

# Unprecedented West Nile Virus Outbreak – Maricopa County, Arizona, 2021

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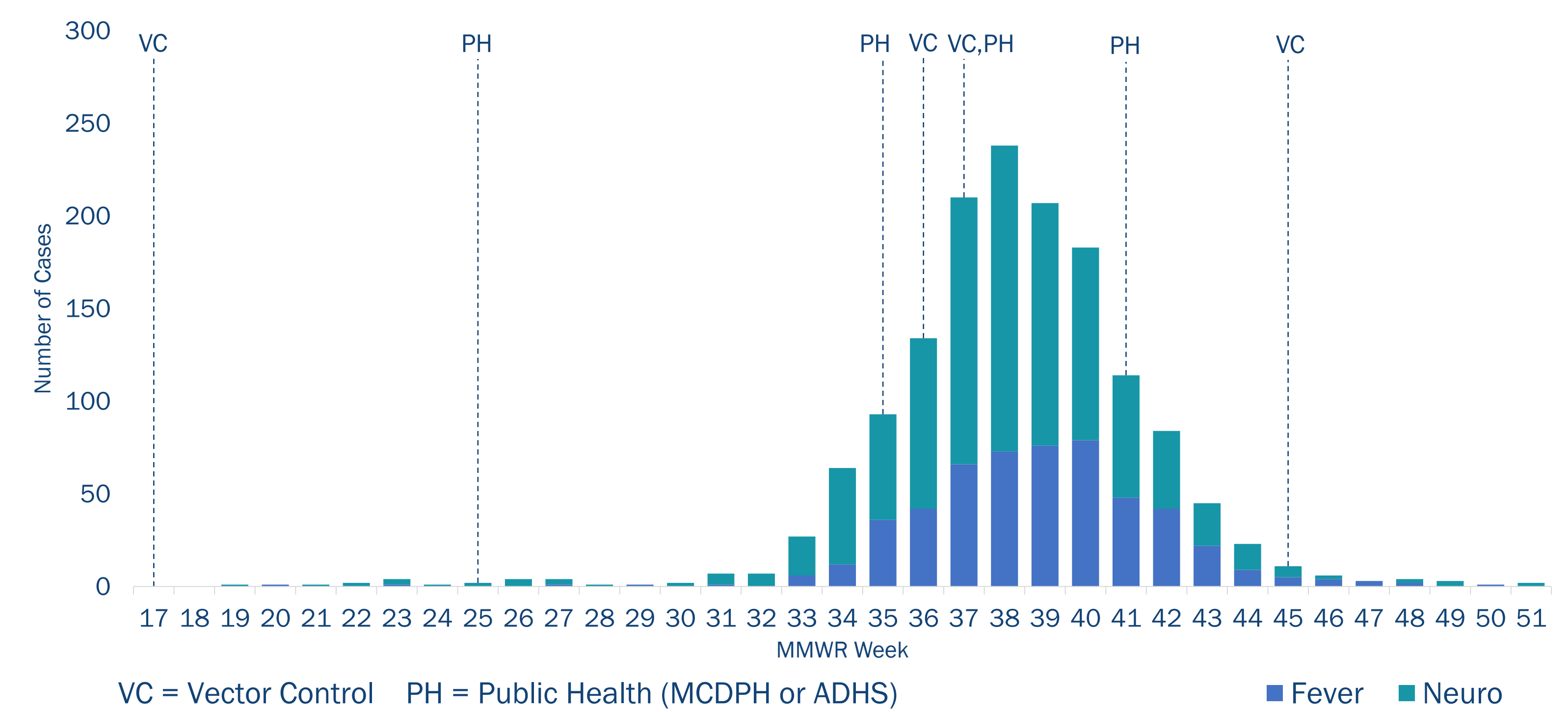


## Highlights

- During the 2021 West Nile virus (WNV) season, 1,493 cases were reported among Maricopa County residents and visitors. This was **17 times higher** than the historical average and the highest number ever reported in the county.
- Of cases, 962 (64.4%) had neuroinvasive illnesses (WNND) and 101 (6.8%) died (all were WNND cases).
- MCESD VC fogged >400,000 acres (~2x the 10-year average) with adulticide, applied larvicide to ~25,000 sites (20% increase from the 10-year average), and received ~9,500 mosquito complaints (40% more than prior season).
- Despite 3 surveillance alerts sent to providers and media coverage, providers were not consistently aware of the outbreak.

## Results

Onset dates occurred from February 22, 2021, to January 7, 2022 (not included in figure). The peak for cases was the week of September 25<sup>th</sup>.



Program	Date	Action Taken
VC	Week of May 1	First + mosquito pool
PH	Jun 25	MCDPH SurvAlert
PH	Sep 1	MCDPH press release
VC	Week of Sep 11	Peak + mosquito activity

Program	Date	Action Taken
VC	Sep 12	Highest mosquito treatments
PH	Sep 17	ADHS HAN
PH	Oct 13	MCDPH SurvAlert
VC	Week of Nov 13	Last + mosquito pool

Summary of WNV cases (n=1,493)— Maricopa County, AZ February 2021–January 2022

	No. of Cases (% of total)	Case Median Age in Years (IQR)	No. of Hospitalizations (% of total)	Median Length of Stay (IQR)
WNND	962 (64.4)	70 (58-78)	929 (91.1)	7 (4-11)
Encephalitis	623 (41.7)	73 (63-80)	605 (59.3)	9 (6-13)
Meningitis	320 (21.4)	61 (48-71)	310 (30.4)	5 (3-7)
Guillain-Barre Syndrome	1 (<1)	79 (N/A)	1 (<1)	9 (N/A)
Acute Flaccid Paralysis	1 (<1)	59 (N/A)	1 (<1)	16 (N/A)
Other Neuro	17 (1.1)	67 (57-72)	12 (1.2)	4 (2-7)
West Nile Fever	531 (35.6)	59 (48-69)	91 (8.9)	4 (2-6)
<b>Total</b>	<b>1493</b>	<b>66 (53-75)</b>	<b>1020 (68.3)</b>	<b>7 (4-10)</b>

### MCDPH Surveillance Alert (SurvAlert)

**West Nile virus (WNV) has reached the highest levels ever recorded in Arizona in Maricopa County**

**Public Health Surveillance System Alert: October 2021**

West Nile virus (WNV) is circulating widely in our community at numbers that have exceeded our initial outbreak in 2004. Routine mosquito surveillance is still yielding both WNV and St. Louis encephalitis (SLEV) positive mosquitoes in Maricopa County.

Both serum and CSF can be collected for diagnostic testing commercially.

Healthcare providers should strongly consider WNV and other arboviral diseases like SLEV when patients fit the following profile:

- All cases of viral encephalitis
- All cases of acute flaccid paralysis or Guillain-Barré syndrome of unknown etiology, with or without presence of viral meningitis or viral encephalitis
- Cases of aseptic meningitis, especially those with at least one of the following: profound muscle weakness or neuropathic symptoms (i.e. flaccid paralysis, spastic paralysis, or Guillain-Barré syndrome)
- Cases of febrile illness of unknown etiology, with or without presence of other symptoms such as headache, body aches, joint pains, vomiting, diarrhea, or rash.

Laboratory diagnosis is recommended and is accomplished by testing of serum or cerebrospinal fluid (CSF) to detect WNV-specific IgM antibodies.

- WNV-specific IgM antibodies are usually detectable 3 to 8 days after onset of illness
- If serum is collected within 8 days of illness onset, the absence of detectable virus-specific IgM does not rule out the diagnosis of WNV infection, and the test may need to be repeated on a later sample.

## Background

Maricopa County is the 4<sup>th</sup> most populous county in the United States with ~4.5 million residents across 9,224 square miles. MCDPH investigates >27,000 communicable disease reports and >100 outbreaks annually.

MCESD VC sets 830 mosquito traps per week.

West Nile virus (WNV) causes a mosquito-borne disease that can lead to permanent paralysis or death.

WNV became endemic in Maricopa County in 2003. Since then, the **average number of cases/year is 87**.

Prior outbreak years included 2004 (n=355), 2010 (n=115), 2015 (n=62), and 2019 (n=155).

Maricopa County experienced an unprecedented WNV **outbreak with 1,493 cases in 2021**.

## Discussion

This was the largest WNV outbreak in Maricopa County.

During WNV season, clinicians should consider WNV testing in both serum and CSF in severely ill patients with and without evidence of neuroinvasive disease.

The outbreak taxed an already stressed healthcare system during the COVID-19 pandemic with over 1,000 hospitalized cases, including nearly 100 in people without WNND.