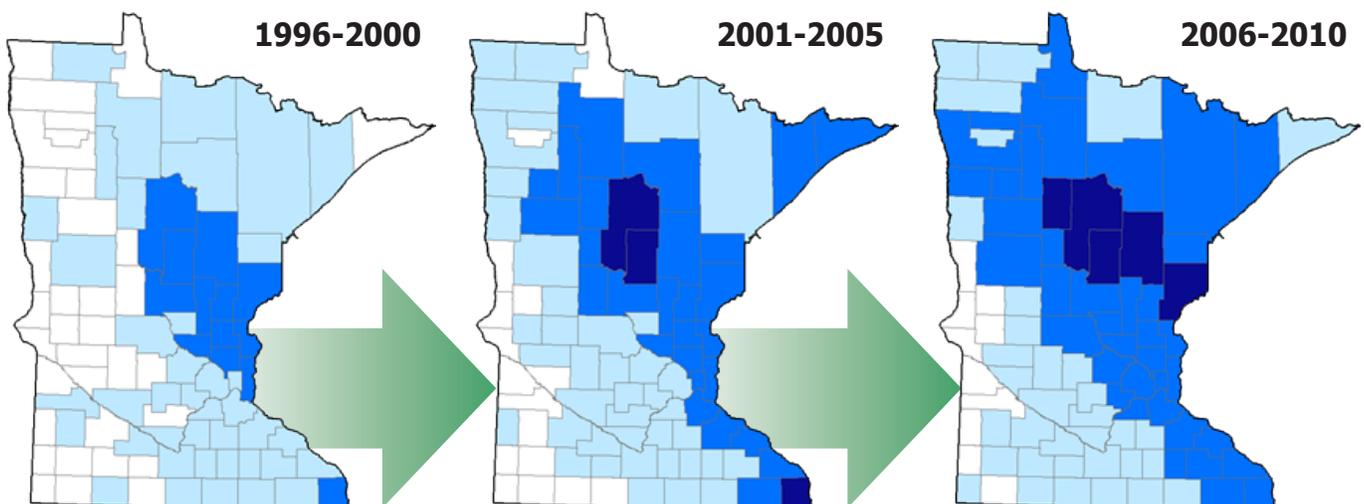
Risk is highest in forested areas for tick-borne disease and agricultural areas for West Nile Virus.

The incidence and geographic distribution of vector-borne disease (diseases transmitted to humans by ticks and mosquitoes) has increased dramatically in recent years.

Consider this in Minnesota:

- Tick-borne diseases (e.g., Lyme disease, human anaplasmosis, and babesiosis) have increased from 200-300 cases per year during the 1990's to 1,300-2,000+ cases per year in the last five years.
- Lyme disease cases increased from 252 in 1996 to 1,293 in 2010
- Human anaplasmosis cases increased from 18 in 1996 to 720 in 2010.

Interested in learning more about vector-borne diseases in Minnesota? We distribute vector-borne disease updates from late spring through late fall to the public and health care providers, including where and when people are at risk, awareness of infection symptoms, new diagnostic procedures, changes in treatment, and prevention measures. We also partner with local public health agencies and the Centers for Disease Control and Prevention to leverage local and national disease prevention resources.



Distribution of Lyme Disease (LD) Cases by County of Residence, MN

Incidence Rate (cases/100,000 person-years)  No Cases  >0.0-10.0  >10.0-100.0  >100.0-160.0

# Nationwide Surveillance System for Internationally Adopted Children

According to the Department of Homeland Security in 2011, 9,504 children were adopted internationally and moved to the U.S. to live with their new families. A variety of social, political and economic conditions have

**A variety of social, political and economic conditions have led to these children being orphaned or relinquished.**

led to these children being orphaned or relinquished. Often the living conditions many of these children come from, the absence or unreliability of a medical history or immunization record raise health concerns. Because of this, the American Academy of Pediatrics recommended that

internationally adopted children receive a health screening following their arrival to the U.S. A health screening is the first step towards getting these children evaluated and any health concerns addressed. However, there was no centralized system for capturing the results of these screenings.

In an effort to do just that, we collaborated with the Centers for Disease Control and Prevention (CDC) to create a surveillance system that documents the health screening results of internationally adopted children at major health clinics in the U.S. The goal of the project was to better identify emerging health issues and improve screening guidelines for newly arrived international adoptees.

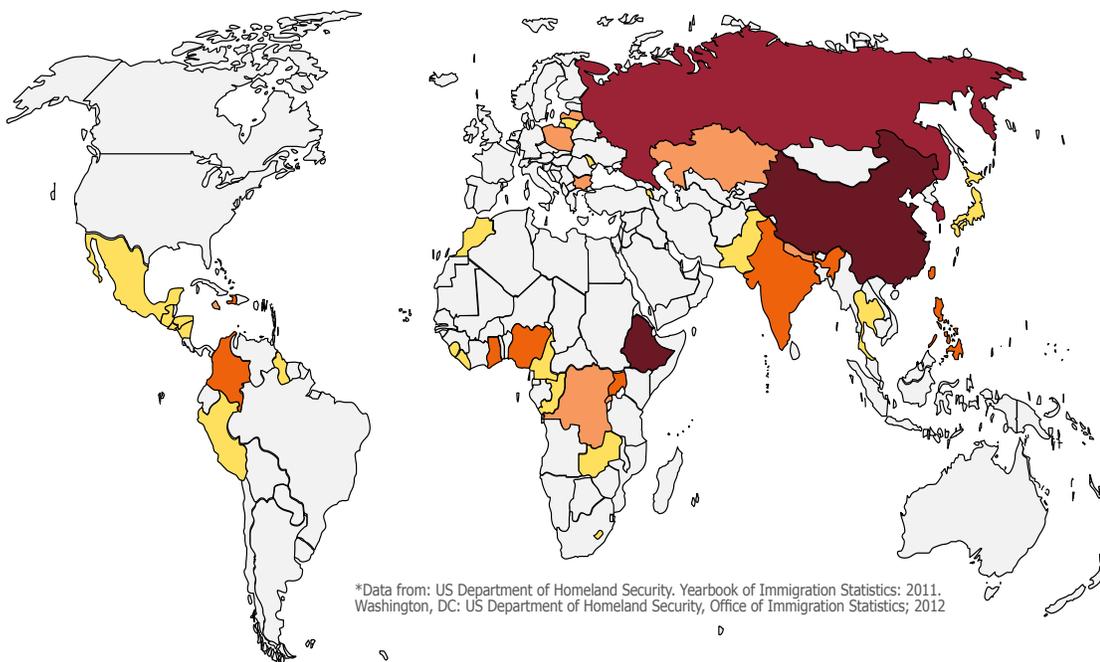
We proposed doing this by recruiting a nationally representative sample of international adoption screening clinics to participate as sentinel health screening surveillance sites.

In 2011, the project was piloted at the University of Minnesota's International Adoption Clinic and expanded to the International Adoption Clinic at Children's Hospital and Research Center in Oakland, California; and the International Adoption Program at Winthrop-University Hospital in Mineola, New York. Seven other sites will begin reporting health screening results as early as summer 2013.

To date, participating clinics have submitted 1,136 reports through a web-based surveillance system, eSHARE/adoptee, maintained here at MDH.

Of those reports entered into the system, we know that international adoptees came from 46 countries, with the largest proportions coming from Ethiopia (20 percent), Russia (18 percent), and China (16 percent). The median age at adoption was 2 years and 54 percent were female. Common health issues included infection with intestinal parasites (31 percent) (most commonly *Giardia*), latent tuberculosis infection (21 percent), and developmental delays (66 percent).

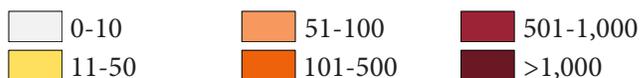
We are very excited to see the benefits of the surveillance system in identifying emerging health issues and improving screening guidelines.



\*Data from: US Department of Homeland Security, Yearbook of Immigration Statistics: 2011, Washington, DC: US Department of Homeland Security, Office of Immigration Statistics; 2012

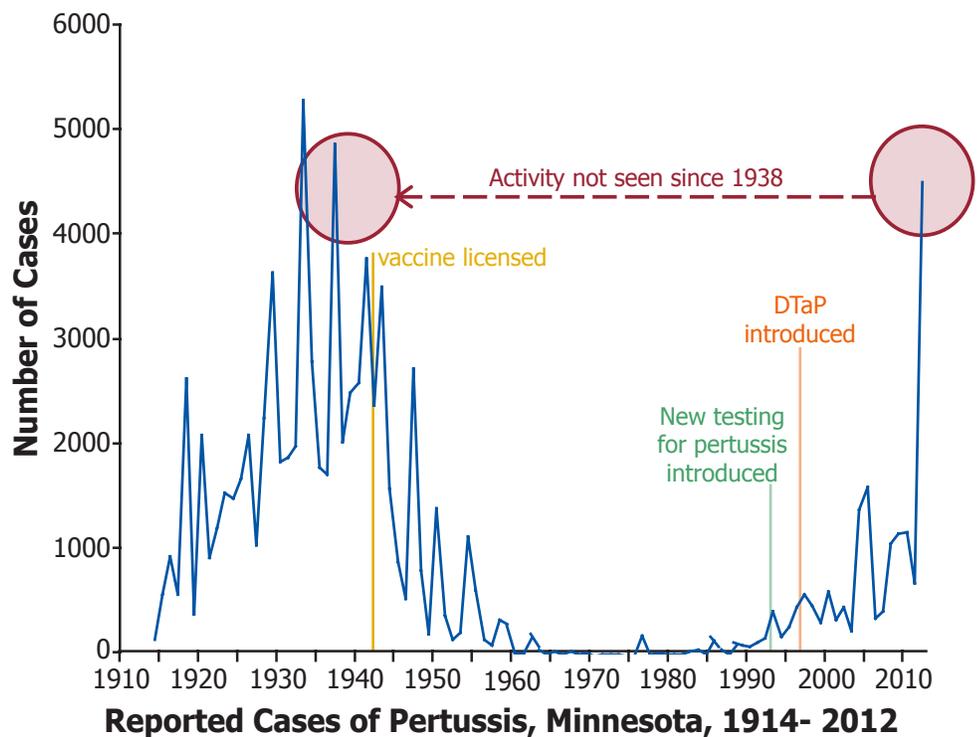
## Countries of Origin of Adopted Children Immigrating to the United States, FY 2011

Adoptions by Country of Origin



# Pertussis: Minnesota Data Informing National Recommendations

Pertussis (whooping cough) reached epidemic levels in Minnesota in 2012, with 4,144 cases statewide. Case numbers had not been this high since a vaccine for pertussis was developed in the 1940s. Prior to 2012, pertussis had been increasing since the 1980s. Furthermore, the number of cases in children age 7-10 years increased more than six-fold between 2007 and 2009 and that trend has continued. These increases have occurred despite high pertussis immunization rates. In Minnesota in 2012, 786 (87 percent) of the 905 cases age 7-10 years were fully immunized in accordance with current immunization recommendations. Minnesota's pertussis data reflect national trends, although Minnesota and other states with strong surveillance programs have reported the highest rates.



Minnesota was selected by CDC for a national pertussis study “based on the quality of statewide pertussis surveillance data and the strength of the state Immunization Information System.”

## Waning immunity?

The Advisory Committee on Immunization Practices (ACIP) sets the national standard for vaccine recommendations. Protection from the pertussis vaccine has long been known to wane over time; however, because pertussis disease is less severe for adolescents and adults than for young children, booster doses following the initial five doses as the childhood immunization series were not recommended initially. But in 2006, in response to the increase in pertussis disease, particularly in adolescents, and data to support that

adolescents and adults are often the source of pertussis for young infants, a booster dose of pertussis vaccine was licensed and recommended for adolescents beginning at 11 years of age. This booster is generally given prior to starting middle school. We are one of four states that participated in a CDC study to examine the source of pertussis transmission to infants.

In 2011, in response to the increase in pertussis in pre-adolescent children, we collaborated with the Centers for Disease Control and Prevention (CDC) and the state health department

in Oregon to conduct a study of the pertussis vaccination history of cases born between 1998 and 2003. Minnesota and Oregon were “selected based on the quality of statewide pertussis surveillance data and the strength of the state Immunization Information System.” The study findings suggest an earlier waning of protection from the current pertussis vaccine than previously thought. These findings and other studies, in conjunction with surveillance data, help to inform CDC and ACIP in making public health policy and immunization recommendations.

# MIIC: Achieving and Maintaining High Immunization Rates

Achieving and maintaining high immunization rates statewide and across the lifespan is important to the public's health. The tool we use to support and enhance this important work is known as MIIC, the Minnesota Immunization Information Connection. MIIC is a confidential immunization information system that electronically stores immunization records for Minnesotans. The following three projects highlight the ways we've integrated MIIC into immunization program activities.

## High Risk ZIP Code Project

We know through multiple data sources that certain Minnesota ZIP codes have low immunization rates with the majority of these being in the metro area. In 2011, along with our partners we began the High Risk ZIP Code Project, an initiative focusing on increasing childhood immunization rates in targeted ZIP codes. We used MIIC to generate recall notices for two-year-old children who were behind in getting their routinely recommended shots. Letters were sent to the parent letting them know that their child may be overdue for immunizations and that they should contact their health care provider to verify the records or schedule an appointment. Follow-up letters were sent quarterly to parents of those kids who remained behind on their immunizations. Mailings included a personalized MIIC record, an opt-out postcard, and information on nearby low-cost and community clinics and were sent in four languages (English, Hmong, Somali, and Spanish).

After a year of following this selected group of children, we evaluated our outreach efforts. Overall, there was a 16 percent increase in immunization rates from 38.5 to 54.9 percent in the targeted ZIP codes compared to a 6 percent increase from 51.1 to 56.9 percent in matched control ZIP codes.

### The benefits of MIIC don't stop with just the immunization record.

#### MIIC can be used to:

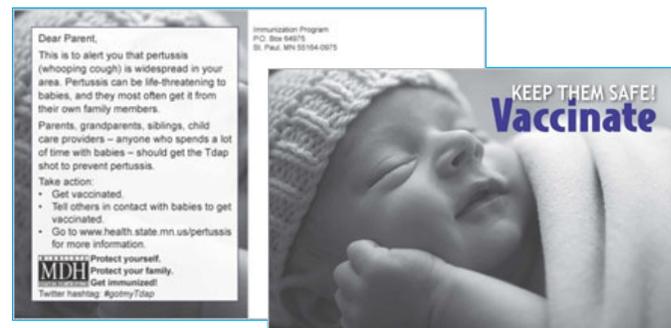
- Generate reminder and recall notices for patients due or behind on their immunizations.
- Prompt health care providers at the point of service when shots are due.
- Monitor and assess immunization rates at the clinic level.
- Identify pockets of need to help target immunization initiatives.
- Communicate with electronic health records (EHRs). MIIC also accepts test and ongoing data submissions so health care providers can be eligible for Meaningful Use incentives.

## FluSafe

FluSafe is an award winning program to track health care worker influenza immunization rates using MIIC. Achieving high influenza immunization rates among health care workers is important to protecting patients and ensuring a healthy workforce. Through this initiative, we collected immunization data from hospitals and nursing homes and then recognized those achieving 70, 80 and 90 percent immunization rates. Participation in FluSafe has grown every year, in:

- 2010-11, 136 facilities participated,
- 2011-12, 197 facilities participated,
- 2012-13, 237 facilities participated, and in
- 2013-2014, we plan to exceed that number.

In May of 2012, FluSafe received the National Influenza Vaccine Summit's (NIVS) Award for Immunization Excellence for a Health Care Personnel Campaign from the CDC and American Medical Association.



## Pertussis Postcards

In Minnesota, we had an outbreak of over 4,100 cases of pertussis (whooping cough) in 2012. Pertussis can be very serious for newborn babies. In fact, nationally 90 percent of pertussis deaths each year are in infants younger than 4 months—the period when an infant cannot yet be fully vaccinated against it. We felt it was vitally important to make sure these babies are protected by building a “cocoon of protection” around them. Toward that end, we sent postcards to families of newborns alerting them of the outbreak, the risk for newborns, and the need for those around them to be vaccinated. Postcards were sent to households in 25 ZIP codes that had at least 20 pertussis cases and a prevalence rate of at least 90 cases per 100,000. MIIC was used to generate mailing labels and postcards were sent every two weeks through the end of 2012. This most recent example marks an exciting future for innovative ways to use MIIC during a disease outbreak.

# Investing in Communities to Reduce HIV/AIDS

We began tracking AIDS in 1982 and HIV in 1985 and since then 10,112 cases of AIDS have been reported in Minnesota. We estimate that an additional 7,516 persons are living with HIV. The numbers don't lie; HIV/AIDS continues to be a major public health issue in Minnesota. Communities of color and men who have sex with men disproportionately share the highest burden of disease.

Limited access to medical care, employment, income, and housing are among the reasons for the disparities. In an effort to decrease the transmission of HIV among the highest risk populations in Minnesota we worked with our community partners to provide outreach and intervention. We provided funding, through a competitive process, to 31 community programs who can provide culturally and linguistically appropriate HIV services to persons at highest risk of infection and to populations that were highly impacted by the disease in Minnesota.

The services provided:

- HIV testing and outreach for persons who were unaware of their HIV status.
- Offered preventive risk reduction education to people living with HIV.
- Re-engaged those out of medical care back into care.
- Provided hepatitis C screening to those individuals that shared injecting drug paraphernalia.

At one of the MDH funded providers, "An HIV+ man who had moved to Minnesota from Florida five months earlier was not adhering to his HIV medications because he could not afford the \$600 Co-pay.

Through the HIV prevention program, he was referred to Hennepin County Medical Center (HCMC) for medical care and enrolled on the AIDS Drug Assistance Program (ADAP) and he was also referred to the Red Door Services for screening of other sexually transmitted infections, which he tested positive for syphilis."

## Community HIV Health Education and Risk Reduction Partners 2012

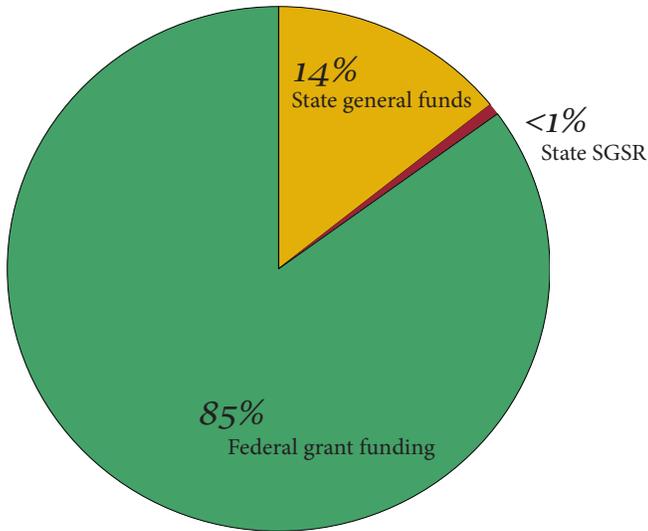
- African Health Action
- Broadway Family Medical
- Centro Campesino
- Face to Face
- Hennepin County Community Health
- High School for Recording Arts
- Indigenous Peoples Task Force
- Minneapolis Medical Research Foundation
- Minnesota Transgender Health Coalition
- Minnesota AIDS Project
- Mwanyagetege
- Neighborhood House
- Pillsbury United Communities
- Rural AIDS Action Network
- Turning Point
- University of Minnesota HIV/STI Intervention and Prevention Studies
- Youth and AIDS Projects
- West Side Community Health Services

Our long term goals are to increase the number of infected people who were aware of their HIV status; increase the number of HIV-infected people linked/retained/re-engaged in appropriate prevention, care, treatment services; and decrease infection and transmission rates, particularly among populations with a disproportionate burden of the disease. Thanks to these community programs we were able to do just that. In 2012:

- 8,160 individuals received behavioral risk screening and counseling.
- 7,154 individuals were enrolled in community level evidence based interventions.
- 87 newly diagnosed HIV positive individuals were identified via 13,578 HIV testing events.
- 85 individuals were referred to HIV preventive services.
- 56 individuals were referred and linked to partner services.
- 36 individuals were linked into medical care.

HIV preventive programs are critical in the HIV treatment cascade. It is the first link in getting persons infected with HIV - but unaware of their status - into medical care. These programs take their services to where people live and likely to congregate to offer HIV health education and risk reduction, conduct on site HIV rapid testing, offer risk assessment and timely counseling to vulnerable individuals. It is a great example of how investing in our communities can lead to great public health outcomes.

## Paying for the Work of IDEPC



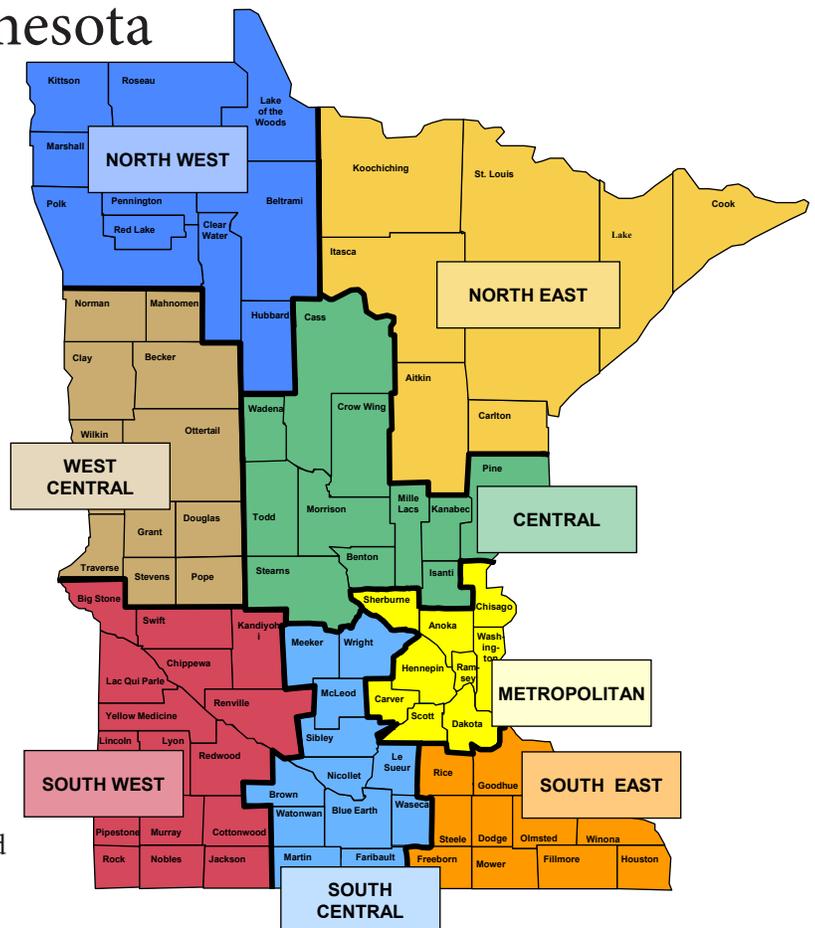
Financial support for our important infectious disease prevention and control work comes primarily from federal grants. Over 85 percent of our division's work is federally funded. Only 14 percent of our activities are supported by the state general fund, and less than 1 percent of our work is funded by State Government Special Revenue (SGSR) funds. Fortunately, IDEPC does receive over \$40 million in vaccines for Minnesota residents. Over the past 10 years, our funding has increasingly relied on federal funds as state funding has declined. As a result, much of our work is increasingly being driven by federal expectations and requirements.

## IDEPC All Around Minnesota

IDEPC has eight district epidemiologists located in MDH district offices in the Metro, Duluth, Fergus Falls, Bemidji, Marshall, St. Cloud, Mankato and Rochester.

The role of the district epidemiologist is to:

- Enhance surveillance and outbreak investigation of reportable infectious diseases throughout Minnesota.
- Provide technical assistance and training to local public health departments, health care providers, tribal health officials, school districts, and the general public on the surveillance, prevention, and control of infectious diseases.
- Perform reportable disease surveillance and outbreak investigation, often providing support to local public health departments who lack the capacity to actively investigate individual cases or outbreaks of infectious disease.
- Participate on local and regional emergency preparedness teams to prepare response plans and conduct training exercises including planning for pandemic influenza.



# Looking Forward

We look forward to 2014 and the opportunities to protect the health of Minnesotans! We will continue to provide 24/7 emergency response capability to assure early and rapid detection, investigation, and mitigation of infectious disease threats and outbreaks and respond to public health emergencies. We will always look for emerging infectious disease trends and recommend evidence-based policy for infectious disease prevention measures in collaboration with our federal, state, and local public health partners. At the time this annual report went to print,

...we were monitoring global infectious disease threats such as avian flu (H7N9) in China, polio in Somalia and Kenya, and a novel coronavirus called MERS-CoV in the Arabian Peninsula. With global air travel, these infectious diseases have the potential to be an airplane ride away from being introduced in Minnesota.

...we were looking for and responding to emerging health threats, such as the spread of the blacklegged or deer tick

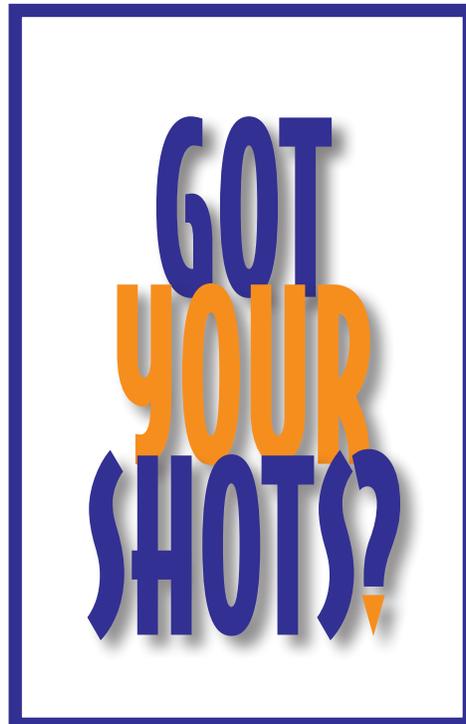
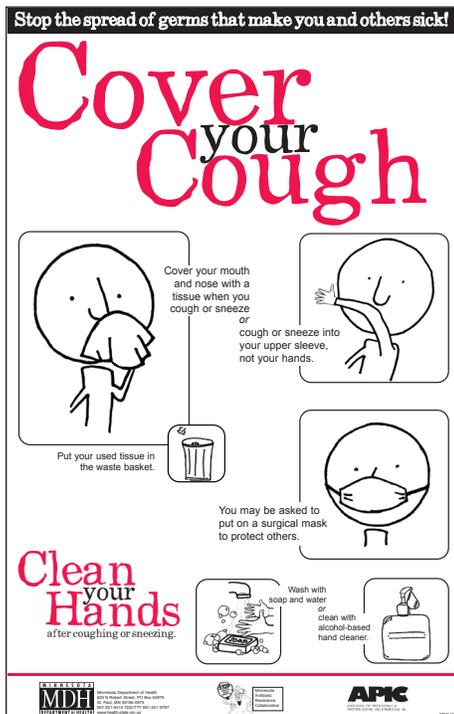
across most of Minnesota's forested regions and the spread of tick borne disease such as Lyme disease and other new forms of tick borne diseases, including, ehrlichiosis and Powassan disease.

...we were looking for and responding to rare and highly dangerous health threats, such as fungal meningitis and *Naegleria fowleri*, the organism that causes primary amebic meningoencephalitis (PAM).

...we were continuing to work with our health care providers and local public health to promote vaccination to prevent devastating diseases such as polio, pertussis, and measles.

...we were working to prevent chlamydia and other sexually transmitted infections by raising community awareness, improving education, increasing screening and treatment, and assuring that services are affordable and accessible.

Remember! You can prevent the spread of infectious disease. Show your commitment to preventing the spread of disease by following the simple advice in these posters.





For more information about the Minnesota Department of Health Infectious Disease Epidemiology, Prevention, and Control Division (IDEPC) Division visit:

[www.health.state.mn.us/divs/idepc](http://www.health.state.mn.us/divs/idepc)



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