Vector-Borne & Zoonotic Disease: 5-Year Report 2014-2018

Maricopa County Public Health
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Diseases contained in this report represent Maricopa County residents who were either laboratory-confirmed and/or exhibited clinically compatible illnesses in the years 2014-2018. Those vector-borne and zoonotic diseases that did not have confirmed or probable cases reported in the years 2014-2018 are not included in this report. Not all diseases were acquired within Maricopa County but were instead associated with travel.

Zoonotic Diseases:

Animal Related

Diseases of animals that have the capability of being transmitted to humans. Animals do not have to be sick in order to transmit disease.

	2014	2015	2016	2017	2018
Amebiasis	17	0	2	7	15
Brucellosis	6	1	0	6	3
Cysticercosis	1	0	2	0	0
Hantavirus	0	0	1	0	0
Leptospirosis	1	0	0	0	0
Lymphocytic Choriomeningitis	0	0	0	1	0
Q Fever	5	3	3	2	2
Taeniasis	0	1	1	0	0
Tularemia	0	1	0	0	0

Brucellosis

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 and 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.

Leptospirosis

What: Bacterial disease caused by the *Leptospira* species
Where: Most prevalent in tropical and sub-tropical regions, islands, and low-lying areas prone to flooding.
How: The bacteria is spread in the urine of infected animals, and people and dogs can be infected through contact with infected urine or water or wet soil contaminated with urine.
Treatment: Antibiotics – Doxycycline.

Dogs

S/S: Low energy, loss of appetite, fever, red eyes, vomiting and diarrhea, and in severe cases liver or kidney failure.
Prevention: Talk to your veterinarian about vaccinations. Also reduce your dog's exposure to anything contaminated with urine such as grass, food, or bedding and limit contact with rodents, wildlife, or infected dogs.

People

S/S: Vary but can include flu-like symptoms and may progress to liver or kidney failure.
Prevention: Use antibacterial cleaning solution such as 1:10 bleach solution to clean up urine in addition to wearing gloves. Always wash your hands when done. Additionally, designate an area for your dog to urinate away from areas where other people or dogs frequently go and away from standing water.

Human cases have been rare in Maricopa County, and all have been travel-associated. In 2016, there was an increase in the number of cases in dogs, but no human cases were identified.

Vector-borne Diseases:

Mosquito-borne

Diseases that need a vector, specifically a mosquito, to be transmitted to humans.

	2014	2015	2016	2017	2018
Chikungunya	12	18	4	0	0
Dengue	15	10	12	3	7
Malaria	16	13	31	21	19
St. Louis Encephalitis	0	22	0	5	0
West Nile Virus	93	62	63	93	24
Zika Virus	0	0	36	3	2

West Nile virus

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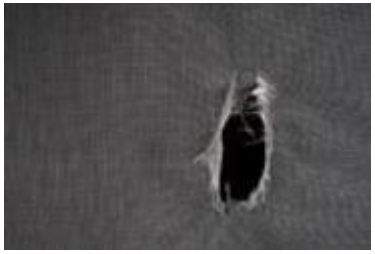
What: Mosquito-borne virus typically spread by the *Culex* mosquitoes. Mosquitoes become infected when they feed on infected birds that have migrated into an area. The mosquitoes then bite people who may or may not become infected.
Where: West Nile virus (WNV) is widespread in Africa, North America, 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 most cases occur between the months of June and October.
How: Primarily through mosquito bites, but also infected blood transfusions or organ transplants.
S/S: 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 brain and spinal cord.
Treatment: There is no specific treatment for WNV; only supportive care can be given.

Mosquito Bite Prevention

Apply Repellent

Drain Standing Water

Install/Repair Screens



Vector-borne Diseases:

Flea, Insect, or Tick-borne

Diseases that need a flea, insect, or tick to be transmitted to humans and animals.

	2014	2015	2016	2017	2018
Babesiosis	0	0	0	2	0
Chagas	1	0	4	3	2
Ehrlichiosis	0	2	2	2	2
Lyme Disease	10	2	5	14	1
Rocky Mountain Spotted Fever	1	0	0	0	2
Tick Borne Relapsing Fever	0	1	0	3	0
Typhus Fever	0	1	0	0	0

Preventing tick bites

- Use insect repellents containing 10-35% DEET when camping or hiking.
- Wear light-colored long pants and long sleeved clothing so that ticks are easier to spot before they attach to the skin
- Remove attached ticks promptly

Although Lyme disease is 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.

Rocky Mountain Spotted Fever

What : Bacterial diseased caused by *Rickettsia rickettsii*
Where: Most cases of Rocky Mountain Spotted Fever (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.
How: Tick bites, most commonly the American dog tick or Rocky Mountain wood tick.
S/S: Symptoms usually present in 3-14 days usually with 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: Antibiotics - typically doxycycline twice daily for 5-10 days.

Chagas Disease


University of Arizona

What: parasitic disease cased by *Trypanosoma cruzi*
Where: The Americas, primarily rural parts of Mexico, Central America, and South America.
How: Primarily through contamination of mucous membranes or breaks in the skin (including a bug bite wound) with infected triatomine bug feces. People can also become infected through contaminated food, from a pregnant woman to her unborn child, or infected blood transfusions or organ transplants.
S/S: Most people will have no symptoms. Some may have symptoms of fever, headache, body aches, fatigue, rash, and swelling develop 5-14 days after being bitten by an infected bug. About 1 in 4 people infected with the parasite will develop long lasting (chronic) symptoms affecting their heart and gastrointestinal system later in life.
Treatment: Medication to kill the parasite (e.g. Benznidazole, Nifurtimox) can be used for acute and chronic infections.
Prevention: Protect yourself when travelling by sleeping indoors in well-constructed facilities and use bed nets treated with insecticides. Around the home, install/maintain screens on windows and doors, change outside lights to yellow bulbs, keep your yard clear of clutter, and prevent pack-rats from nesting. Consult with a pest control company for any structures infested with triatomine bugs.