Vector-Borne & Zoonotic Disease: 5-Year Report 2018-2022

Maricopa County Public Health
WeArePublicHealth.org

Diseases contained in this report represent Maricopa County residents who were either laboratory-confirmed and/or exhibited clinically compatible illnesses in the years 2018-2022. Those vector-borne and zoonotic diseases that did not have confirmed or probable cases reported in the years 2018-2022 are not included in this report. Not all diseases were acquired within Maricopa County but were instead associated with travel. **Numbers included in this report are preliminary.**

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.

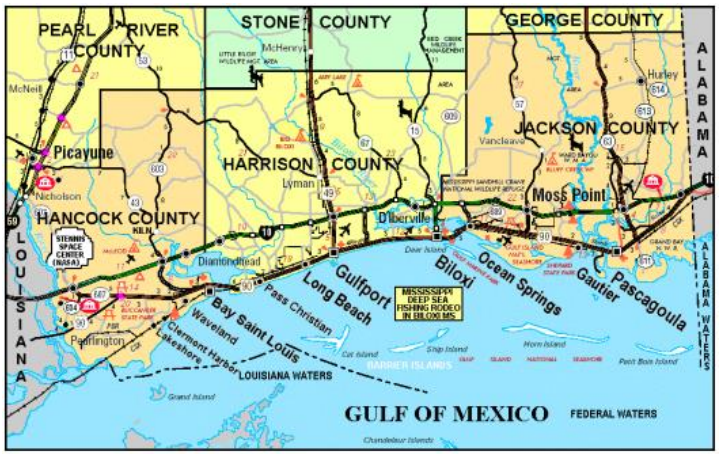
	2018	2019	2020	2021	2022
Amebiasis	15	12	2	8	9
Brucellosis	3	2	4	5	0
Cysticercosis	0	2	5	1	1
Leptospirosis	0	0	1	0	0
Melioidosis	0	1	0	0	0
Psittacosis	0	1	0	0	0
Q Fever	2	3	1	3	3
Tularemia	0	1	0	0	1

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.

Melioidosis

What: Bacterial disease caused by *Burkholderia pseudomallei*
Where: Primarily tropical climates but the bacteria was found in the environment along the Gulf Coast of Mississippi in the United States in 2022.
How: People may become infected through direct contact with contaminated soil and water. This often occurs through either inhalation of contaminated dust or water, ingestion of contaminated water, or ingestion of soil-contaminated food or other contact with contaminated soil (like through cuts or wounds on the skin).
Signs and Symptoms: There is a wide range of signs and symptoms depending on if infection is localized, in the lungs, in the blood, or spread throughout the body. Fever is usually present for all types of infection.
Treatment: Antibiotics
Prevention: In areas where the disease is widespread, avoiding contact with contaminated soil or water is recommended. See https://www.cdc.gov/melioidosis/prevention/index.html for occupational and health conditions that may put you at higher risk for disease.



Vector-borne Diseases:

Mosquito-borne

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

	2018	2019	2020	2021	2022
Chikungunya	0	1	1	0	0
Dengue	7	13	4	7	13*
Malaria	19	27	7	22	18
St. Louis Encephalitis	0	8	6	11	9
West Nile Virus	24	155	3	1480	46†
Zika Virus	2	0	0	0	0

* Two locally-acquired cases identified

† Ten cases and 1 death were reported in 2022 but occurred or had incubation periods in 2021

Preventing Mosquito Bites

- ✓ Repel mosquitoes using EPA-registered insect repellent
- ✓ Remove standing water from your home and yard
- ✓ Repair or replace damaged window and door screens
- ✓ Remind your family, friends, and neighbors about mosquito safety

Recent News

- Unprecedented Outbreak of West Nile Virus — Maricopa County, Arizona, 2021 | MMWR (cdc.gov)
- Notes From the Field: First Evidence of Locally Acquired Dengue Virus Infection — Maricopa County, Arizona, November 2022 | MMWR (cdc.gov)

West Nile virus

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 the majority of cases occur between the months of June and October.
How: Primarily through mosquito bites, but also mother to child and infected blood transfusions or organ transplants.
Signs and Symptoms: 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.

Dengue

What: Mosquito-borne virus typically spread by the *Aedes* mosquitoes. Mosquitoes become infected when they bite a person infected with the virus. Infected mosquitoes can then spread the virus to other people through bites.
Where: Dengue outbreaks are occurring in many countries of the world in the Americas, Africa, the Middle East, Asia, and the Pacific Islands. In the United States, local cases and limited spread of dengue does occur periodically in some states. In 2022, dengue virus was found locally in Maricopa County, Arizona; prior to this, all cases had been travel-related.
How: Primarily through mosquito bites, but also mother to child and infected blood transfusions or organ transplants.
Signs and Symptoms: About 1 in 4 (25%) of people infected will get sick and symptoms vary from mild to severe. Those with mild dengue typically experience fever with nausea, vomiting, rash, headache, and body aches. Severe dengue can be life-threatening and often requires care at a hospital. Warning signs usually begin in the 24-48 hours after the fever has gone away. They include belly pain, vomiting, bleeding from the nose or gums, vomiting blood or blood in the stool, and feeling tired, restless, or irritable. Individuals should immediately seek care if these symptoms occur.
Treatment: There is no specific treatment for dengue.

Vector-borne Diseases:

Flea, Insect, or Tick-borne

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

	2018	2019	2020	2021	2022
Babesiosis	0	0	0	1	1
Chagas	2	3	3	2	1
Ehrlichiosis	2	1	0	2	4
Lyme Disease	1	1	0	0	0
Rocky Mountain Spotted Fever	2	4	2	1	1
Tick Borne Relapsing Fever	0	1	0	0	0
Typhus Fever	0	1	0	1	0

Preventing Tick Bites

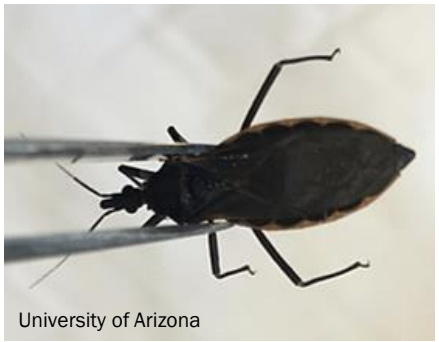
- Use insect repellents containing 10-35% DEET when camping or hiking.
- Wear light-colored long pants and long sleeved clothing so that ticks are easier to spot before they attach to the skin
- Remove attached ticks promptly

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.
Signs and Symptoms: 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.
Signs and Symptoms: 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.