

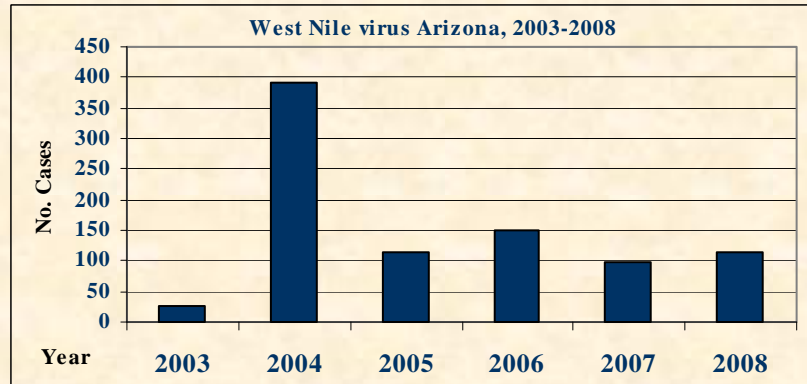
West Nile Virus



West Nile virus (WNV) continues to be a concern for Arizonans. In 2008, Arizona ranked second in the country for WNV cases. There were 114 cases and 7 deaths (6.3%). Since 2003 there have been almost 900 cases and more than 40 deaths. From 2005 through 2008, the number of WNV case in Arizona has remained fairly constant with approximately 100 cases per year .

In this issue:

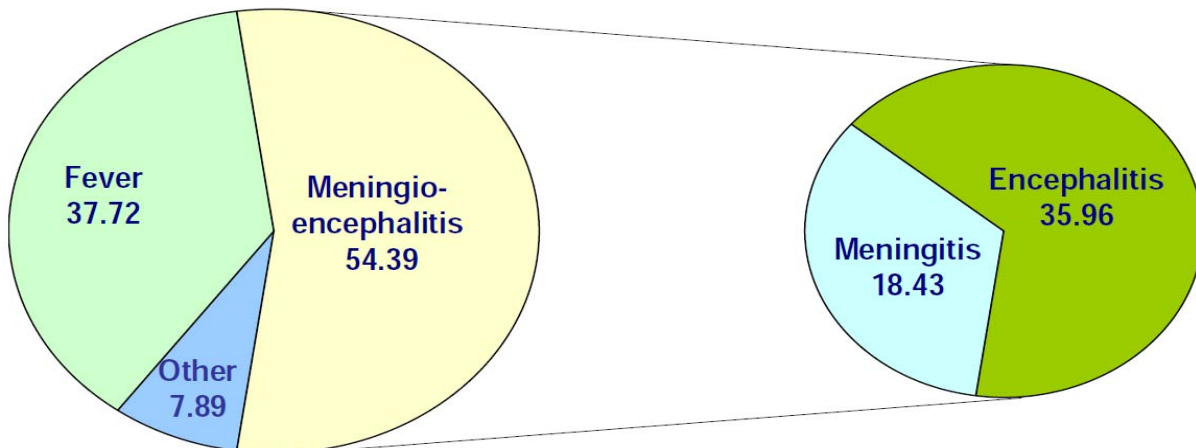
West Nile virus	1-2
Hantavirus	3
Melioidosis	3
Arizona State Health Laboratory	4
Rabies	4-8
Brucellosis	9
Salmonella in Turtles	10
Pet-Associated Fungal Infection	10
Leptospirosis	11
Plague	12
Rocky Mountain Spotted Fever	12
Dengue	13
Malaria	13
Chagas' Disease	13



Each year, the majority of cases reported have clinical presentations of meningoencephalitis. Of this group, there are more encephalitis cases than meningitis. Reporting of cases with neurologic involvement is typical because these patients are more often seen at hospitals due to the severity of the disease. Persons presenting with meningoencephalitis are also more likely to have long-lasting sequelae or die from West Nile virus infection.

Compared to 2007, there were more specimens submitted for surveillance in 2008 but a lower percentage was positive. This indicates improved surveillance and knowledge of the disease and possibly the efficacy of prevention efforts.

West Nile virus, Arizona 2008 Clinical Presentation (N=114)



ADHS Vector-Borne & Zoonotic Disease Newsletter 2008

West Nile Virus

Species	No. Tested Positive 2007	Total Submitted 2007	% Positive	No. Tested Positive 2008	Total Submitted 2008	% Positive
Avian	10	33	30.30	5	54	9.26
Sentinel	35	134	26.12	62	208	29.81
Veterinary	19	61	31.15	6	93	6.45
Human	98	268	36.57	114	386	29.53



West Nile virus is preventable. There are several recommendations, which when followed, can decrease a person's chance of getting the disease and can decrease mosquito populations.

- Regularly wear mosquito repellent such as DEET or picaridin. Be sure to follow the label.
- Wear long sleeves/long pants when outdoors at night.
- Eliminate standing water, which allows mosquitoes to breed. Check for conditions outside the home that may provide potential for mosquito breeding, such as poorly maintained swimming pools, cans, bottles, jars, buckets, old tires, drums and other containers with water.
- Change water in flower vases, birdbaths, planters and animal watering pans at least twice a week.
- Repair leaky pipes and outside faucets, and move air conditioner drain hoses.
- Report mosquito breeding problems (e.g. green pools) to your local environmental health office.

False positive test results, CDC investigation

In September 2008, the Centers for Disease Control & Prevention (CDC) became aware of an increase in false positive lab results for WNV being generated by a commercially available IgM assay. A multistate investigation was launched to assess the scope of this problem. During the 2008 arbovirus season, the assay kit in question was used to test specimens from over 500 patients in 40+ states. Of these 500 patients, specimens from over 150 patients were still available and were re-tested at the CDC. As it turns out, this particular assay kit generated a false positive rate of over 70% based on the samples that were re-tested. The implications of this un-reliable testing were that many cases of WNV reported across the country may not have been valid, and re-testing of many patients was warranted.

Every year Arizona receives lab reports from the commercial lab using this assay kit. In past years ADHS has recommended having any available specimens sent to the Arizona State Health Lab (ASHL) for confirmation testing. ADHS will continue to make this recommendation in regards to this particular lab and test assay kit.

Serum or CSF specimens can be submitted to the ASHL. Under most circumstances, IgM positive results reported by commercial labs as a numeric value or titer are acceptable in determining case classification. However, in the following circumstances, confirmatory testing at the Arizona State Health Laboratory is strongly recommended for any "positive" commercial lab result:

- "Positive" results are reported out-of-season, or early in the season.
- "Positive" results are reported in areas that have no surveillance evidence of arbovirus activity.
- Results are reported simply as "positive" or "reactive" without any numeric values.
- Numeric "positive" results are reported that are borderline (ie, close to the cut-off).

If you would like a second opinion on a suspect human case or have questions on commercial lab results, please contact ADHS-VBZD staff at (602) 364-4562.

For more information on the CDC investigation of false positive test results please visit the CDC website at: http://www.cdc.gov/ncidod/dvbid/westnile/wnv_DiagnosticsUpdate.html

For more information about West Nile Virus in Arizona, call the Arizona Department of Health Service's Vector-Borne & Zoonotic Disease program at (602) 364-4562 or visit these websites: <http://www.westnileaz.com> or <http://www.cdc.gov/ncidod/dvbid/westnile/index.htm>. During the spring, the Arizona Game & Fish is asking for the public's assistance in reporting illness and death in wetland birds like ducks, geese, shorebirds, raptors, hawks, owls and eagles. This reporting is requested to enhance surveillance efforts for H5N1 avian influenza. To report sick or dead wetland birds or raptors, please call the toll-free hotline at: 1-(877)-97-AVIAN or <http://www.azgfd.gov/AI>.

Hantavirus Pulmonary Syndrome

Hantavirus pulmonary syndrome (HPS) is caused by rodent-borne viruses which are shed in the urine, feces and saliva of rodent reservoirs. In Arizona, the specific hantavirus responsible for most (if not all) human infections is the *Sin Nombre virus* which is carried primarily by deer mice and related species (Genus *Peromyscus*). People usually become exposed to the virus through the inhalation route when disturbing / aerosolizing dust in mouse contaminated environments. People living in rural areas are at greater risk for exposure to infected wild mice.

The incubation period for HPS is a few days to six weeks. Prodromal symptoms commonly include fever (usually 101° degrees F or greater), myalgias, abdominal pain, cough, nausea and vomiting. Flu-like symptoms are followed in 1-10 days by rapid onset of respiratory distress. Most HPS case patients require admission to the hospital ICU, intubation / mechanical ventilation and intensive hemodynamic monitoring. Case fatality rate of HPS cases nationwide is approximately 35%.

During the ten year period 1998-2007, 40 cases of HPS were reported in Arizona. Cases were reported in six counties, including Apache (18), Coconino (5), La Paz (1), Maricopa (7), Navajo (8), and Pinal (1). Ages have ranged from 13 to 71 with a median of 37. Twenty-five (63%) were male. Thirteen cases (33%) were fatal.

In 2008, one case of HPS was reported in Arizona in an adult female in Navajo County. Onset of flu-like symptoms occurred in late April and was followed by the development of dyspnea several days later. This was a mild case of HPS and the patient recovered. The HPS diagnosis was confirmed by laboratory testing. This case patient lived in a very rural area.

In 2008, as in prior years, we continued to have false positive laboratory results reported from some of the commercial laboratories. Over 25 “positive” reports for hantavirus were received last year, of which only one case was confirmed. For this reason, any “positive” result reported from an outside lab should be treated as a screening test, and follow-up testing/confirmation at the Arizona State Health Laboratory (ASHL) or CDC is recommended.

Melioidosis in Graham County

In late October of 2008 the Arizona State Health Lab (ASHL) received a blood specimen that tested positive for a rare and unusual bacterium. *Burkholderia pseudomallei* was culture and PCR confirmed not only by ASHL but also the Utah State Lab and TGen North. This led to an investigation that is still ongoing and that has involved several agencies and collaboration with international experts. Environmental sampling and a serosurvey are being conducted and an extensive medical review and interview process has taken place.

The patient is an adult male, residing in rural Graham County, with no travel history outside of the United States. *Burkholderia pseudomallei* is endemic to Southeast Asia and northern Australia and has never been found in the U.S. Infected persons diagnosed in the U.S. have invariably had travel to an endemic area.

Burkholderia pseudomallei causes a range of illness including pneumonia, skin, tissue and organ abscess, or sepsis. The mortality rate can be 20-50%, depending on geographic location, timeliness of diagnosis and treatment, and disease manifestation. The most common risk factor for this disease is diabetes.



For more information on *Burkholderia pseudomallei*, contact the ADHS Vector-Borne & Zoonotic Disease program at vbzd@azdhs.gov or (602) 364-4562.

Arizona State Health Laboratory



Arizona State Laboratory– Phoenix
Cindy Yu, Heather Bickley, Sherry Gower, Michelle Pickel, and Kate Fitzpatrick



Arizona State Laboratory– Tucson
Jeremy Vanderzyl, Gary Davis, Celina Mendez, Kevin Mead

Note: The Tucson Laboratory was closed on 3/20/09 due to the budget deficit.

**Animal submissions for rabies testing should be sent to: Arizona State Health Laboratory
Attention: Virology 250 N. 17th Ave. Phoenix AZ 85007 Tel: (602) 542-1188**

Rabies

The three reservoir animals for rabies in Arizona are bats, skunks, and foxes. These animals are considered reservoir hosts, as these species maintain the virus circulating in nature. Raccoons are important reservoir hosts in eastern United States, but fortunately thus far, not in Arizona. When animals other than reservoir species become infected with rabies, public health and wildlife health officials refer to these as spillover infections.

Arizona set a new record for rabies in 2008. Arizona State Health Laboratory (ASHL) staff confirmed rabies infection in 176 animals out of 2,688 animals tested (6.5%). Of the positive animals, there were 89 bats, 51 skunks, 21 foxes, and 15 non-reservoir animals. The previous record in 2005 for rabid animals was 169 lab-confirmed rabid animals out of 2,481 tested (6.8%). In 2008, spillover infections were documented in seven bobcats, four coyotes, one coati, a mountain lion, a dog and a horse. There were 43 humans and 122 domestic animals exposed to a laboratory confirmed rabid animal.

Variant typing results at the Centers for Disease Control and Prevention (CDC) for the bobcats, coyotes, mountain lion, and dog indicated infection with the Arizona gray fox variant. Although the lab-confirmed rabid bobcats were spread out geographically and chronologically in Arizona, federal public health and wildlife health officials are concerned that the increase in rabid bobcats being reported in both Arizona and Texas could indicate that bobcats may be emerging as a reservoir host. ASHL staff members are currently forwarding specimens from bobcats to the CDC for further study.

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ADHS Vector-Borne & Zoonotic Disease Newsletter 2008

(Continued from previous page– Rabies)

In early 2008, a rabies epizootic emerged in the Oracle area of southeastern Pinal County, which included the following lab confirmed rabid animals: a bobcat which attacked two people at Peppersauce Campground, a skunk found at the same campground; a coatimundi and three skunks within the town of Oracle; a fox in Mammoth; and two skunks in the Catalina area with 15 dogs potentially exposed to one skunk. Pinal County Animal Control provided low cost rabies vaccination clinics for pet owners in the Oracle area. The Oracle Fire Department canvassed the neighborhood with rabies prevention educational messaging.

In March, at the Sheep Crossing Bridge area of the Verde River, approximately 30 miles north of Cave Creek in Tonto National Forest, southeastern Yavapai County, a mountain lion crawled onto a 10 year-old child's shoulders and scratched him. The mountain lion was shot and dissected by the family, and was later submitted by Arizona Game & Fish Department for testing at ASHL. Preventative rabies vaccinations of nine people were recommended due to direct contact with the mountain lion's saliva or internal organs.

In April, a fox attacked two hikers along the Boynton Pass/Vista Trail area north of Sedona, in Yavapai County. A bobcat attacked two hikers in Adobe Canyon, west of Sonoita, in Santa Cruz County. A rabid coyote was reported from the Rainbow Valley area of southern Buckeye in extreme southern Maricopa County, which is in the same area that a bobcat tested positive for rabies in November 2007. Both the bobcat and coyote were the first documentation of fox rabies in southern Maricopa County.

In October, the ASHL confirmed rabies in a dog from eastern Pima County 15 miles west of Benson. The nine-month old dog was a valuable coon hound used for hunting competitions and was fully vaccinated for other diseases, but not rabies. Three humans and ten dogs were considered exposed to the rabid dog. The last lab-confirmed rabid dog in Arizona was in 2002 in Pima County. This dog was a stray that was found at Roper Lake State Park near Safford in Graham County.

In November, the ASHL confirmed rabies in a horse from Morristown south of Wickenburg, in western Maricopa County. Variant typing of the virus performed at the CDC indicated infection with a Mexican-free tailed bat (*Tadarida brasiliensis mexicana*). This variant was found previously in *Myotis* species of bats and in a California resident who had emigrated from Oaxaca, Mexico¹.

In 2008, 16.8% of the bats tested at the ASHL were positive for rabies (compared to 16.9% in 2007). While other wild animal species are important for rabies surveillance and response, bats remain the most common source for human exposures in Arizona. The county and species data of lab confirmed rabid animals for 2008 are provided in this newsletter. Additional information, statistics, and maps on rabies in Arizona can be found online at: <http://www.azdhs.gov/phs/oids/vector/rabies/index.htm>. An educational video and poster for school children on bats and rabies will be disseminated in 2009. This material can also be viewed at the above webpage.

1 Velasco-Villa A, Messenger SL, Orciari LA, Niezgoda M, Blanton JD, Fukagawa C, et al. Identification of new rabies virus variant in Mexican immigrant. *Emerg Infect Dis*. 2008 Dec. <http://www.cdc.gov/eid/content/14/12/pdfs/08-0671.pdf>

ADHS Vector-Borne & Zoonotic Disease Newsletter 2008

Human Rabies Vaccine Supply

In June 2008, the Centers for Disease Control & Prevention (CDC) notified local and state public health officials that both manufacturers of human rabies vaccine (Novartis Vaccines, maker of RabAvert, and Sanofi Pasteur, producer of ImoVax) had limited supplies “necessitating the need for judicious use of these products by health care providers.” The availability and authorization process from these products has fluctuated since that time. Currently, vaccine can only be ordered on a per-patient basis. Vaccine manufacturers are not allowing ordering for stockpiling at healthcare facilities. At this time, only RabAvert is being released for pre-exposure prophylaxis. Priority for pre-exposure prophylaxis is being given for those individuals at greatest rabies exposure risk (e.g., rabies laboratory workers, animal control officers, veterinary staff, and wildlife workers). In lower risk rabies exposure categories (e.g., travelers, veterinary students, etc.), human rabies pre-exposure prophylaxis should be delayed until vaccine supply levels are restored. There is a password process for ordering ImoVax for post-exposure prophylaxis, which requires a rabies risk assessment by a public health official. This system and the limited supply issue are expected to continue through the summer of 2009.

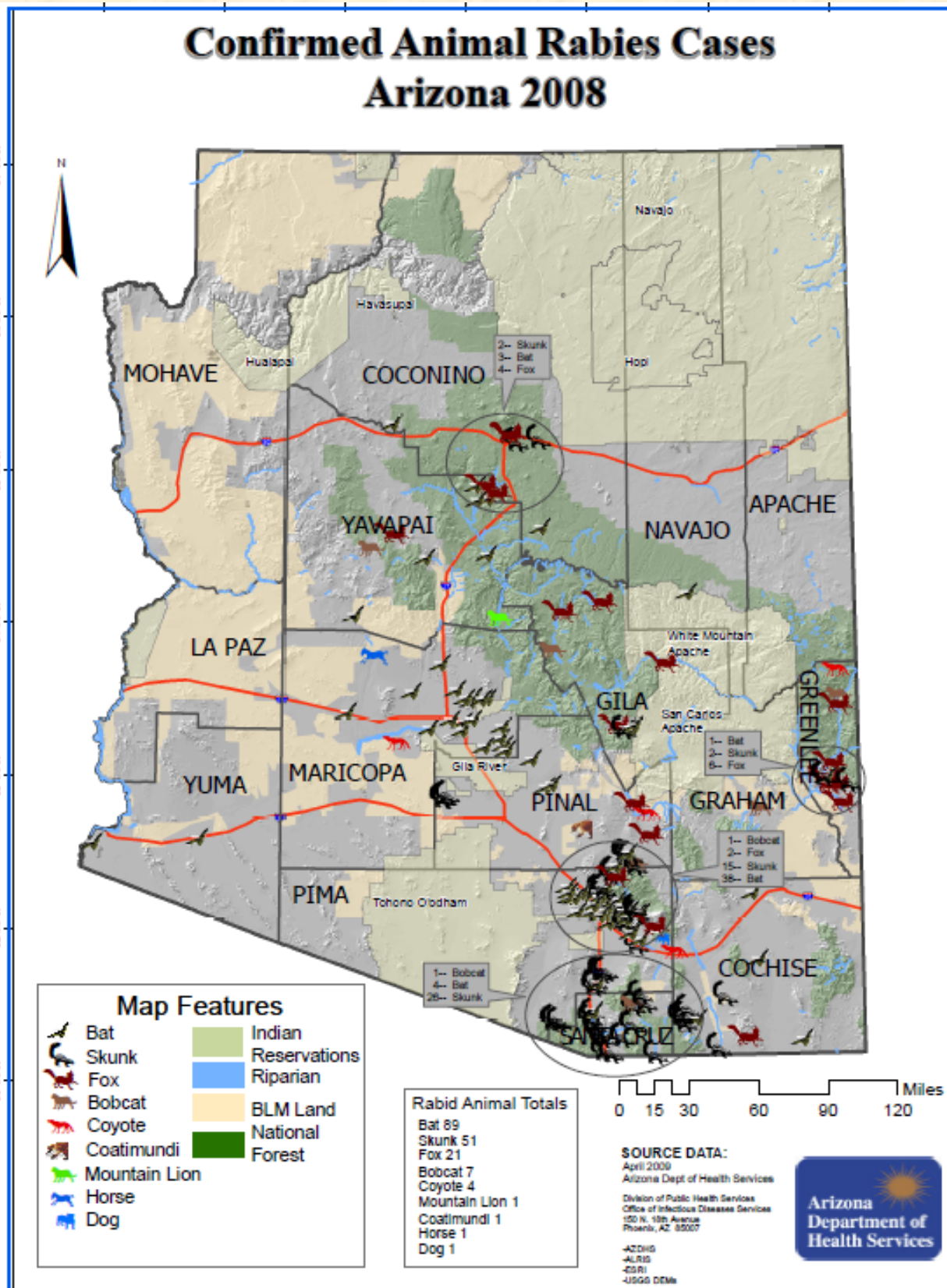
Reason for Interruption of Supply (excerpt from CDC website): “Starting in June 2007, Sanofi Pasteur began renovating its IMOVAX Rabies vaccine production facility in France to maintain compliance with the most current requirements from FDA and the French regulatory body. Prior to these renovations, Sanofi Pasteur established an inventory based on historical levels of sales and projected market demand. The facility is scheduled to be approved and operational by mid-to-late 2009. Until the facility is operational, Sanofi Pasteur has a finite amount of IMOVAX Rabies vaccine.”

Current Supply: As of April 2009, Novartis is releasing human rabies vaccine without restrictions, and Sanofi-Pasteur is releasing rabies vaccine only for post-exposure prophylaxis after approval by local or state public health officials. Updates on the rabies vaccine situation can be obtained on the CDC rabies website <http://www.cdc.gov/rabies> or by calling ADHS at 602-364-4562.

Rabies by Month 2008

(by date of report- results from Arizona State Health Laboratory)

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
Bat	1		1	16	9	9	12	9	13	13	5	1	89
Skunk	4	3	3	9	8	4	3	3	5	2	4	3	51
Fox	1	1	4	2	4	1	1			1	4	2	21
Other	1		5	3	1	1	1		1	1		1	15
Total	7	4	13	30	22	15	17	12	19	17	13	7	176



<http://www.azdhs.gov/phs/oids/vector/rabies/pdf/2008map.pdf>

Brucellosis

Brucellosis is a febrile illness characterized by night sweats, fatigue, anorexia, weight loss, headache and arthralgia. Although there are only about 100 to 200 Brucellosis cases in the United States each year, it is of increased public health concern due to growing demand for raw/unpasteurized dairy products.



Enhanced Brucellosis Surveillance in Arizona

There were 3 confirmed Brucellosis cases in Arizona in 2008, all of which were linked to unpasteurized *queso fresco*, a Mexican style soft cheese. Unsafe *queso fresco* is made with raw milk, in unsanitary conditions, sold door-to-door in non-refrigerated containers, or home-made in Mexico and sent to family members living in Arizona.



The Arizona Department of Health Services (ADHS) has expanded outreach efforts to discourage consumption of raw milk products and explain the importance of pasteurization. A survey was conducted by ADHS to identify specific beliefs and behaviors associated with unsafe *queso fresco* consumption. Information gathered from this survey is included in English and Spanish language educational brochures, which are distributed through a Pima County Women, Infant and Children (WIC) clinic with a caseload of 14,500 people per month.

Additionally, ADHS is conducting a reporting assessment by reviewing medical charts for unreported brucellosis cases. Identification of unreported cases will allow ADHS to determine if there is a need for Brucellosis outreach to physicians or medical facilities.



New! ADHS Brucellosis Website:

You can find more information about Brucellosis on the ADHS website: <http://www.azdhs.gov/phs/oids/vector/brucella/> or call (602) 364-4562.

Arizona Brucella Cases by Year 1999-2008



Salmonella ~ Turtles

In February 2008, a child contracted turtle-associated *Salmonella* Typhimurium in Maricopa County. Cloacal swabs from the patient's two pet turtles (with carapace of less than 4 inches) and water samples from their enclosure were tested at the Arizona State Health Laboratory (ASHL). An isolate from one of the turtles and the specimen from their enclosure matched the PFGE pattern of an isolate from the child. <http://www.cdc.gov/salmonella/typhimurium/>



Trichophyton mentagrophytes

Also in February, three human cases of *Trichophyton mentagrophytes*, a dermatophyte associated with pet rats, were reported in Maricopa County by a dermatologist. Two cases were children who had pet rats purchased from a large pet store chain. One child had symptoms of malaise, nausea, body aches, and significant lesions on the face. Skin scrapings from one of the rats owned by one of the children and a rat from another store of the same chain were positive for *Trichophyton mentagrophytes* at the Arizona Veterinary Diagnostic Laboratory. The quality assurance veterinarian of the large pet store chain took the following steps: treatment of the rats, notified the rat breeder to change management practices to reduce risk for transmission between animals, and adjusted the educational message for a brochure featuring pocket pets.

Leptospirosis– Two Probable Canine Cases in Yavapai County

Two adult dogs from the Cottonwood and Cornville area of Yavapai County were diagnosed with leptospirosis by a veterinarian in late 2008. The dogs are considered to be probable cases by the Arizona Department of Health Services (ADHS). Dogs can act as important sentinels for this disease since dogs in rural areas are more likely than humans to have direct contact with and drink untreated surface water.

Leptospirosis is a bacterial disease that affects humans and animals. Leptospirosis occurs worldwide but is most common in temperate or tropical climates. It is caused by bacteria of the genus *Leptospira*. In humans and animals it causes a wide range of symptoms, and some infected persons and animals may be asymptomatic. Symptoms of leptospirosis include high fever, severe headache, chills, muscle aches, and vomiting, and may include jaundice, red eyes, abdominal pain, diarrhea, or a rash. If the disease is not treated, the patient could develop kidney damage, meningitis, liver failure, and respiratory distress. In rare cases death occurs.

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ADHS Vector-Borne & Zoonotic Disease Newsletter 2008

(continued from previous page– Leptospirosis)

Transmission usually occurs through exposure to water contaminated with the urine of infected animals. Many different species of animals can carry the bacterium. *Leptospira* organisms have been found in cattle, pigs, horses, dogs, rodents, and wild mammals. Humans become infected through contact with water, food, or soil containing urine from these infected animals. This may happen by swallowing contaminated food or water or through skin contact, especially with mucosal surfaces, such as the eyes or nose, or with broken skin. Zoonotic transmission is rare, but possible through direct contact with urine or tissue from infected animals

Brief summary of the two canine cases:

Case 1: In late October, a three year old dog from Cottonwood had a clinically compatible presentation, extremely high titer for leptospirosis (1:51,200 for *L. pomona* serovar on microagglutination at IDEXX), lack of vaccination history for leptospirosis, and "exposure to pasture, wildlife, livestock, and the Verde River". The dog survived and is recovering.

Case 2: In early December, a nine year old Shepard-mix dog from the Cornville area had a clinically compatible presentation, a high titer for leptospirosis (1:51,200 to *L. gryppotyphosa* serovar on microagglutination at IDEXX), lack of vaccination history for leptospirosis, and "exposure to a riparian area with plentiful wildlife and livestock". This dog suffered severe renal failure which was unresponsive to supportive therapy, and the owners elected for euthanasia. This dog had contact with Spring Creek, a tributary of Oak Creek, near the confluence of the Verde River and Oak Creek.

As an extrapolation for human surveillance for leptospirosis, public health officials consider these cases as probable because laboratory confirmation in humans requires a four-fold rise in titer, isolation of *Leptospira* from a clinical specimen, or demonstration of *Leptospira* in clinical specimen by immunofluorescence.

Leptospirosis cases in dogs are rarely reported in Arizona, with the last lab confirmed case in Oak Creek Canyon north of Sedona in the late 1980s. Two equines with significant elevation in leptospirosis titers in Navajo County were reported in 2007.

In early January 2008, public health officials notified Yavapai County veterinarians and the community of these cases so preventative leptospirosis vaccination could be considered for dogs with direct contact with the Verde River or Oak Creek in the Cottonwood area. Yavapai County public health officials also notified local healthcare providers that leptospirosis could be considered as a potential differential diagnosis for patients with compatible clinical signs and exposure history to surface water in the area. In late March 2009, ADHS and Yavapai County public health officials requested race directors of two water events to notify participants of ways to reduce risk of exposure to leptospirosis due to contact with the Verde River.

Veterinarians are encouraged to report suspect canine leptospirosis to the State Public Health Veterinarian at the Arizona Department of Health Services at 602-364-4562. Titers to leptospirosis after a four-serovar subunit vaccination can be as high as 1:12,800 on microagglutination and should be considered when reporting. However, in unvaccinated dogs, titers greater than 1:800 are significant.



Plague

Plague is caused by the Gram-negative bacillus *Yersinia pestis*. Plague bacteria are vectored by fleas, and plague is maintained in nature by a rodent-flea-rodent cycle.

Prairie dogs, ground squirrels, chipmunks, and wood rats are important reservoirs for plague. However, other rodents, rabbits, wild carnivores and domestic cats may be sources for infection to people. In Arizona, plague activity typically occurs in areas above 4,500 feet in elevation, and as a result it is most commonly reported in the northern counties. Plague activity has not been identified in the mountain ranges of southeastern Arizona since the 1980s. Plague activity is often identified as the cause of rodent die-offs (e.g. prairie dogs) and occasionally the cause of morbidity in cats. Plague can be transmitted to humans by flea-bite, direct contact with infected animals, or by inhalation of respiratory droplets expelled by persons or animals (primarily cats) infected with pneumonic plague. Human cases of plague are rare. During the ten-year period 1998-2007, only four human cases of plague were reported in Arizona, all in residents of northern counties (Apache-2, Coconino-1, and Navajo-1).

In 2008, one case of bubonic plague was reported in an adult male in Apache County. The case patient had onset in late September of fever (103° F), headache, chills, diarrhea and left inguinal lymphadenopathy. The patient was seen at a local hospital emergency department, and physicians quickly suspected plague. Specimens were collected for diagnosis, the hospital implemented appropriate infection control measures (droplet precautions), and antibiotic treatment was initiated for the patient. Lab specimens were sent to the Arizona State Health Laboratory (ASHL) where testing confirmed the plague diagnosis. In order to identify the source of exposure, U.S. PHS staff retraced the patient's steps (back to one week before onset), and flea samples were collected for testing. Fleas collected from one location tested positive for *Yersinia pestis* at the CDC. U.S. PHS staff applied pesticide to rodent burrows to kill fleas in the affected area, and provided prevention education to local residents.

In the Flagstaff area of Coconino County, plague was identified as the cause of at least two prairie dog die-offs. County environmental health staff collected fleas from rodent burrows in the die-off areas and submitted them to Northern Arizona University (NAU) for testing. Results were positive for *Y. pestis* bacteria. County staff responded by providing prevention education to local residents and by dusting rodent burrows with deltamethrin.

Rocky Mountain Spotted Fever

Rocky Mountain spotted fever (RMSF) is a severe and potentially life threatening tick-borne disease caused the bacteria *Rickettsia rickettsii*. Incubation period for RMSF is 3-14 days after tick bite. In the case of "classic RMSF" initial symptoms can include sudden onset, fever, chills, severe headache, nausea, vomiting, deep muscle pain, anorexia and blood-shot eyes. Later symptoms can include rash (maculopapular and/or petechial), abdominal pain, joint pain, and diarrhea. Not all RMSF infections manifest with "classic" symptoms which can lead to delayed diagnoses, delayed treatment and fatal outcomes.

The principle tick vectors in the U.S. are the American Dog Tick (*Dermacentor variabilis*) and the Rocky Mountain Wood Tick (*D. andersoni*). These vector ticks are either very rare (*D. andersoni*) or non-existent (*D. variabilis*) in Arizona. Prior to 2003, RMSF cases in Arizona were very rare. In 2003-2004, an unusual outbreak of RMSF occurred in the White Mountains Region of eastern Arizona. Studies conducted by the Centers for Disease Control & Prevention (CDC) involving the collecting and testing of ticks, testing dog bloods, and human case follow-up lead to the identification of a new tick vector for RMSF – the Brown Dog Tick (*Rhipicephalus sanguineus*). The conditions which lead to increased parasitism of Brown Dog Ticks on humans included an over abundance of stray dogs, ample amounts of peridomestic tick habitats (e.g. untrimmed grass/weeds, outdoor furniture and mattresses, piled wood, etc.) and excessive tick populations on pets and around homes. Since 2004, local, state and federal public health officials have collaborated annually to reduce RMSF transmission through (1) prevention education campaigns, (2) controlling ticks on dogs with tick collars and sprays, (3) controlling ticks around homes with pesticide applications, and (4) community clean-up campaigns. In spite of mitigation efforts, 70 cases of RMSF have been reported in eastern Arizona during the years 2002 through 2008. Cases were reported in Gila, Graham, and Navajo counties. Seventeen cases were reported in 2008. Of the 17 cases, nine were in children. Ten cases were male. Ages range from <1 – 75 years with a median of 15. Two cases were fatal.

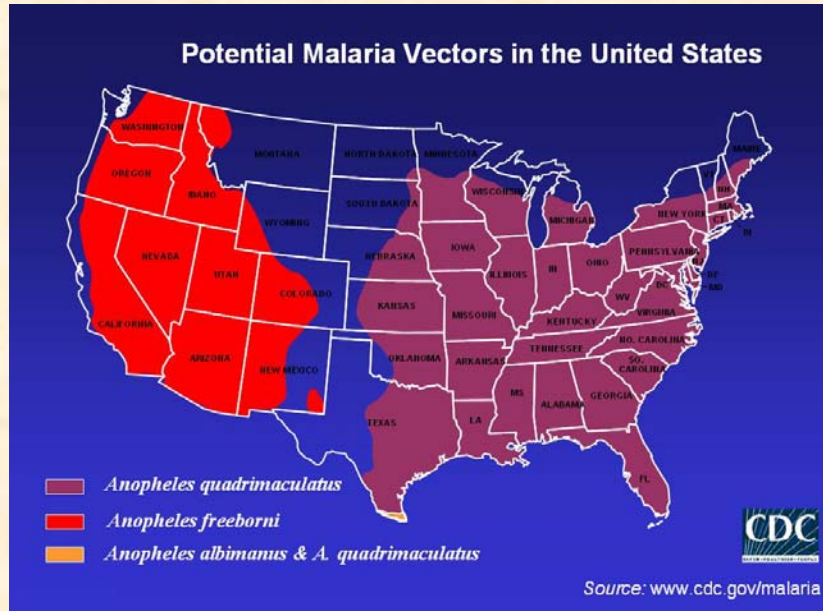


Dengue

In 2008 there were six cases of dengue fever (3 confirmed, 3 probable) reported in Arizona. All were imported cases with travel histories to Asia (2), the Caribbean (1), Mexico (1) and Central America (2). Five of the patients were Maricopa County residents while one was from Coconino County.

Malaria

In 2008, 16 cases of malaria (14 confirmed, 2 probable) were reported in Arizona residents. Seven cases represented *P. falciparum* infections, two were *P. vivax* cases, two were plasmodia species, and five cases were not determined. All but one of the 2008 malaria cases were imported with travel histories to Africa (10) and Asia (5). A congenital *P. vivax* case was identified in a newborn infant in Maricopa County. The



The child's mother was a refugee from Asia. Eleven of the patients were Maricopa County residents, three were Pima County residents, and one was from Coconino County. No malaria-related deaths were recorded in 2008 in Arizona.



Chagas' Disease (American Trypanosomiasis)

Chagas' disease is caused by the protozoan parasite *Trypanosoma cruzi*, and is transmitted to animals and people by insect vectors called triatomine bugs, or more commonly, kissing bugs or conenose bugs. It may also be transmitted by the use of contaminated blood products, tissue transplants and even ingestion of infected bugs. Chagas' disease is found only

in the Americas with most cases occurring in rural areas of South America. This disease is also endemic in parts of southern Mexico and Latin America.

In 2007 Chagas' disease became a reportable disease in Arizona so local and state health officials could assess the impact the disease has on the state's residents. Because *T. cruzi* infections may be acquired through contaminated blood products, blood banks began screening the state's blood supply in order to detect possible infections among their donors. Through this screening process, two *T. cruzi* positive blood donors were reported in Maricopa County in 2008. Both individuals came from areas of Mexico where the disease is endemic, but were not currently symptomatic or showed signs of the chronic stage of Chagas' disease.

ADHS Vector-Borne & Zoonotic Disease Newsletter 2008



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Upcoming Events

May 6-7, 2009

ADHS 2009 Annual Vector-Borne & Zoonotic Disease
Conference & Workshop
Mesa Public Safety Training Facility

Click here to register: <http://www.azdhs.gov/phs/oids/vector/confweb2009.htm>

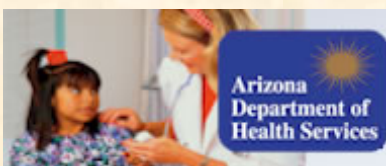


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