

Vector-Borne & Zoonotic Disease: 5-Year Report 2008-2012

- Office of Epidemiology •

Vector-borne and zoonotic diseases are infectious diseases involving animal hosts or vectors like mosquitoes, ticks, and fleas. Zoonotic diseases are diseases of animals that have the capability of being transmitted to humans. Many of these zoonotic diseases require the use of a vector to facilitate the transmission from animals to humans; these are referred to as vector-borne diseases. The following report is a summary of both categories of infectious diseases that were reported to and investigated by Maricopa County Department of Public Health (MCDPH) from the years 2008-2012. While MCDPH investigates all reported cases of these diseases, some cases may be ruled-out or lost to follow-up due to incompatible symptoms, laboratory testing, or lack of interview information.

	2008	2009	2010	2011	2012
	Confirmed or Probable [†]				
Amebiasis	7	0	1	8	5
Brucellosis [§]	2	2	6	3	4
Cysticercosis	11	2	1	2	4
Dengue [§]	5	5	7	3	7
Ehrlichiosis [§]	2	1	0	4	1
Hantavirus	0	0	0	1	0
Lyme Disease [§]	8	3	0	7	3
Malaria [§]	10	9	20	17	15
Psittacosis [§]	0	0	0	0	0
Q Fever [§]	2	2	3	3	4
Rocky Mountain Spotted Fever [§] (RMSF)	0	0	0	0	1
St. Louis Encephalitis Virus (SLEV)	0	0	0	0	0
Taeniasis	0	1	0	0	1
Tularemia	0	0	0	0	0
West Nile Virus (WNV)	90	20	115	45	90

[†] Confirmed or Probable case classifications represent a case that is either laboratory-confirmed and/or had a clinically compatible illness to the disease

[§] These diseases underwent changes in either laboratory criteria, clinical presentation, and/or case definitions from 2008-2010. These changes may have affected reporting of these diseases and the numbers of total cases investigated or classified as confirmed or probable. Source: <http://www.azdhs.gov/documents/preparedness/epidemiology-disease-control/disease-data-statistics-reports/infectious-disease-epidemiology-report-2008-2013.pdf>

Report ALL suspected rabies cases and ALL animal bites!

MCDPH can conduct a rabies risk assessment and assess if rabies vaccination is needed. There is no cure for rabies after the onset of symptoms and death is expected within days of symptom onset. In high risk exposure situations rabies can be prevented by administration of post-exposure prophylaxis.

To report a suspected rabies case or to receive a rabies risk assessment call-

Monday-Friday 8 am to 5 pm:
(602) 506-6767

Holidays and After Hours:
(602) 747-7111

Rabies

Rabies is a deadly zoonotic disease caused by a virus that attacks the central nervous system and causes acute, progressive encephalomyelitis (brain swelling) that almost always leads to death. It is transmitted when saliva of an infected animal is passed to an uninfected animal through a bite, scratch, abrasion, open wound, or mucous membrane contaminated with saliva or other potentially infectious material (such as brain tissue or cerebrospinal fluid) from a rabid animal.

Bats, skunks, foxes, raccoons, bobcats, and coyotes serve as important carriers for the disease. Cats, dogs and livestock can also become infected with rabies if they have not been vaccinated and are bitten by rabid wild animals. As a result of animal control and vaccination programs and the development of effective human rabies vaccines and immunoglobulins, there has not been a case of rabies in a human since 1981 in Arizona. Furthermore, there has not been a rabid dog in Maricopa County since 1977 or a rabid cat since 1982 making domestic animals, such as dogs and cats low risk for rabies transmission in our county.

From 2008 to 2012, there were **51** confirmed cases of rabies in wild animals in Maricopa County. Out of the 51 cases, 86% were bats, 2% were foxes, and 4% were bobcats.

**Total Number of Animal Exposures Assessments
Conducted by MCDPH, 2008-2012**

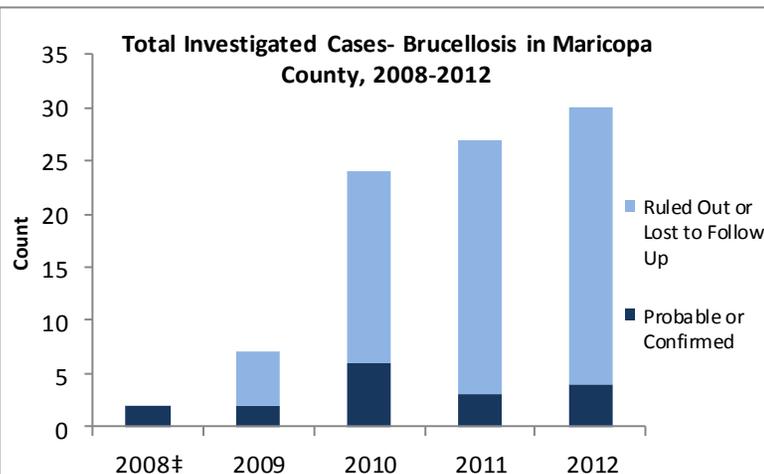
2008	2009	2010	2011	2012
N/A	263	268	411	626

➔ For more information regarding rabies, please [click here](#) to visit MCDPH's Rabies Homepage

Rabies Positive Animals in Maricopa County, 2008-2012

	2008	2009	2010	2011	2012
Bat	21	11	8	3	1
Fox	0	1	0	0	0
Bobcat	0	0	1	1	0
Other	2	1	0	1	0
Total	23	13	9	5	1

Brucellosis



† 2008 data for total cases investigated not available

What: Bacterial disease caused by the *Brucella* species

Where: Found worldwide. Higher-risk areas include Eastern Europe, South & Central America, Asia, Africa, and the Middle East.

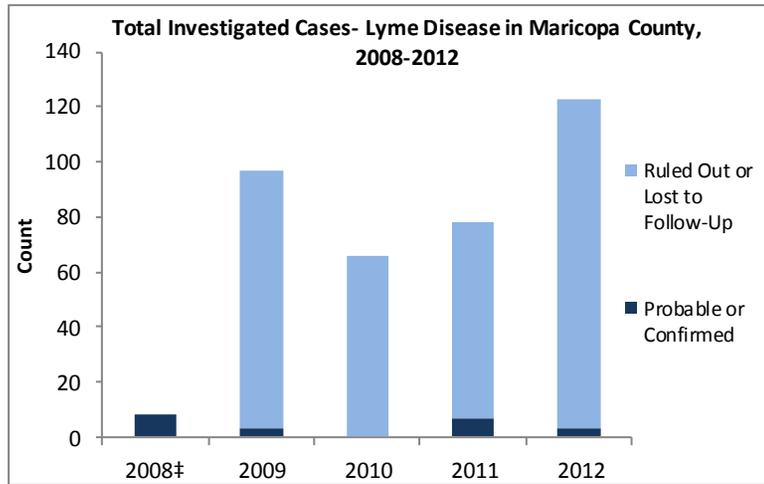
How: From contact with infected animals or consumption of contaminated animal products, like consuming unpasteurized cheese or milk. Most commonly found in cattle, sheep, goats, pigs and dogs. Individuals may also become infected through inhalation or contamination of skin wounds.

Signs & Symptoms: Fever, sweats, body aches, weakness, headaches, chills, arthralgia, depression. Severe infection may also infect the liver, spleen, heart or central nervous system

Treatment: Antibiotics- typically a combination of doxycycline and rifampin

Prevention: Avoid undercooked meats and unpasteurized dairy products, such as raw milk. People who frequently come into contact with animal tissues should wear protective equipment like gloves, goggles, and aprons.

Lyme Disease



† 2008 data for total cases investigated not available

Lyme disease is the most common vector-borne disease in the United States. It is caused by the *Borrelia burgdorferi* spirochete which is transmitted to humans through bites from the black-legged tick. Early symptoms of infection include feeling weak or unwell, fatigue, fever, headache, stiff neck, muscle pain, joint pain and swollen lymph nodes. The best clinical marker is the *erythema migrans* which occurs in 60-80% of cases and is described as a large round red macule or papule often with a central clearing. Long-term complications may involve the musculoskeletal, nervous and cardiovascular systems if untreated. Those that receive early treatment with antibiotics such as doxycycline, amoxicillin, or cefuroxime for three weeks usually recover completely.



Although Lyme disease and malaria are not endemic in Arizona, there are still cases in Maricopa County from residents who have traveled from or relocated to Arizona from an endemic area.

Malaria

What: Parasitic infection with one or more of the 4 types of *Plasmodium*

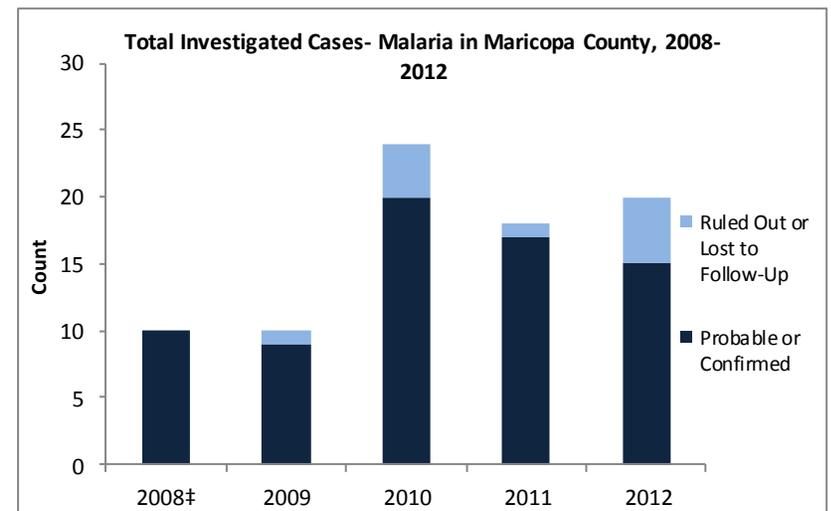
Where: Eradicated in the United States, but cases are reported in travelers from malaria-endemic areas; primarily countries that lie along the equator.

How: Transmission is through the bite of an infective female *Anopheles* mosquito. Because the parasite can be found within red blood cells, the disease may be transmitted through blood transfusion, organ transplant surgery, shared usage of needles or from mother to infant before or during birth.

Signs & Symptoms: Fever and flu-like illness which may present with chills, headaches, muscle aches, and tiredness. Other symptoms of malarial infection include nausea, vomiting, and diarrhea. Jaundice may develop in some cases and if not treated properly. *Plasmodium falciparum* infection may lead to mental confusion, seizures, coma, kidney failure, or death.

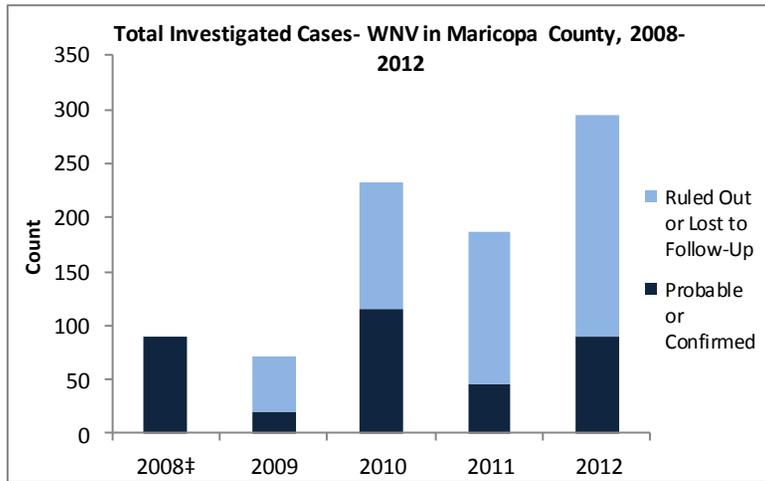
Treatment: Varies depending on the species (chloroquine, quinine sulphate, and antibiotics) typically a combination of medications.

Prevention: If traveling to malaria-endemic areas, avoid exposure to mosquitoes (sleeping with a net, using sprays containing DEET, etc.) Physicians may prescribe medication to take before, during, and after traveling to help prevent malaria.



† 2008 data for total cases investigated not available

West Nile Virus (WNV)



† 2008 data for total cases investigated not available

➔ For more information regarding WNV please [click here](#) to view MCDPH's WNV reports home page

West Nile virus (WNV) is a mosquito-borne virus that causes a non-specific, self-limited, febrile illness. Mosquitoes become infected when they feed on infected birds that have migrated into an area. The mosquitoes then bite people who may or may not become infected. The cycle of WNV occurs at an unusually high intensity when there is both a large number of infected birds and a high concentration of infected mosquitoes in a relatively small geographic area. Mosquitoes are the known carriers (vectors) of the virus from the host birds to humans. Humans and animals are incidental hosts in this bird-mosquito cycle.

WNV is widespread in Africa, North America, Europe, the Middle East, India, southeast Asia, Australia, the Caribbean and Central and South America. Although it is now widespread in the United States, WNV was not present in Arizona until 2003. WNV is now considered endemic in Maricopa County and is expected to be a public health concern indefinitely. WNV surveillance season begins April 1st and ends November 30th. However, in Arizona the majority of cases occur between the months of June and October. All residents and visitors are urged to continue to take precautions against WNV infection every year.

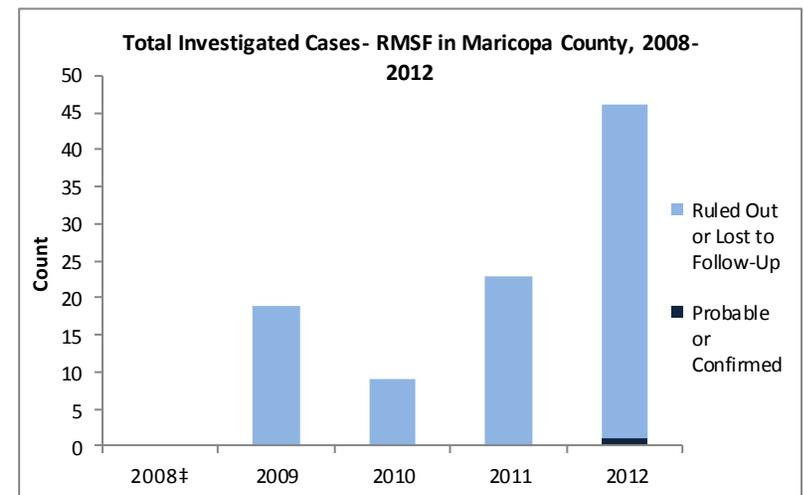
The majority (~80%) of people infected with WNV will show no symptoms at all. For those that are symptomatic (~20%), symptoms will appear 2-14 days after receiving the mosquito bite. Symptomatic cases are characterized by the acute onset of fever, headache, joint pain, muscle pain, and sometimes accompanied by a maculopapular rash or swollen lymph nodes. Rarely do symptoms get more severe; however 1-3% of symptomatic infections will develop a form of the disease that affects the nervous system. There is no treatment for WNV; only supportive care can be given.

Fighting mosquito bites reduces the risk of getting this disease. Residents should avoid mosquito bites by using insect repellent, wearing light-colored long pants and long-sleeved shirts to cover exposed skin, limiting outside exposure during the evening hours when mosquito activity is at its highest, and eliminating mosquitoes inside the home. It is also very important to reduce the amount of mosquitoes around the home by ridding areas of standing water. The most common places water accumulates includes old tires, buckets, wheelbarrows, gutters and pet dishes.

Rocky Mountain Spotted Fever (RMSF)

Rocky Mountain Spotted Fever (RMSF) is a seasonal disease caused by the bacteria *Rickettsia rickettsii*. Most cases of RMSF occur in the southeast and south central regions of the United States between the months of April and September; however, RMSF is also found in Northern Arizona during the same months. The bacteria is transmitted to humans through the bite of an infected tick, most commonly the American dog tick (*Dermacentor variabilis*) or Rocky Mountain wood tick (*Dermacentor andersoni*). Symptoms usually present in 3-14 days and generally include a sudden onset of moderate to high fever, deep muscle pain, severe headache, chills, weakness and conjunctival infection. A maculopapular rash usually appears on the extremities around the 3rd to 5th day and spreads rapidly to the trunk of the body. With prompt treatment death, is rare; however, more recently the fatality rate in the United States has ranged from 3-5%. Treatment includes antibiotics (typically doxycycline) twice daily for 5-10 days.

Although RMSF is not present in Maricopa County, there are still many areas of Arizona with the disease and can be found in residents who have traveled to or moved from an endemic area.



† 2008 data for total cases investigated not available

For more information about these and many other infectious diseases, please visit MCDPH's Disease Prevention & Epidemiology page:

<http://www.maricopa.gov/PublicHealth/Services/EPI/diseases.aspx>



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