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**1. Babesiosis in Wisconsin, 2007-2011**

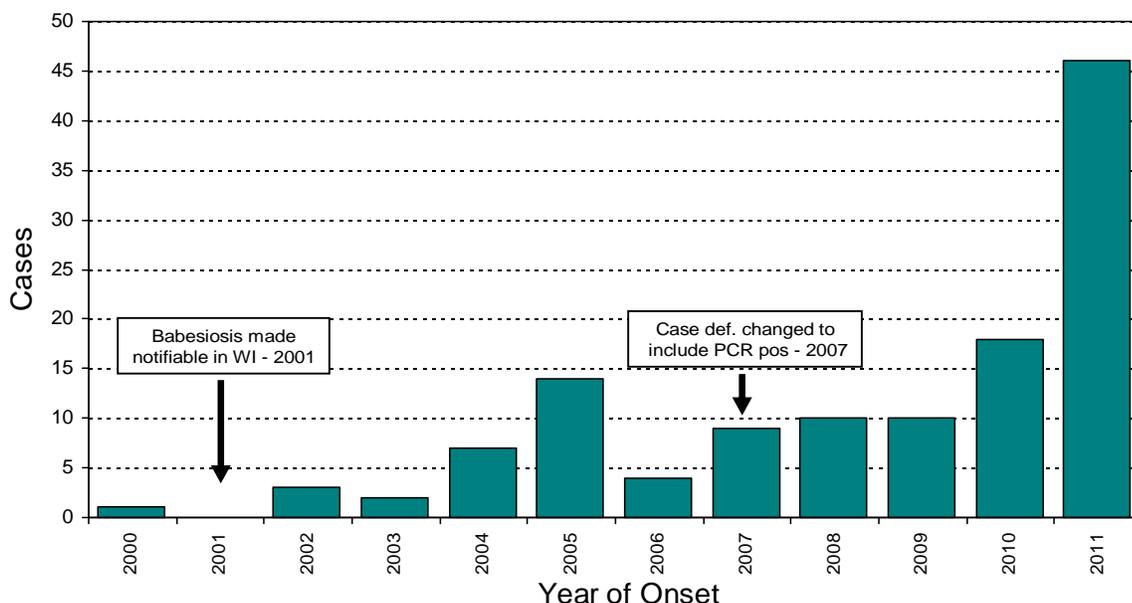
Babesiosis is caused by intraerythrocytic protozoan parasites of the genus *Babesia*. The vast majority of cases occurring in the USA result from infection with *Babesia microti* which is transmitted by *Ixodes scapularis* ticks, commonly known as blacklegged or deer ticks.

The clinical spectrum of babesiosis ranges from asymptomatic infection to severe, even fatal, illness. The parasite invades and destroys red blood cells. Signs and symptoms of illness and laboratory findings typically include fever, myalgia, fatigue, splenomegaly, hepatomegaly, anemia, and thrombocytopenia. Liver enzymes may be elevated and jaundice sometimes occurs as a result of hemolytic anemia. Severe cases can be associated with marked thrombocytopenia, disseminated intravascular coagulation, hemodynamic instability, acute respiratory distress, myocardial infarction, renal failure, hepatic compromise, altered mental status and death. Host factors such as advanced age, asplenia and other immunosuppressive conditions are associated with an increased risk of more severe disease.

Some persons with asymptomatic infections may be parasitemic for months, which poses a risk to the blood supply if such individuals donate blood. Currently, blood donations are not routinely screened for *Babesia* antibodies, although regional screening will likely be implemented soon for donated blood from endemic areas such as the upper midwestern and northeastern states.

Reports of babesiosis occurring among Wisconsin residents have increased substantially during recent years, with 93 confirmed cases reported during calendar years 2007 through 2011 (see figure 1 for long-term trend). Cases are classified as confirmed if the patient has a compatible clinical illness and laboratory results consisting of the visualization of *Babesia* parasites in a blood smear evaluation or a positive PCR assay for *B. microti*.

Figure 1. Reported Cases of Confirmed Babesiosis, Wisconsin, 2000-2011



Among the 93 patients with confirmed cases, the mean age was 66 years (range 10-96). 62 (67%) were males and 73 (78%) were hospitalized. Although cases occurred statewide, most infections were acquired in northcentral and northwestern Wisconsin (figures 2 and 3). Three patients had blood transfusion associated cases, one patient acquired *Babesia* from a transplanted kidney, and the remaining 89 cases were acquired by a tick bite. Two (2.2%) patients died which is below the case fatality rate of approximately 5% cited in published case series. Co-morbid conditions among Wisconsin case patients included asplenia (5), diabetes mellitus (4), renal disease (4), and cancer (3). At least one case had initially been misdiagnosed as malaria, based on the finding of intraerythrocytic inclusions.

Because of the increasing incidence of reported babesiosis among Wisconsin residents, clinicians should increase their index of suspicion for this disease and include acute babesiosis in the initial differential diagnoses for acute febrile illnesses occurring in the setting of possible tick exposure. Early recognition of babesiosis is vital because prompt diagnosis and treatment can be life-saving, particularly among elderly, asplenic, or otherwise immune compromised patients who are at increased risk of severe or fatal babesiosis.

Figure 2. Confirmed cases of babesiosis by county of residence, Wisconsin, 2007-2011 (n=93)

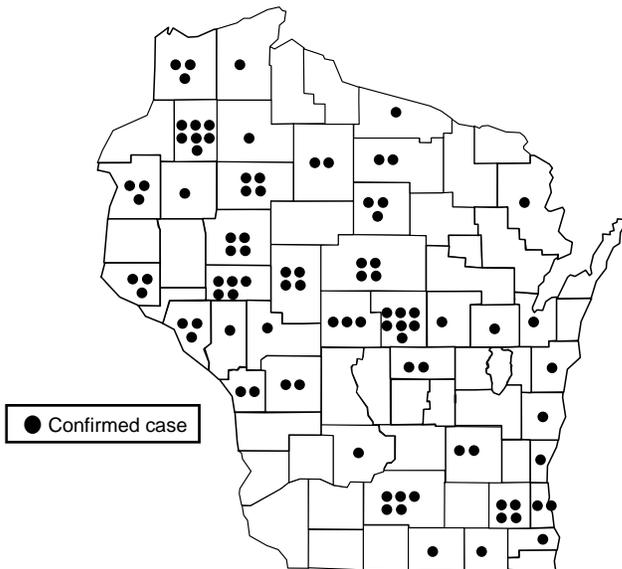
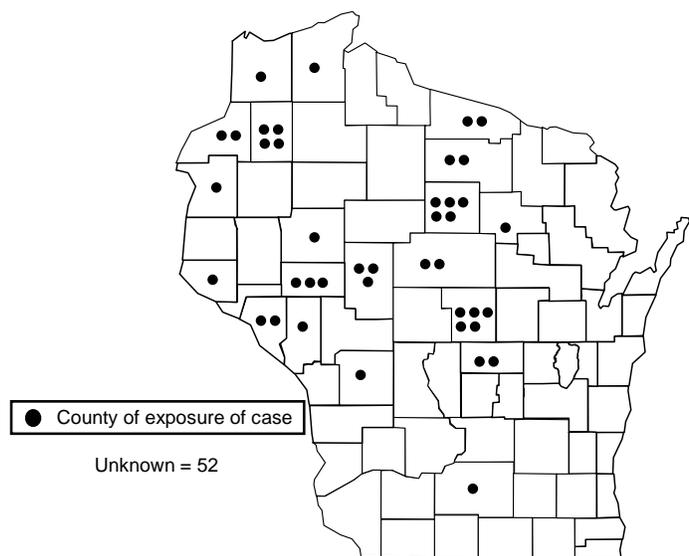


Figure 3. Confirmed cases of babesiosis by county of likely exposure, Wisconsin, 2007-2011 (n=93)



## 2. Redesigned Communicable Diseases website goes live

It's been over a year in the works, but we're pleased to announce the launch of our redesigned Communicable Diseases website at: <http://www.dhs.wisconsin.gov/communicable/index.htm>. The site features a comprehensive A-Z list of communicable disease topics relevant to Wisconsin residents. Each topic webpage includes a brief introduction to the disease, general information about the disease, information for health professionals and additional disease resources. Wisconsin case reporting guidelines, report forms and worksheets (commonly referred to as the EpiNet) were moved from the HANplus website and are now available at each disease webpage under *Information for Health Professionals*. In addition, all of the guidelines, forms and worksheets are compiled into a 13 MB file identified as *EpiNet – complete printable version* in the A-Z topic list. The new website provides easy access to disease-specific public health information, and allows for timely updates and posts to individual disease topics. We welcome feedback regarding the website by contacting Barb Anderson ([Barb.Anderson@wi.gov](mailto:Barb.Anderson@wi.gov)).

## New Resources Available on the Communicable Diseases website

- **Botulism Management Protocol** The protocol includes details for reporting and investigation of all forms of botulism (infant, foodborne, wound, other).  
<http://www.dhs.wisconsin.gov/communicable/Foodborne/PDFfiles/BotulismProtocol.pdf>
- **Arboviral diseases hub** provides general arboviral disease and prevention information and links to the specific diseases including West Nile virus, Powassan, La Crosse Encephalitis and Dengue Fever.  
<http://www.dhs.wisconsin.gov/communicable/ArboviralDiseases/Index.htm>
- **Invasive bacteria hub** includes links to disease-specific websites for Group A streptococcal, Group B streptococcal, *Haemophilus influenzae*, *Neisseria meningitides* and *Streptococcus pneumoniae* infections.  
<http://www.dhs.wisconsin.gov/communicable/InvasiveBacteria/Index.htm>
- **Tickborne diseases hub** provides an introduction to the variety of tickborne diseases seen in Wisconsin, tick bite prevention measures, training links for health professionals and links to each of the tickborne diseases, including anaplasmosis, babesiosis, ehrlichiosis and Lyme disease. <http://www.dhs.wisconsin.gov/communicable/Tickborne/Index.htm>

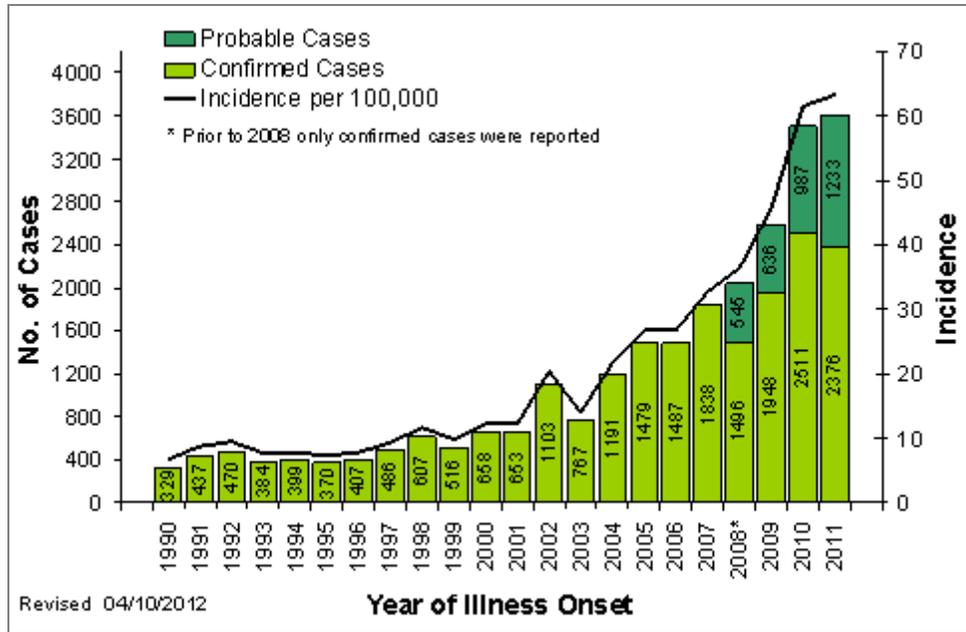
### 3. Modified Lyme disease surveillance reporting requirements, Wisconsin, June 2012

Recognizing the need to have a sustainable Lyme disease surveillance program, the Wisconsin Division of Public Health (DPH) collaborated with health professionals in clinical settings and local health departments (LHDs) to modify the reporting requirements for Lyme disease surveillance in Wisconsin effective June 1, 2012. To reduce the time needed to gather detailed patient medical information and classify cases, the modifications provide for an option to report only physician-diagnosed erythema migrans (EM) rash cases occurring among Wisconsin residents. Laboratories and physicians should continue to improve Lyme disease detection, and those clinical activities should be unaffected by the changes in surveillance.

Since Lyme disease was added to Wisconsin's reportable disease list in 1980 and to the national list of reportable diseases in 1991, surveillance of reported cases has enabled public health officials to track the emergence of Lyme disease from a novel infection to what is now the most commonly reported vectorborne disease in the United States. Neither past nor current surveillance programs capture every physician-diagnosed case of Lyme disease. In one study conducted in the area of Wisconsin served by the Marshfield Clinic, only one third of potential Lyme disease cases diagnosed during 1992-1998 were captured by the state surveillance system.<sup>1</sup> Nevertheless, surveillance data have been essential for describing the seasonality of the disease and the age groups and geographic areas at greatest risk. In Wisconsin, human case surveillance data, along with tick surveys, have been critical to documenting the steady and dramatic geographic expansion of Lyme disease occurrence and *Ixodes scapularis* distribution from the northwestern region of Wisconsin to the east and south.

Throughout the 1990s, the reported Lyme disease incidence in Wisconsin was relatively stable, averaging 440 confirmed cases reported annually. The incidence increased markedly during the 2000s. More than 7,100 Lyme disease reports were received by DPH during 2011, of which 3,609 represented confirmed or probable cases (Figure 1). Much of this increase is real, and likely attributed to the expanding geographic range of the *Ixodes scapularis* tick, greater physician recognition of human infections and increased public awareness of the disease.

**Figure 1. Reported cases of confirmed and probable Lyme disease in Wisconsin, 1990-2011 (25,313 total cases)**



Other contributing factors to the increase in incidence include the expansion of the Council of State and Territorial Epidemiologists (CSTE) and Centers for Disease Control and Prevention (CDC) Lyme disease case definition adopted in 2008 to capture probable cases, and the implementation of the Wisconsin Electronic Disease Surveillance System (WEDSS) and electronic laboratory reporting (ELR) system. The improvements to reporting increased the number of Lyme disease reports that healthcare providers and public health officials investigated, particularly in areas of high disease incidence.

Four years after implementing the revised Lyme disease national surveillance case definition it became apparent that Lyme disease surveillance placed a substantial burden on reporters of the disease and public health agencies. Requiring that every report of suspected Lyme disease be investigated for surveillance reporting was no longer sustainable in Wisconsin. A notification letter was emailed on May 22, 2012 to inform public health agencies and healthcare providers that the DPH was modifying the requirements for Lyme disease reporting in Wisconsin to reduce the Lyme disease surveillance burden, effective June 1, 2012. A summary of the requirements follows.

**Lyme disease reporting via Wisconsin Electronic Disease Surveillance System (WEDSS) or paper copy**

**Required reporting:**

- Continue to report all cases of erythema migrans (EM) rash diagnosed by a physician or a medical professional and occurring in a Wisconsin resident.
  - For surveillance purposes, EM rash is defined as a red macule or papule that expands during a period of days to weeks to a diameter that is greater than or equal to 5 cm. The skin lesion often has partial central clearing.
- Continue to report date of illness onset and patient demographic information including address, birth date, sex, race and ethnicity.
- Laboratories must continue to report all Lyme (*Borellia burgdorferi*) positive laboratory test results.

**Optional reporting:**

The following reporting information is now optional, instead of required as with the previous procedure.

- Unless requested by the local health department, reporting of cases without EM rash is now optional.
- Unless requested by the local health department, reporting of signs and symptoms other than EM rash is now optional.

## How do the modified reporting requirements affect public health and health care partners?

- **Laboratories** will continue to report all Lyme disease positive test results to LHDs or the State.
  - In WEDSS, laboratory results are assigned to a new WEDSS disease *Lyme Laboratory Report*. Laboratory results that are reported via paper copy can continue to be sent to the LHDs and the State.
- **Health Care Providers** (physicians, nurse practitioners, infection preventionists, and medical professionals, etc.) will continue to provide patients' demographic information including address, birth date, sex, race, and ethnicity of patients with clinical signs of EM rash.
  - An EM rash should be reported and may be documented as a clinical sign or observation in medical records using a variety of descriptions besides "EM rash" including:
    - Bull's-eye rash or lesion (rash with central clearing)
    - Enlarging or expanding rash around tick bite
    - Large red macule, papule, rash or areaThe key is to determine if the described rash is at least 5 cm (or 2 inches) and is associated with a tick bite or exposure to potential tick habitats.
  - Date of onset is the earliest date reported by the patient when signs or symptoms of illness began, and is always required when reporting cases of disease.
  - Unless requested by the LHDs, reports of cases with confirmatory and non-confirmatory clinical signs and symptoms without EM rash are optional. Reporting of signs and symptoms other than EM rash, exposure, and treatment information is also optional.
- **Local health departments (LHDs)** should request and review reports with clinical symptoms of EM rash, classify as a confirmed case if clinical criteria are met, and send to state when local follow-up is complete. Any clinical information received should be entered into WEDSS as a Lyme disease incident, even if the patient already has a Lyme Laboratory Report incident.
  - LHDs are *not* expected to review incoming laboratory reports or call providers for clinical signs and symptoms when a positive laboratory report is received.
    - Lyme laboratory results that are received electronically at the LHDs or at the state in the staging area will be auto-imported into WEDSS as a "Lyme Laboratory Report", and are automatically compiled for each patient with a "Result Imported" process status. Paper copies of laboratory results received at the LHDs can be entered into WEDSS at the LHDs or forwarded to the state for entry. All laboratory results that have been entered into WEDSS will be accessible to LHDs.
  - LHDs that choose to prompt their providers to report EM rash cases by relying on positive laboratory reports can obtain a spreadsheet of reported positive laboratory results for their jurisdiction via the WEDSS Report Server SQL Server Reporting Services (SSRS).
  - LHDs should educate the providers in their jurisdiction to report all cases with EM rash meeting surveillance criteria and encourage the local providers to report via WEDSS instead of by paper copy for more timely and efficient reporting.
  - LHDs that choose to continue reporting Lyme disease cases using the complete CDC classification algorithm should contact their local health care providers to arrange for complete case follow-up. This approach may be preferable in counties with few reported cases where Lyme disease is more recently emerging.

The DPH will continue to participate in CDC's national Lyme disease surveillance program. The reported number of Lyme disease cases in the *Morbidity and Mortality Weekly Report (MMWR)* will likely include a note indicating the modification of Wisconsin's reporting requirements. Please contact the DPH (BCDER/CDES) vectorborne diseases epidemiologist if you have any questions or suggestions regarding the modified surveillance requirements.

### What's new on the Lyme disease front?

- Wisconsin Lyme disease information can be found at the BCDER Tickborne Diseases website: <http://www.dhs.wisconsin.gov/communicable/Tickborne/Index.htm>
- CDC and Medscape teamed up to produce a video regarding testing for Lyme disease. The video and other continuing education opportunities are available at the *CDC Lyme Disease - Resources for Clinicians* webpage: <http://www.cdc.gov/lyme/healthcare/clinicians.html>
- For clinicians, medical facilities and public health professionals wanting to spread the word on preventing and recognizing Lyme disease, CDC continues to expand their public education tool kit with posters, brochures, signs and even a quiz. <http://www.cdc.gov/lyme/toolkit/index.html>
- The CDC Clinician Outreach Communication Activity (COCA) call in March 2012 addressed the epidemiology of Lyme disease, early signs and symptoms of Lyme disease, appropriate use of diagnostics, recommended treatment guidelines, and prevention practices. The webinar was recorded and is available at: [http://www.bt.cdc.gov/coca/calls/2012/callinfo\\_030612.asp](http://www.bt.cdc.gov/coca/calls/2012/callinfo_030612.asp). Free CE credits are offered for a variety of medical disciplines.

#### Reference:

<sup>1</sup> Naleway AL, Belongia EA, Kazmierczak JJ, Greenlee RT, Davis JP. Lyme disease incidence in Wisconsin: a comparison of state-reported rates and rates from a population-based cohort. *Am J Epidemiology* 2002;155:1120-7

#### **4. Wisconsin agencies critical to success of the multistate outbreak investigation of *Salmonella* Bareilly and *Salmonella* Nchanga infections associated with a raw scraped ground tuna product**

A coordinated multistate foodborne outbreak investigation that began in early March 2012 and involved many local, state, and federal agencies identified raw scraped ground tuna product as the source of *Salmonella* Bareilly and *Salmonella* Nchanga infections that sickened 390 people in 27 states and the District of Columbia.

Wisconsin partners participating in this investigation included staff of local health departments in Milwaukee, Waukesha, Washington, Fond du Lac, and Dane counties, the Wisconsin Division of Public Health (DPH), the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP), and the Wisconsin State Laboratory of Hygiene (WSLH). Wisconsin partners worked closely with partners at the federal Centers for Disease Control and Prevention (CDC) and Food and Drug Administration (FDA) to investigate the outbreak and identify the source of the *Salmonella*. On April 13, 2012, Moon Marine USA Corporation voluntarily recalled three production dates of frozen raw yellowfin tuna product and on April 24, 2012 the DATCP-Bureau of Laboratory Services (BLS) isolated the outbreak strain of *Salmonella* Bareilly from recalled product.



Ground yellowfin tuna product sampled during the outbreak investigation (photo courtesy of DATCP-BLS).

The success of this investigation highlights the importance of collaboration between public health partners and the benefits of maintaining robust routine surveillance systems that ensure outbreaks are detected early. Particularly critical to the success of this investigation were the efforts of local health department staff in Wisconsin who supported the national investigation. Routine enteric interviews conducted with patients by Wisconsin local health department staff prior to establishing their connections to this outbreak were essential in generating the initial hypothesis that sushi consumption might be associated with the illnesses.

Throughout the investigation Wisconsin public health nurses, epidemiologists and sanitarians at local health departments communicated regularly with epidemiologists and food safety personnel at the DPH and DATCP to ensure patient interviews and assessments at restaurant and other food service establishments were being conducted quickly and thoroughly. The CDC FoodCORE funded student SOS Team at DPH also assisted local investigators by conducting some patient interviews during evening hours.

Local health departments supported the national investigation in the following ways:

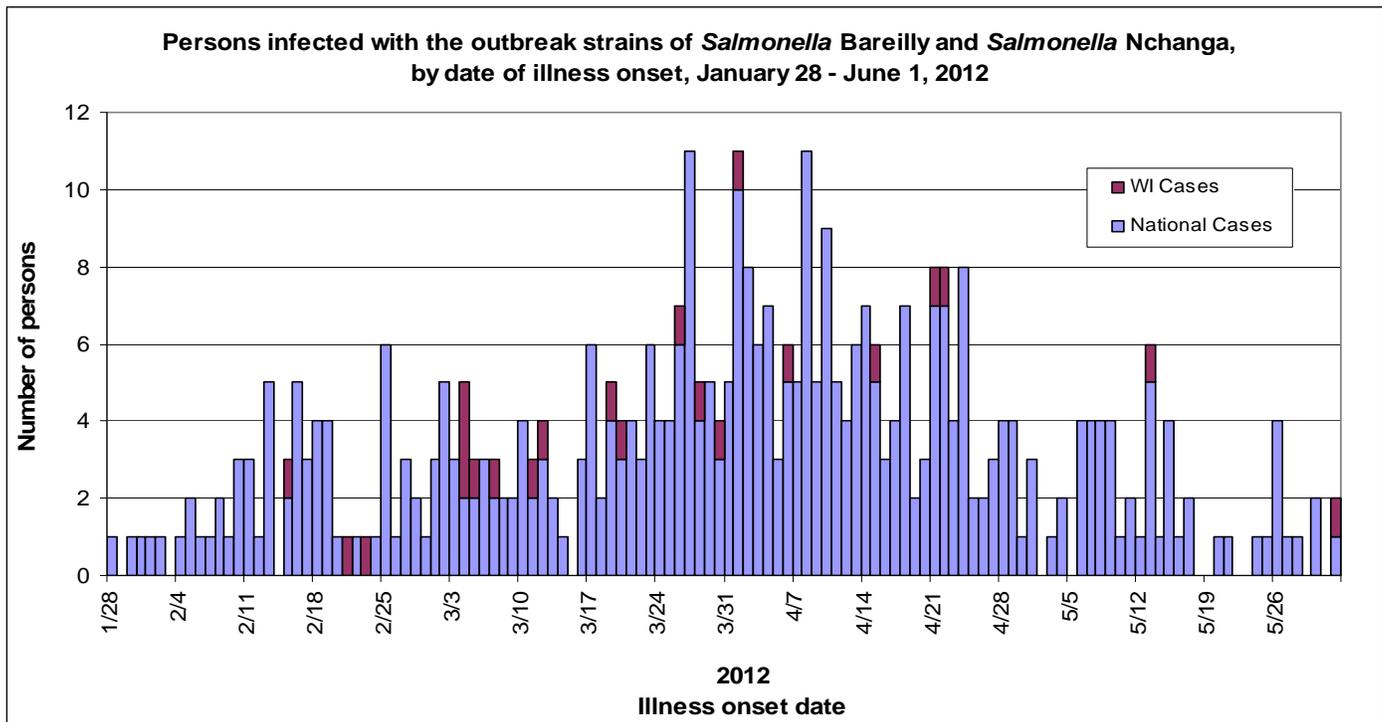
- Provided timely interview information from patients regarding their food histories and other exposures.
- Completed in-depth assessments at restaurants and grocery stores.
- Collected invoice information for products of interest.
- Collected samples of tuna for testing by the DATCP-BLS.
- Gathered data from restaurants and grocery stores to assist in determining the background rates of consumption of particular sushi items.

These efforts greatly contributed to the success of the trace back investigation of food consumed by ill individuals from the point of consumption through the distribution chain to its source.

### Wisconsin Case Summary

Since February 2012 a total of 22 Wisconsin residents had laboratory-confirmed *Salmonella* infections with pulsed field gel electrophoresis (PFGE) patterns (“DNA fingerprints”) that match the PFGE patterns of the national outbreak strains. The Wisconsin cases included 21 cases of *Salmonella* Bareilly infection and 1 case of *Salmonella* Nchanga infection. Four of the 22 patients were hospitalized and all of the patients have recovered from their infection. Onset dates among Wisconsin patients range from February 15, 2012 through June 1, 2012.

County	Cases
Dane	1
Milwaukee	9
Washington	3
Waukesha	9
<i>Total</i>	<i>22</i>



To read more about the investigation and the role Wisconsin health officials had during the investigation, see the CDC Timeline of Events: <http://www.cdc.gov/salmonella/pdf/bareilly-04-12-timeline051712.pdf>

Additional information on this outbreak can be found at:

- CDC Outbreak Site: <http://www.cdc.gov/salmonella/bareilly-04-12/index.html>
- FDA Outbreak Site: <http://www.fda.gov/Food/FoodSafety/CORENetwork/ucm298741.htm>

## 5. Upcoming Meetings, Trainings & Important Dates

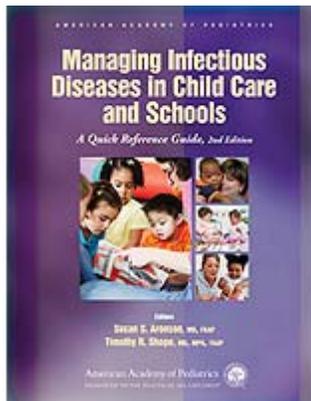
- July 28, 2012 **World Hepatitis Day** ([www.nvhr.org](http://www.nvhr.org))
- August 2012 **National Immunization Awareness Month**
- September 2012 **National Food Safety Education Month**
- September 28, 2012 **World Rabies Day** ([www.worldrabiesday.org](http://www.worldrabiesday.org))



**Tickborne diseases in Wisconsin** – Thursday, August 2, 2012, 12:15-1:15 pm  
Physician's Lunch Hour Seminar at Ministry Door County Medical Center Conference Room  
Target audience is clinical healthcare professionals. For more information please contact Laurel Wise at Ministry Health (920-746-3741).

**Fight the Bite – Beware of tickborne illnesses in Wisconsin** – Monday, August 13, 2012, 1:00-2:30 pm  
The USS Liberty Memorial Public Library in Grafton is hosting this public presentation provided by Diep (Zip) Hoang Johnson, DPH vectorborne epidemiologist. For more information please contact John Hanson at the library (262-375-5315).

**Tickborne diseases in Wisconsin** – Saturday, August 25, 2012, 1:00-4:00 pm  
Diep (Zip) Hoang Johnson will be presenting information on recognizing and preventing tickborne diseases at the 2012 Wisconsin Woodland Owners Association (WWOA) Annual meeting held at the Madison Marriott West in Middleton, WI. More information is available at the meeting website: <http://wisconsinwoodlands.org/annualmeeting.php>



**WEE Book Club** - Looking to expand your library? Public health professionals in the CDES and LHDs have found the following reference book informative and useful: **AAP – Managing Infectious Diseases in Child Care and Schools “A Quick Reference Guide”**, 2<sup>nd</sup> Ed. 2009. Susan S. Aronson, Timothy R. Shope (Editors). American Academy of Pediatrics. Elk Grove Village, IL.

More information is available at the AAP Bookstore:  
[https://www.nfaap.org/netFORUM/eweb/DynamicPage.aspx?webcode=aapbks\\_product\\_detail&key=44bcf704-e81b-45ac-88ab-c16c6a8c709e](https://www.nfaap.org/netFORUM/eweb/DynamicPage.aspx?webcode=aapbks_product_detail&key=44bcf704-e81b-45ac-88ab-c16c6a8c709e)

The Wisconsin Epi Express is posted online at <http://www.dhs.wisconsin.gov/communicable/WiEpiExpress/Index.htm> and distributed by email to local, tribal, regional and state public health officials and infection preventionists in Wisconsin. Suggestions for article topics are welcomed. Distribution list removal or addition requests and topic suggestions should be sent to: Barb Anderson: [Barb.Anderson@wi.gov](mailto:Barb.Anderson@wi.gov).

