Infectious Disease Update

Karen Rose, RN BSN

Communicable Disease Surveillance Nurse; Office of Epidemiology

Today's Updates:

- Influenza – H3N2
- Zika update
- Rabies Epizootic in Foxes

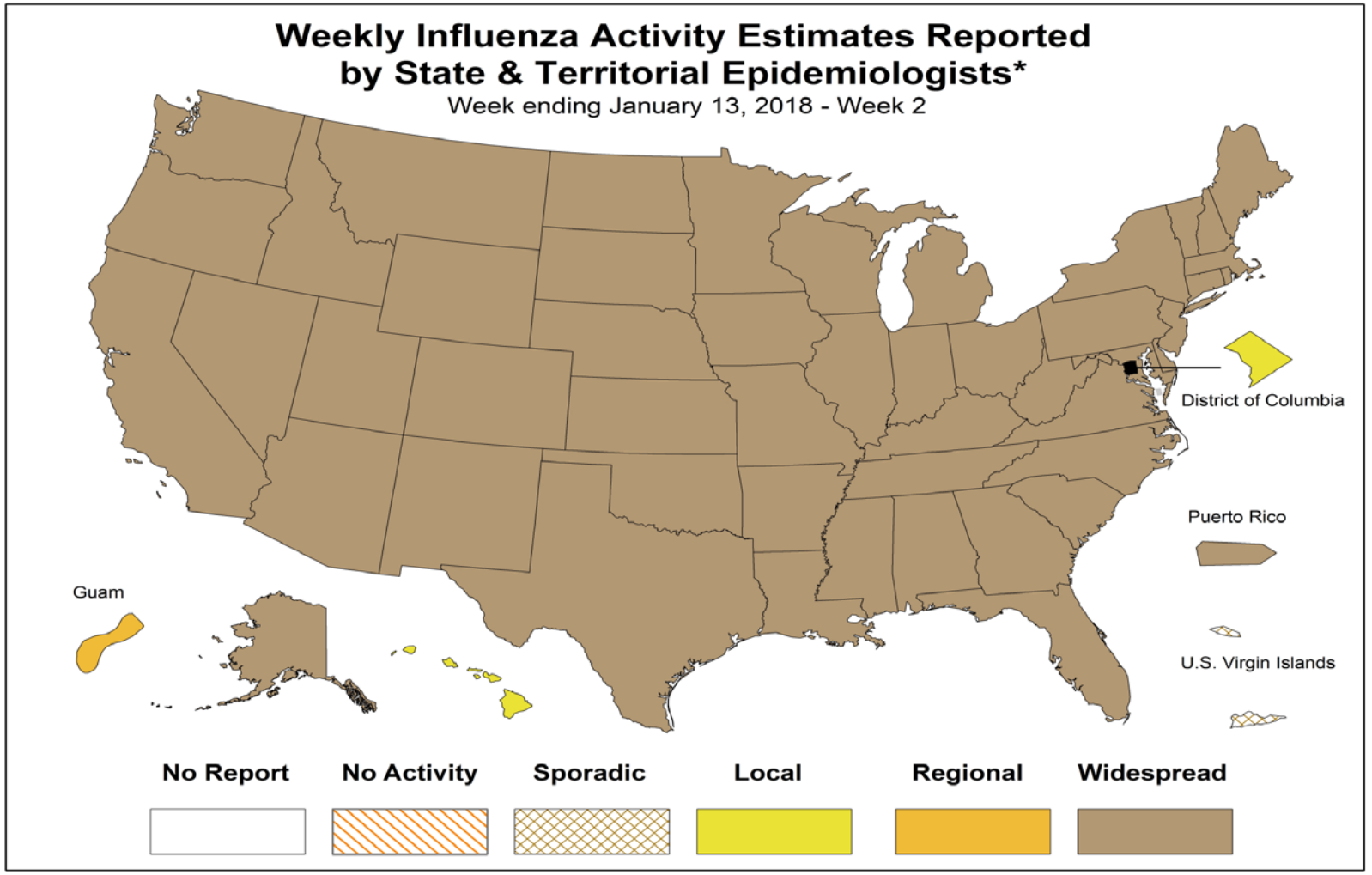
Influenza in Maricopa County

2017-18 Influenza Season (as of 1/20/2018)

- Started October 1st 2017 – continues through 9/30/18
- 2 pediatric deaths reported (compared to none last season)
- Influenza A H3 - predominant strain
- Arizona has had widespread flu activity for the past 6 weeks

National Distribution

- Nationally, outpatient ILI reported at 6.3%, which is above the national baseline of 2.2%.
- Currently, widespread influenza activity in Puerto Rico & 49 states

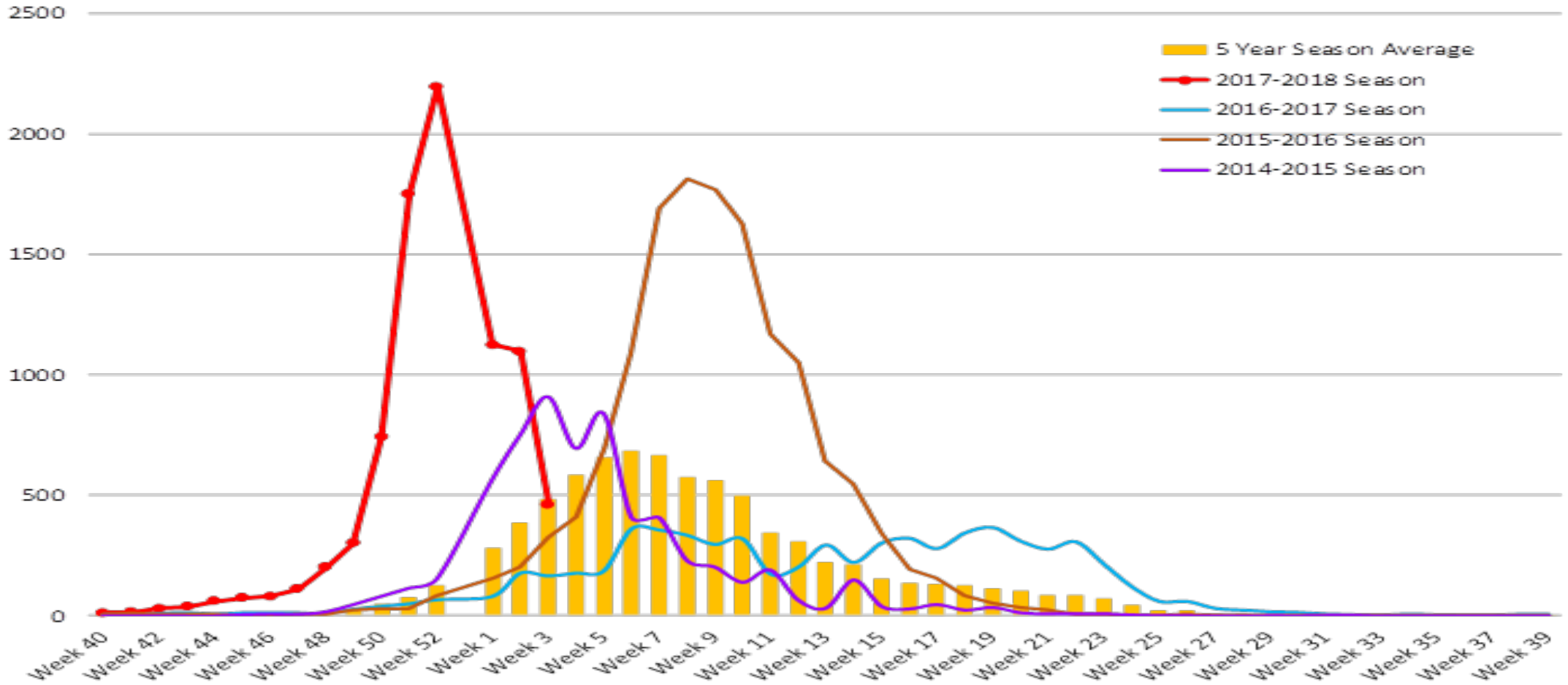


* This map indicates geographic spread & does not measure the severity of influenza activity

Maricopa County Season Comparison – Lab Confirmed Influenza

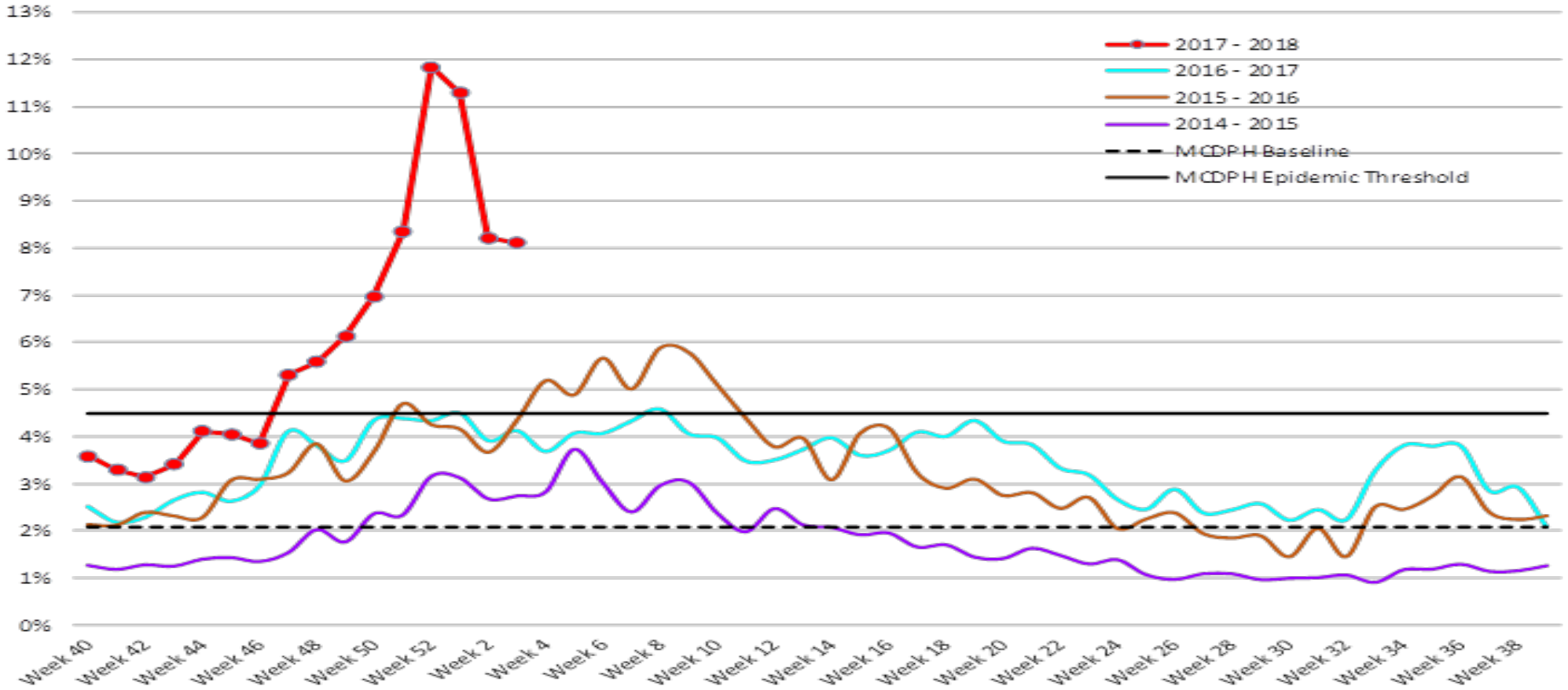
Since October 1st 2017, **8285 cases** are lab-confirmed

(compared to 668 for the same timeframe for last season)



Maricopa County Season Comparison – Influenza Like Illness (ILI)

ILI at Maricopa County sentinel sites (outpatient facilities) – above threshold at 8.11%



2017-18 Seasonal Influenza Vaccine Effectiveness

(as of 1/25/18)

- Interim estimates for this season are not yet available

- Best estimates are using US 2016-17 data (vs. Australian data)
  - Overall VE against influenza A & B virus infection = 39%
  - VE against influenza A (H3N2) virus = 32%

- 2017-18 vaccine includes the same H3N2 component as last season & US circulating H3N2 viruses are still similar to the H3N2 vaccine virus

H3N2 Antigenic Drift /Egg-Adapted Changes

Antigenic Drift

- Genetic changes can occur in influenza viruses
  - Antigenic Drift: Small changes in the genes of influenza viruses
  - Antigenic Shift: Abrupt, major change in the influenza A viruses
- **No significant antigenic drift has occurred among circulating wild-type influenza viruses at this time**

Egg-Adapted Changes

- Changes that occur as a result of viruses being grown in eggs
- Most U.S. flu vaccines are produced using egg-based technology
- Unclear if cell-propagated (grown in animal cells) vaccines would change effectiveness
- **Compared with H1N1 & B, egg-adapted changes in H3N2 viruses are more complex & more likely to produce H3N2 viruses less similar to circulating H3N2 viruses**

Antiviral Treatment

- Treatment with antivirals can reduce the severe outcomes of influenza, especially when initiated as early as possible (<48hrs)

- Antiviral resistance to oseltamivir, zanamivir, and peramivir among circulating influenza viruses is currently low

- Supply update:
  - Total reported national supply of influenza antiviral drugs is sufficient
  - Spot shortages have been reported, suggesting ordering issues with high volume demand
  - CDC is working with manufacturers to address any existing gaps in the market

H3N2 and Parotitis

- Acute parotitis - swelling of the salivary glands (bacterial or viral etiology)
- Not a common symptom of influenza, but commonly associated with mumps
- Unknown frequency rates for parotitis after influenza virus
- While rare, influenza-associated parotitis appears to occur more often after infection with influenza A (H3N2) viruses

Recommendations for Providers:

With H3N2 as predominant strain, consider influenza testing with parotitis, even in the absence of resp. symptoms

Staying Healthy - Vaccinations

Single best way to protect against seasonal flu
& its potential severe complications is to
get a seasonal influenza vaccine every year

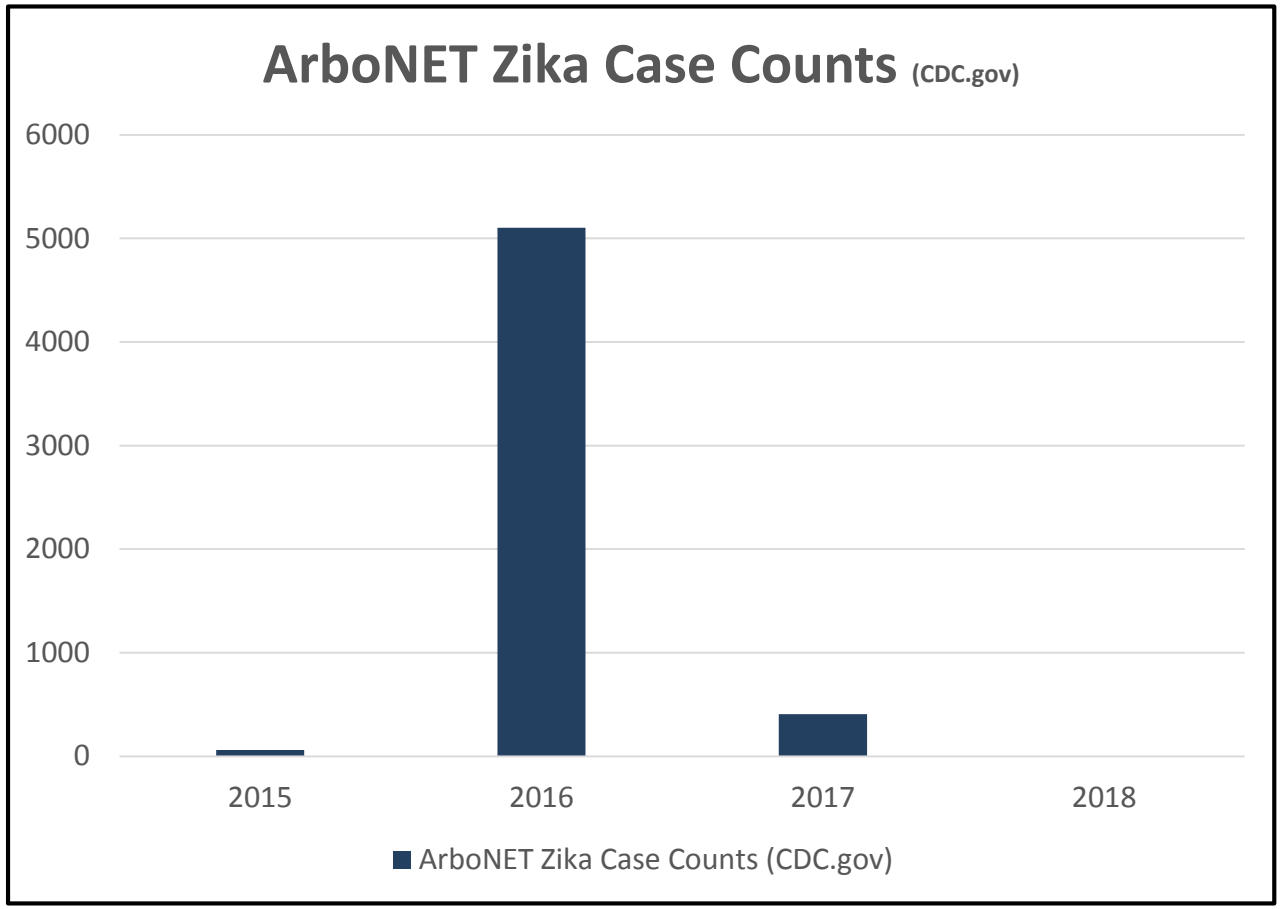
Zika Response Update

Zika Case Counts 2015-2018 (as of 1/10/2018)

Cumulative 2015-18

- 5,355 cases: US States - travel-associated
- 228 cases: locally acquired (FL & TX)
- 50 cases: sexual transmission
- 2364 cases: Infected pregnant women (US Zika Preg Registry)
  - 102 liveborn infants with birth defects
  - 9 pregnancy losses with birth defects
- **58 confirmed cases in AZ (all travel-associated)**

Year to year comparison



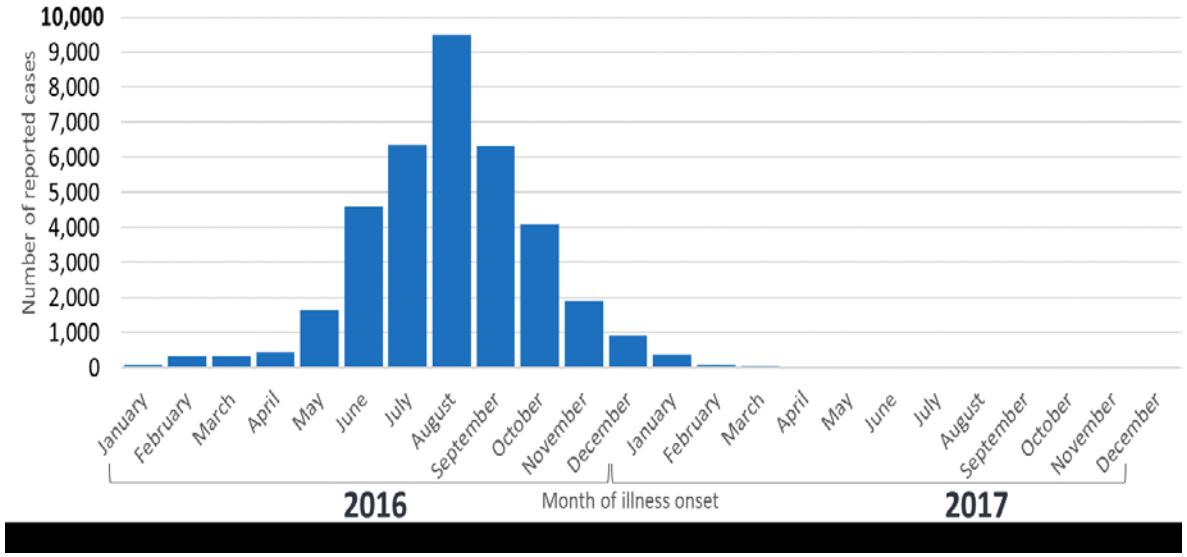
Zika Updates

- Overall case counts decreasing across the Americas & the Caribbean

- Inconclusive IgM results due to flavivirus cross-reactivity led to more PCR focused testing algorithms

- Narrowed testing recommendations
  - Testing symptomatic persons with exposure
  - Testing asymptomatic pregnant women with ongoing exposure
  - Testing infants with suspect Congenital Zika Syndrome or those born to mothers with Zika

Zika Cases for US Territories (CDC.gov)



US Zika Pregnancy Registry (USZPR) Updates

- As of April 1, 2018, CDC will not be enrolling new cases
- MCDPH Office of Epidemiology has committed to following USZPR cases through June 2018

MCDPH Office of Epidemiology Has Followed:

- 15 pregnant women with evidence of Zika virus infection
  - Currently following 0
- 11 infants born to these women
  - Currently following 3
  - Zero had congenital abnormalities
    - National 3.0 per 1,000 live births

MCPDH Office of Epidemiology Partnerships

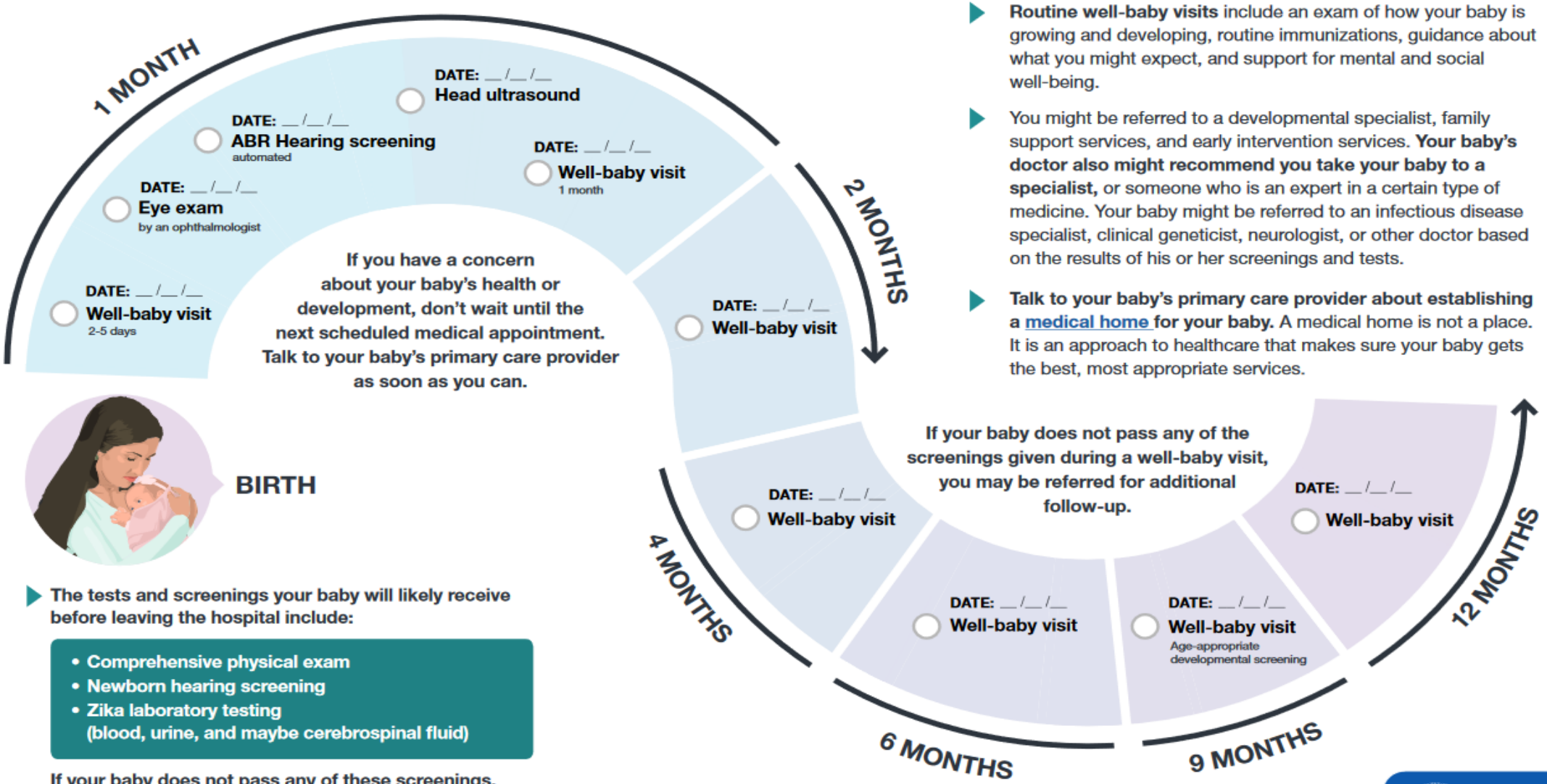
- ADHS Health Start
  - Objective: women and their families receive education, support, and screening
    - These are done in the home by a community health worker from pregnancy through infancy
- MCDPH Office of Family Health
  - Objective: provide screening and monitoring of developmental milestones to infants born to women with evidence of Zika virus infection
    - These are done in the home by a registered nurse at 4 and 9 months of age

ROADMAP FOR BABIES WITH CONGENITAL ZIKA INFECTION

This document should be used as a guide to discuss the screening and testing your baby may receive with his or her primary care provider. Each baby is different, and it is possible that your baby may need more tests or fewer tests. This roadmap outlines care for 1) babies who are born with birth defects or other clinical findings related to Zika virus infection during pregnancy 2) babies who test positive for Zika virus infection but may look healthy at birth.

Follow the roadmap to ☑ check off each recommended doctor's visit for the first year of follow up.

- **Routine well-baby visits** include an exam of how your baby is growing and developing, routine immunizations, guidance about what you might expect, and support for mental and social well-being.
- You might be referred to a developmental specialist, family support services, and early intervention services. **Your baby's doctor also might recommend you take your baby to a specialist,** or someone who is an expert in a certain type of medicine. Your baby might be referred to an infectious disease specialist, clinical geneticist, neurologist, or other doctor based on the results of his or her screenings and tests.
- **Talk to your baby's primary care provider about establishing a medical home for your baby.** A medical home is not a place. It is an approach to healthcare that makes sure your baby gets the best, most appropriate services.



- **The tests and screenings your baby will likely receive before leaving the hospital include:**
  - Comprehensive physical exam
  - Newborn hearing screening
  - Zika laboratory testing (blood, urine, and maybe cerebrospinal fluid)

If your baby does not pass any of these screenings, you may be referred for additional follow-up.

275226-A November 3, 2017

Accessible Version: https://www.cdc.gov/zika/parents/care-for-babies-with-congenital-zika.html

Rabies Epizootic in Foxes

Rabies Virus Overview

- Virus spread by the bite of or contact with saliva of an infected animal
- In Arizona, bats, skunks, & foxes are the main animal sources of rabies
- Disease causes severe damage to the central nervous system and usually leads to death once symptoms appear

Rabies Epizootic in Foxes

Background:

- Rabies is always cycling in Arizona's wildlife
- Rabies activity in Arizona's gray fox populations has quadrupled in the last year (30 rabid foxes 2017 compared to 6 in 2016)
- Involved counties include: Cochise, Navajo, Pima, Santa Cruz, Gila, Maricopa, & Pinal

Most Recent Outbreak Concern:

- Ongoing rabies epizootic in foxes occurring in the Superstition Mountains area east of the Valley (involving Maricopa & Pinal Counties)
- 6 lab confirmed rabid wild animals in this outbreak
- Several sick and dead animals (mostly foxes) have been encountered within the First Water Trail System
- Outbreak may be spreading to more urban areas posing additional risk to people & their pets living in residential communities

Decreasing the Human & Pet Risk

What to do to prevent being exposed to rabid animals:

- ✓ People & pets should stay away from wild animals & be cautious when hiking, hunting or camping
- ✓ Keep pets on a leash at all times & get them vaccinated against rabies
- ✓ Never pick up, touch, or feed wild or unfamiliar animals, even if they do not appear sick or aggressive
- ✓ Report any wild animal exhibiting erratic or aggressive behavior to local animal control officials or the Arizona Game & Fish Department (602-942-3000)
- ✓ If you or your pet is bitten or has contact with a wild animal, seek immediate medical or veterinary attention & call public health

STDs and HIV in Special Populations

STD Rates in Maricopa County-2017

- Required Reporting Diseases: Chlamydia, Gonorrhea, Syphilis and HIV
- Maricopa County 2017 All-Cause Case Frequency: 35,859
- Maricopa County Disease Specific Frequency and Rate 2017:

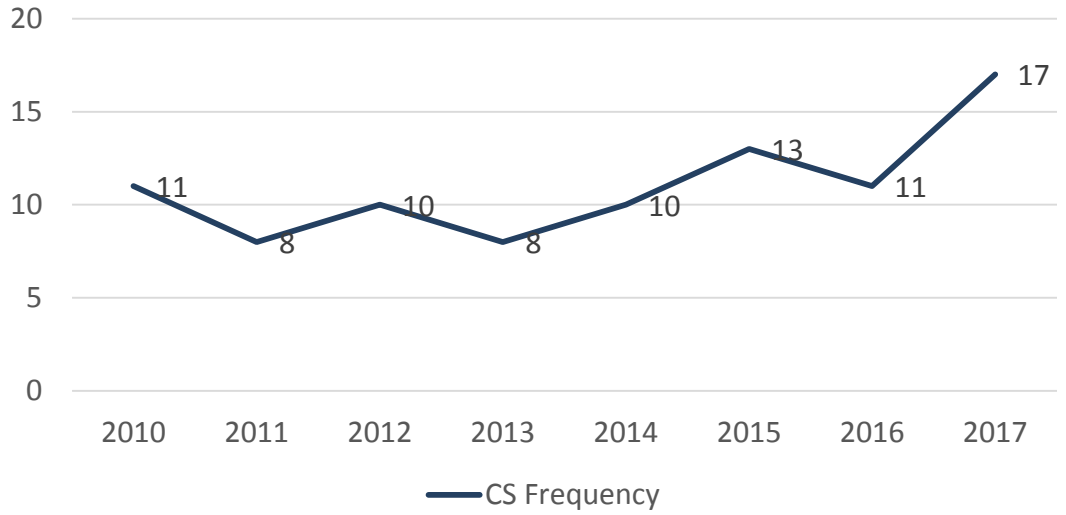
	Frequency	Rate per 100,000
Chlamydia	25,015	600.2
Gonorrhea	8,877	212.7
Syphilis	1,559 (44.3% P&S)	37.4
HIV	408	9.8

Congenital Syphilis

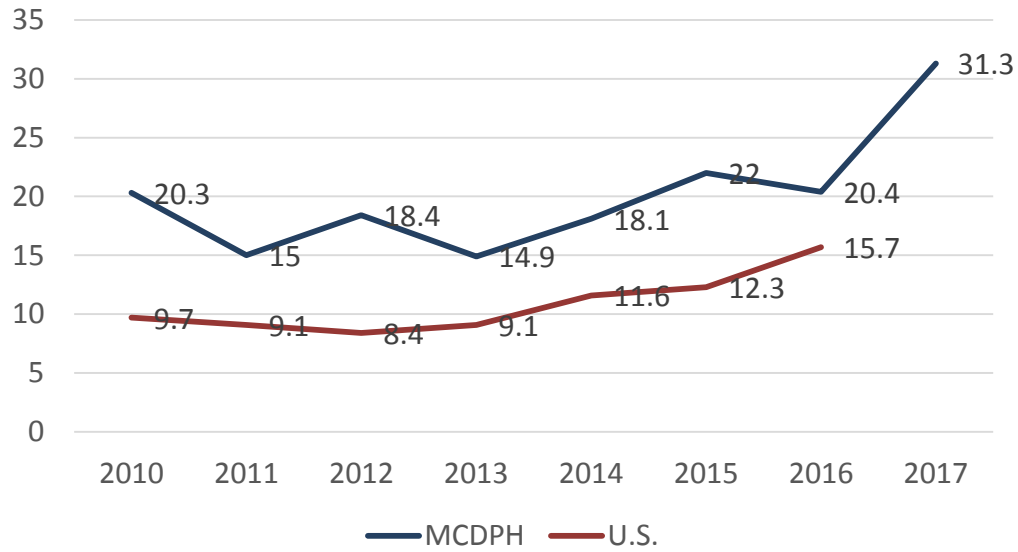
- Case determined by maternal and/or infant criteria:
  - Maternal: Non-trep and trep test (+) and did not receive stage appropriate treatment beginning no less than 30 days before the birth of the infant
  - Infant: Non-trep (+) and symptoms, CS long bone evidence, CSF VDRL (+), elevated CSF WBC or protein, or non-trep fourfold higher than mom
- CDC CS Treatment guidelines based on likelihood of infection, from proven to unlikely
  - https://www.cdc.gov/std/tg2015/congenital.htm

Congenital Syphilis

Maricopa County Congenital Syphilis Frequency



Maricopa County vs. U.S. Congenital Syphilis Rates



2017 Congenital Syphilis Risks	n(%)
Drug Use	15 (88.2%)
Prenatal Care	9 (53.9%)
Late Prenatal Care	4 (44.4%)
Jail in Past Year	7 (41.1%)

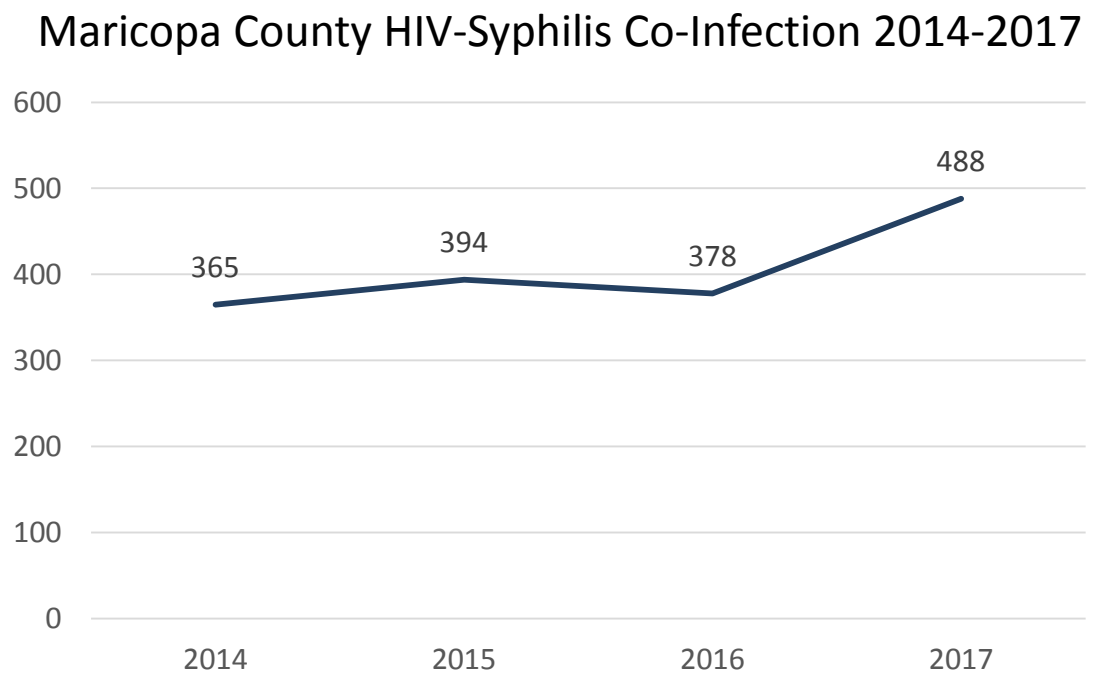
Congenital Syphilis Testing and Reporting

- Mandatory first prenatal visit syphilis testing for pregnant women (ARS 36-693)
- Requested early 3rd trimester, 24-32wks, for all pregnant women (MCDPH Public Health Order, 2015)
- Maternal blood or cord blood syphilis test from all women who bore a stillborn infant (ARS 36-694)
- Monthly Reporting to MCDPH of:
  - Total Number of Births
  - Total Number of Infant Syphilis Tests
  - Total Number of Positives

HIV-Syphilis Co-Infection

- MCDPH experiencing a decrease in HIV rates, but increase in syphilis and HIV-syphilis co-infection
- Each infection increases the risk of the other:
  - Estimated 2-5 fold increased risk of acquiring HIV, if exposed, when infected with syphilis
  - Syphilis infection causes temporary increase in HIV viral load
- Behavioral risks are comparable for both infections

HIV-Syphilis Co-Infection



Maricopa County HIV-Syphilis Co-Infection Cases 2017	
Demographic or Risk (N=488)	n (%)
Sex	Male: 472 (97.6%)
Race n(r/100,000)	W: 236 (9.9) H: 137 (10.5) B: 83 (32.6)
Sexual Preference	Homosexual: 439 (90%)
History of Syphilis	258 (52.9%)
Anonymous Sex	294 (60.2%)
Sex w/ Pick-ups	320 (65.6%)
Sex while Intoxicated	169 (34.6%)
More than 2 Contacts	256 (52.5%)
Drug Use	197 (40.4%)

Syphilis Treatment: Pregnant and/or HIV Pos

- Syphilis treatment does not differ for these consideration groups as compared to general population, mostly
- Early Syphilis:
  - Benzathine penicillin G, 2.4 million units IM X 1
- Late Syphilis:
  - Benzathine penicillin G, 2.4 million units IM X 3 one week apart
- Alternative Treatment for Allergies:
  - Doxycycline 100 mg x2 orally for 14 days (Early) or 28 days (Late)
  - Except in pregnant women!


Questions