Carousel of Coughs:

Spinning Through Respiratory Season and Emerging Infections

2026 Arizona Immunization Conference

April 14th-15th, 2026

ARIZONA DEPARTMENT OF HEALTH SERVICES

Speakers

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Vaccine-Preventable Disease Epidemiologist, ADHS

Financial Disclosures

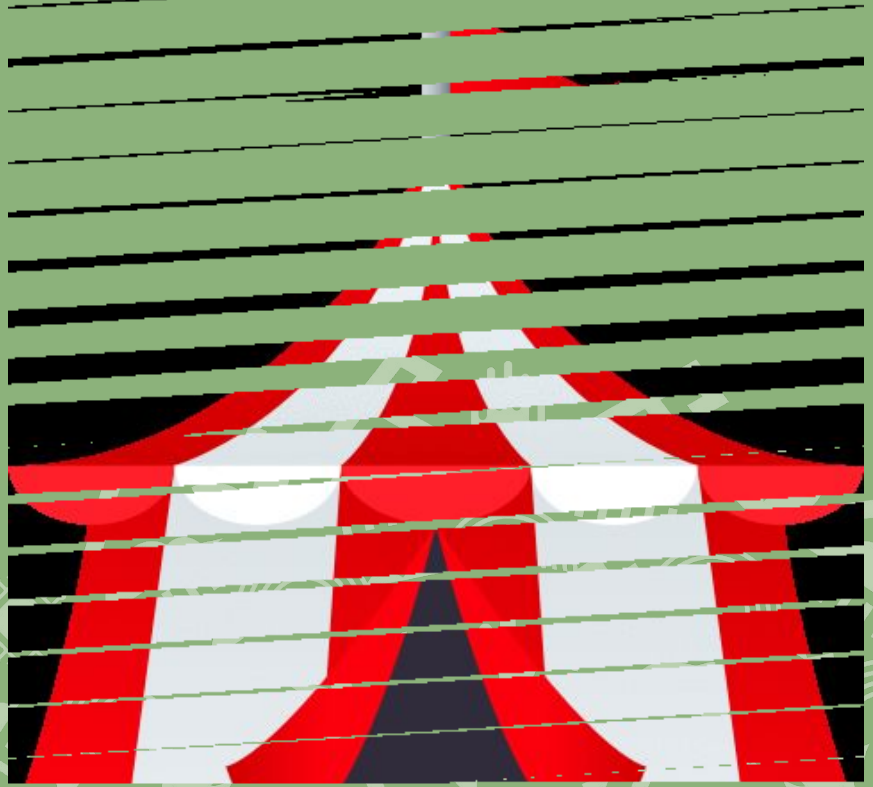
- **Priscilla Lauro/ Joel Terriquez**, faculty for this CE activity, **have no relevant financial relationship(s) with ineligible companies to disclose.**
- None of the planners for this activity have relevant financial relationships to disclose with ineligible companies.
- The Arizona Alliance for Community Health Centers is accredited by the Arizona Medical Association to provide medical education for physicians.
- The Arizona Alliance for Community Health Centers designated the 2025 Arizona Immunization Conference educational activity for a maximum of 11 hours AMA PRA Category 1 Credits Physicians should only claim credit commensurate with the extent of their participation in the activity.
- The Arizona Pharmacy Association is accredited by the Accreditation Council for Pharmacy Education (ACPE) as a provider of continuing pharmacy education.

Learning Objectives:

1. Learn the current Arizona respiratory trends and clinical decision making.
2. Understand current viral threats and emerging infections.
3. Discuss returning preventable diseases in the post-pandemic era.

Carnival Quiz!

Step up to win a prize!



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What strains of viruses are covered by the 2025-2026 influenza season trivalent vaccine?

a. Influenza A (H5N1), Influenza A (H3N2) and influenza B
b. Influenza A (H1N1), Influenza A (H3N2) and COVID-19
c. Influenza A (H1N1), Influenza A (H3N2) and Influenza B
d. Influenza A (H1N1), Influenza A (H2N3) and influenza B
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Respiratory Trends & Clinical Decisions

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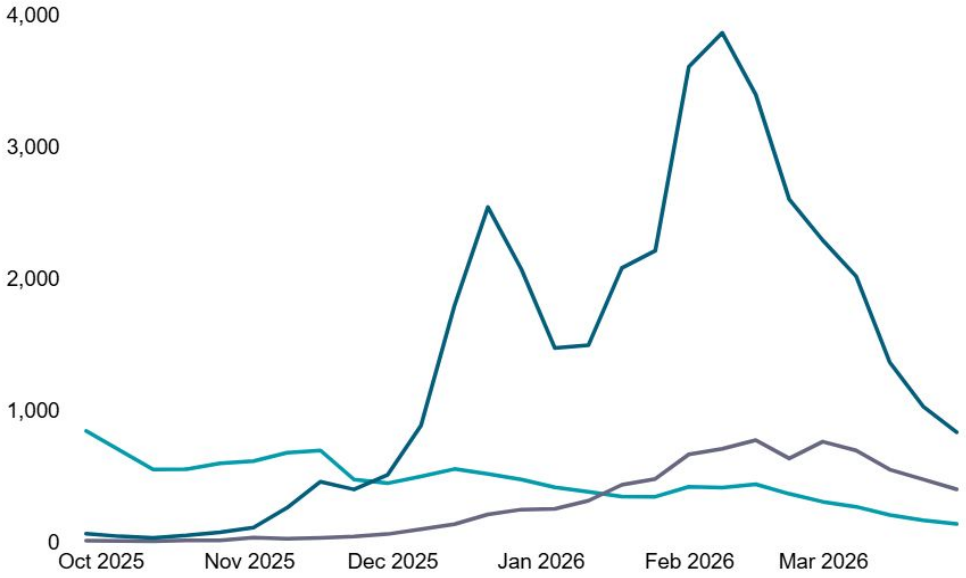
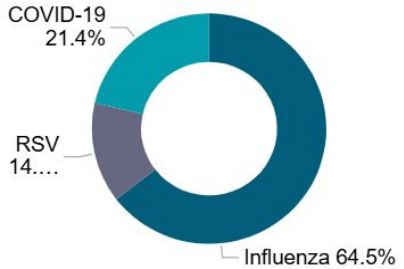
2025-2026 Respiratory Season

(9/28/2025-10/3/2026)

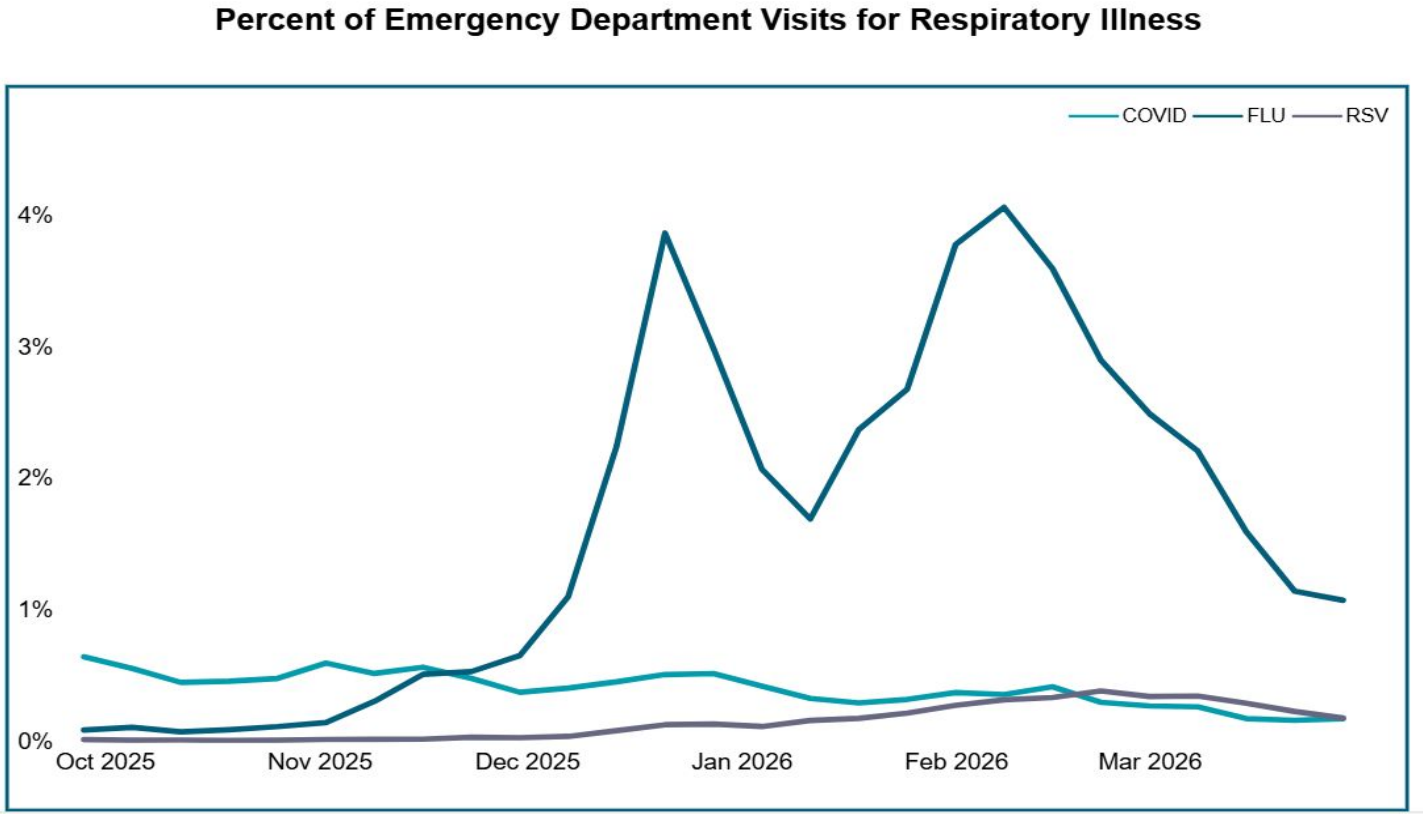
COVID-19 Cases	Influenza Cases	RSV Cases
Season Total	Season Total	Season Total
12,500	37,606	8,188

Weekly Laboratory-Confirmed Cases and Percent Breakdown of COVID-19, Influenza and RSV





25-26 Respiratory Season



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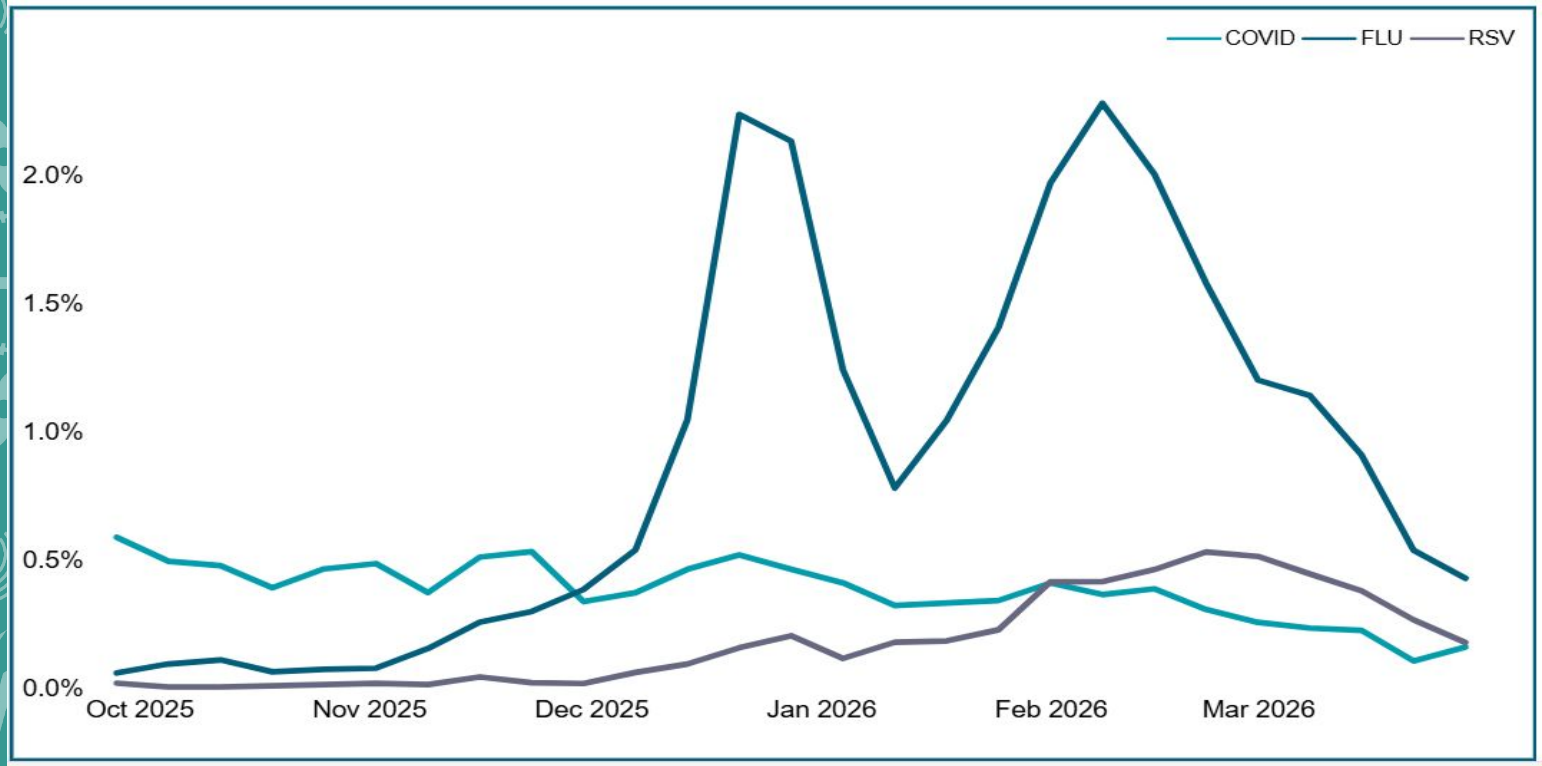

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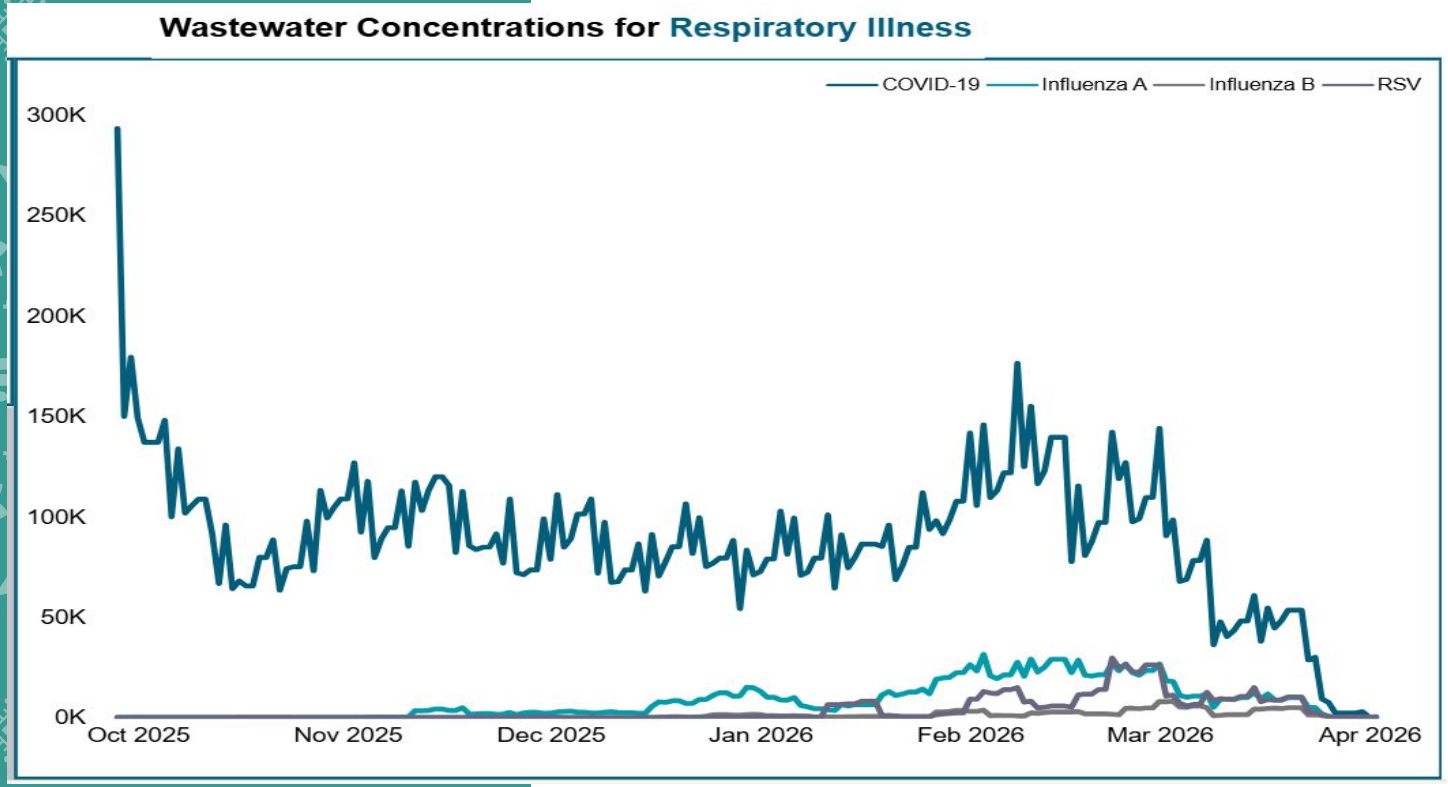
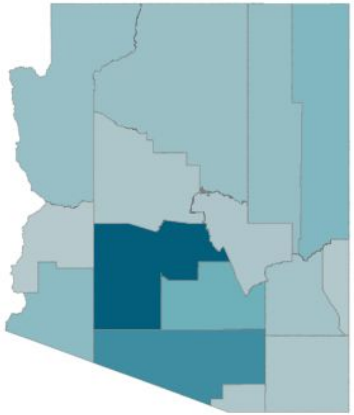


Influenza in Arizona



Season Total Flu Cases

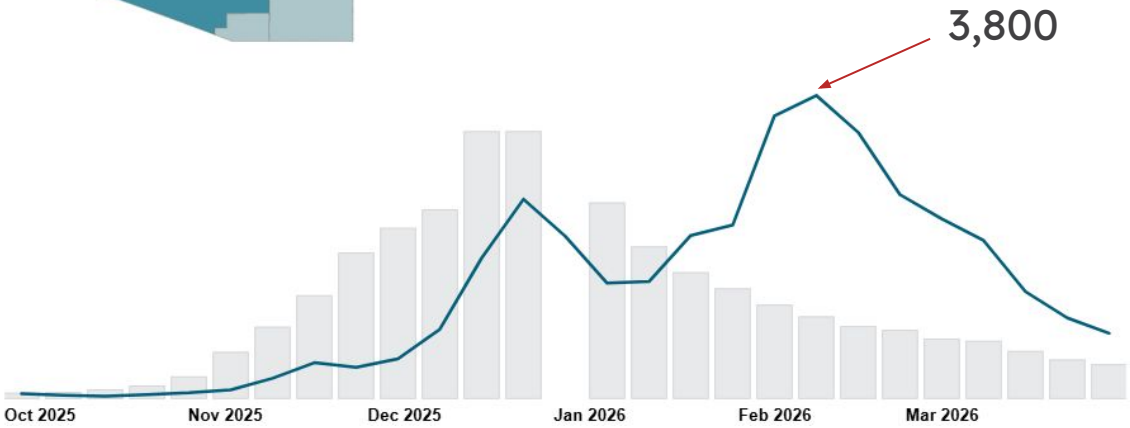
37,606

Current Week Cases

837

% Change from last week

-18.9%



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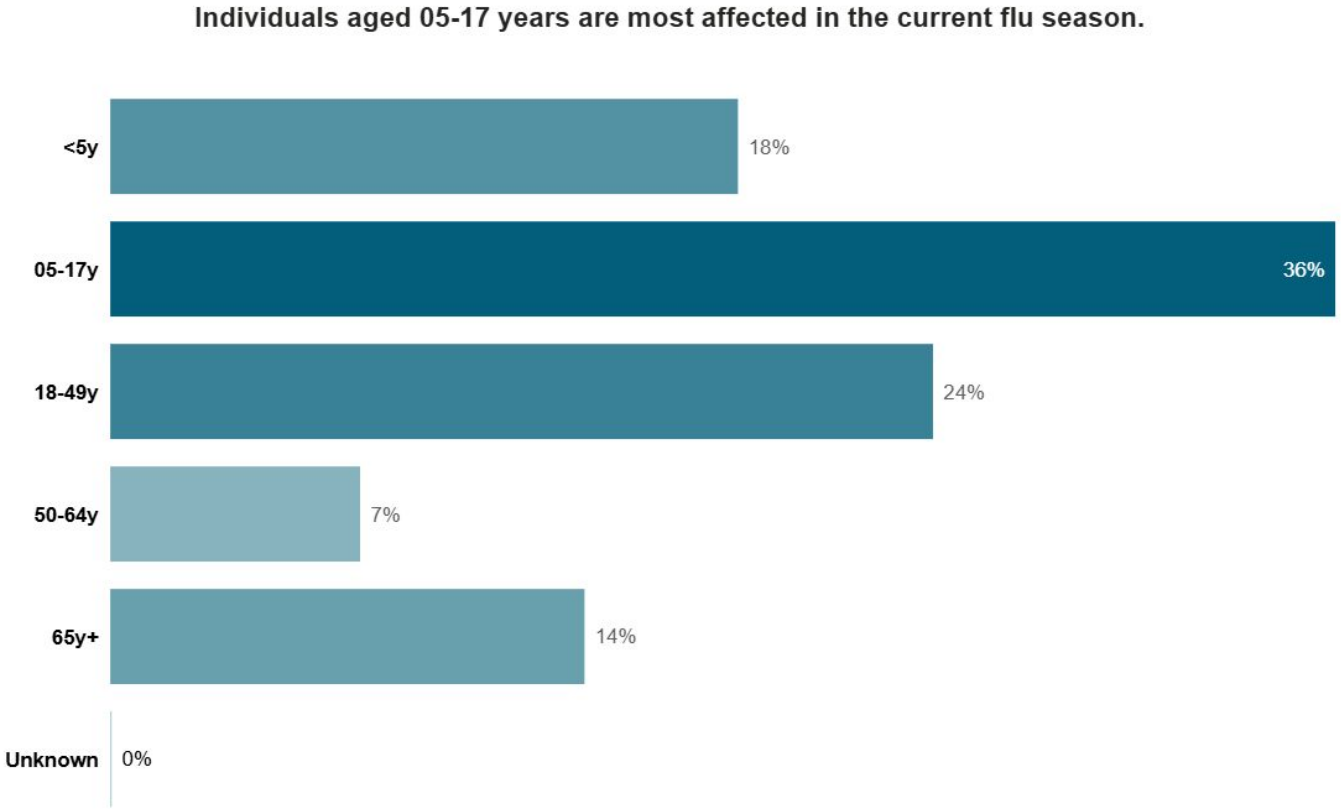

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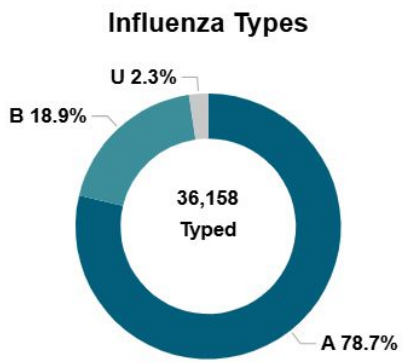
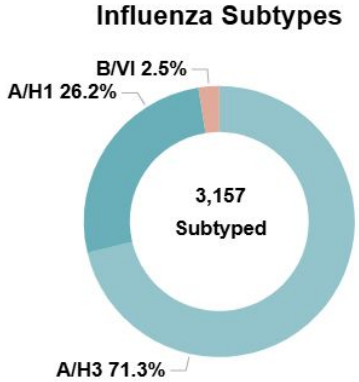
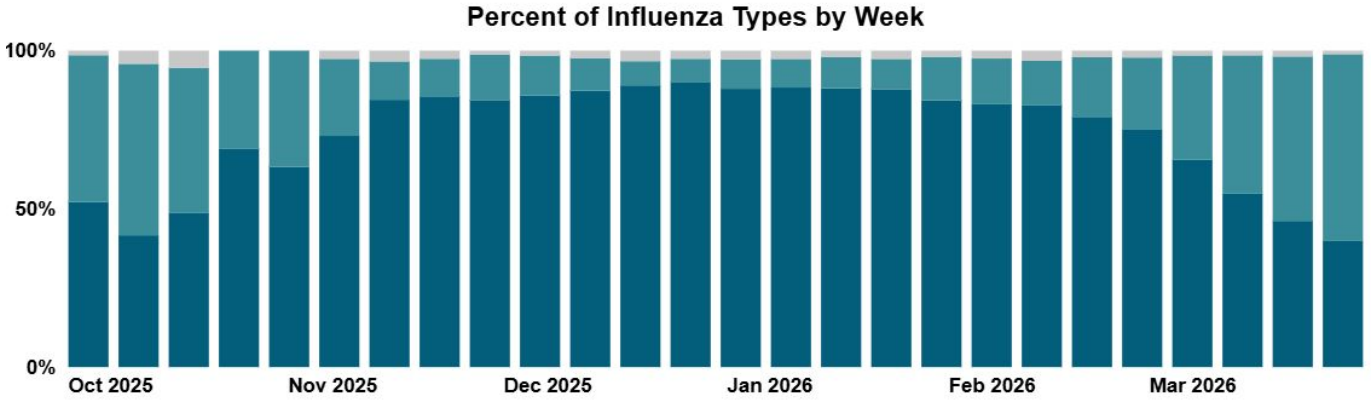






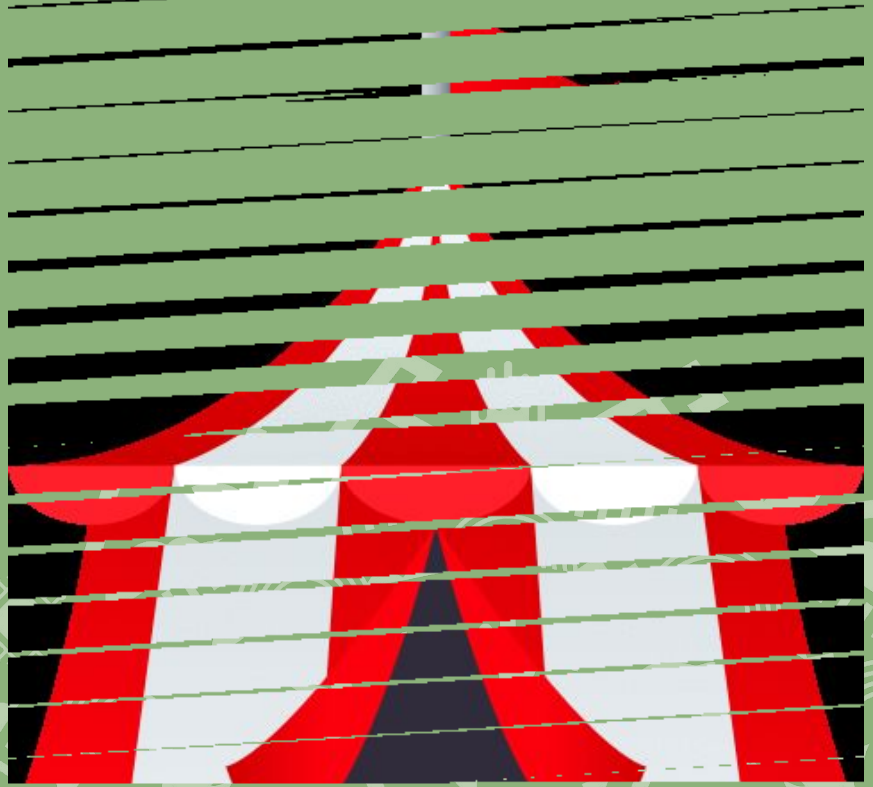
Influenza Special Considerations

Special considerations:

- “Flumps” (Looks like mumps - could be flu…)
  - Consider respiratory panel
- Arizona is not currently actively monitoring any HPAI outbreaks in poultry or cattle.
- Antiviral resistance?
- Vaccine effectiveness?

Carnival Quiz!

Step up to win a prize!



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From what animal was influenza virus isolated first?

a. Birds
b. Pigs
c. French bulldogs
d. Camels
e. Bats
f. Cattle

UNCLE SAM'S ADVICE ON FLU

U. S. Public Health Service Issues Official Health Bulletin on Influenza.

Epidemic Probably Not Spanish In Origin—Germ Still Unknown—People Should Guard Against "Droplet Infection"—Surgeon General Blue Makes Authoritative Statement.

Coughs and Sneezes Spread Diseases

As Dangerous as Poison Gas Shells

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Antiviral treatment

TABLE 1 Summary of widely approved influenza antivirals[a]

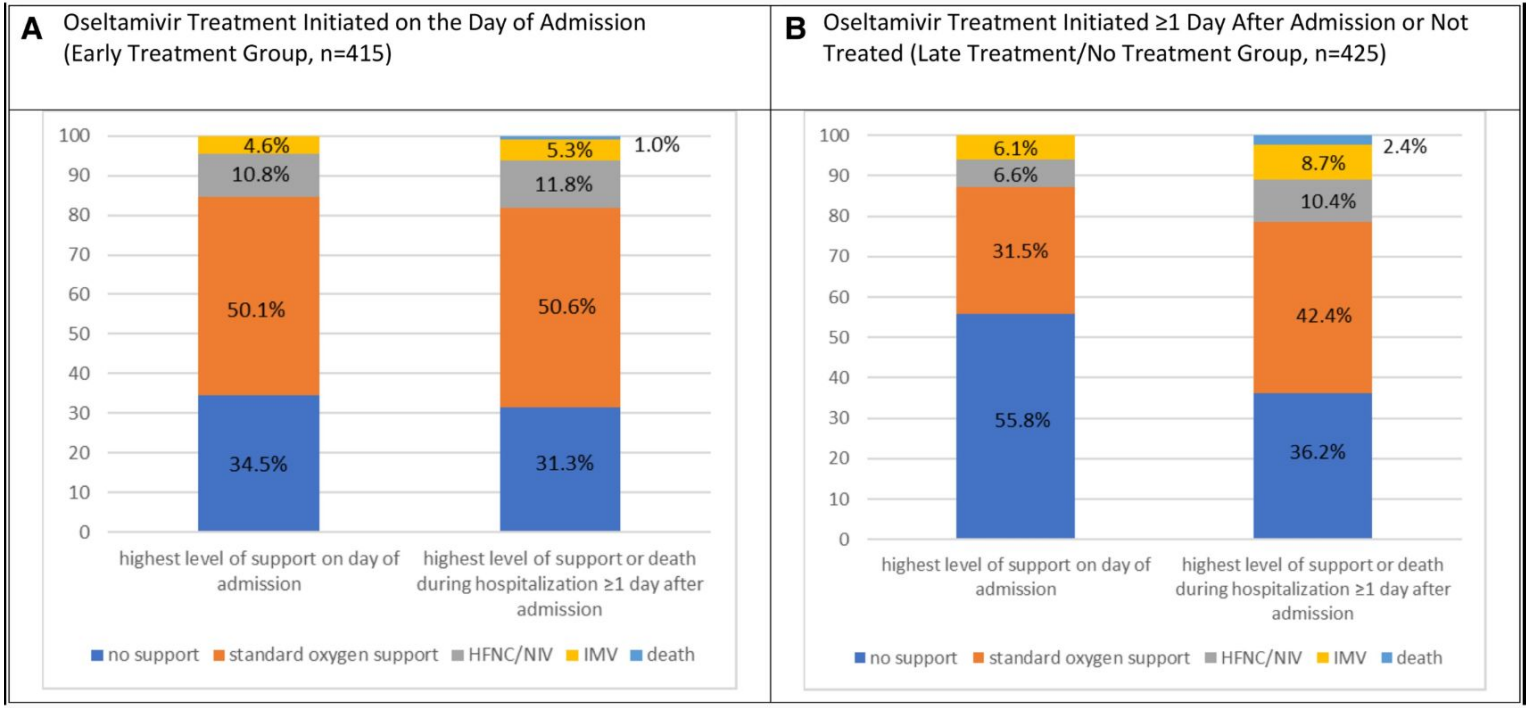
Influenza antiviral	Approval	Mechanism of action	Administration route	Standard adult treatment regimen	Yr of first approval in any country	Patient population(s) with demonstrated efficacy from RCT data (reference[s])
Amantadine	Worldwide (including the EU and U.S.); note that it is no longer used due to widespread resistance	M2 ion channel inhibitor	Oral	Once daily for ≥10 days (U.S.)	1966	Otherwise healthy (72), prophylaxis (73)
Rimantadine	Worldwide (excluding the EU); note that it is no longer used due to widespread resistance	M2 ion channel inhibitor	Oral	Twice daily for 7 days	1993	Otherwise healthy (74), children (75), prophylaxis (73)
Zanamivir	Worldwide (including the EU and U.S.)	Neuraminidase inhibitor	Inhalation or intravenous	Twice daily for 5 days (inhalation) or twice-daily infusion for 5–10 days (intravenous)	1999	Otherwise healthy (76), children ≥5 yrs of age (77), prophylaxis (78, 79)
Oseltamivir	Worldwide (including the EU and U.S.)	Neuraminidase inhibitor	Oral	Twice daily for 5 days	1999	Otherwise healthy (78, 80), high risk of complications (53), children ≥1 yr of age (51), prophylaxis (81)
Peramivir	Worldwide (including the EU and U.S.)	Neuraminidase inhibitor	Intravenous infusion	Single infusion over 15 min (minimum)	2014	Otherwise healthy (82)
Laninamivir	Japan only	Neuraminidase inhibitor	Inhalation	Single dose	2010	Otherwise healthy (83), children (≤9 yrs of age) (84), prophylaxis (85)
Baloxavir	Worldwide (including the EU and U.S.)	Endonuclease inhibitor	Oral	Single dose	2018	Otherwise healthy (49), high risk of complications (53), children ≥1 yr of age (54), prophylaxis (86)
Favipiravir	Japan and China (approved for novel pandemic or multiresistant strains only)	RNA-dependent RNA polymerase inhibitor	Oral	Twice daily for 5 days	2014	Otherwise healthy (87)

[a] RCT, randomized controlled trial; EU, European Union.

- Limited options
- Oseltamivir resistance <1%; Baloxavir <0.1%

Holmes, E. C., Hurt, A. C., Dobbie, Z., Clinch, B., Oxford, J. S., & Piedra, P. A. (2021). Understanding the impact of resistance to influenza antivirals. *Clinical Microbiology Reviews*, *34*(2), 10-1128.

Treatment effectiveness



A multicenter observational, prospective study- enrolled 840 adults (aged ≥18 years) hospitalized with laboratory-confirmed influenza

Compared peak pulmonary disease severity:

1. Oseltamivir on admission
2. Oseltamivir >1 day after admission

Lewis, N. M., Harker, E. J., Grant, L. B., Zhu, Y., Grijalva, C. G., Chappell, J. D., ... & Self, W. H. (2025). Benefit of early oseltamivir therapy for adults hospitalized with influenza A: an observational study. *Clinical infectious diseases*, *81*(1), 190-197.

Influenza vaccine effectiveness

Children and adolescents (aged <18 years)

- **VE against any influenza-associated ARI was 32% in outpatient settings and 63% against influenza-associated hospitalization.**
  - VE against influenza A(H1N1) was 72% outpatients, and 63% against hospitalization.
  - VE against influenza A(H3N2), was 42% in outpatients and 55% against hospitalization.

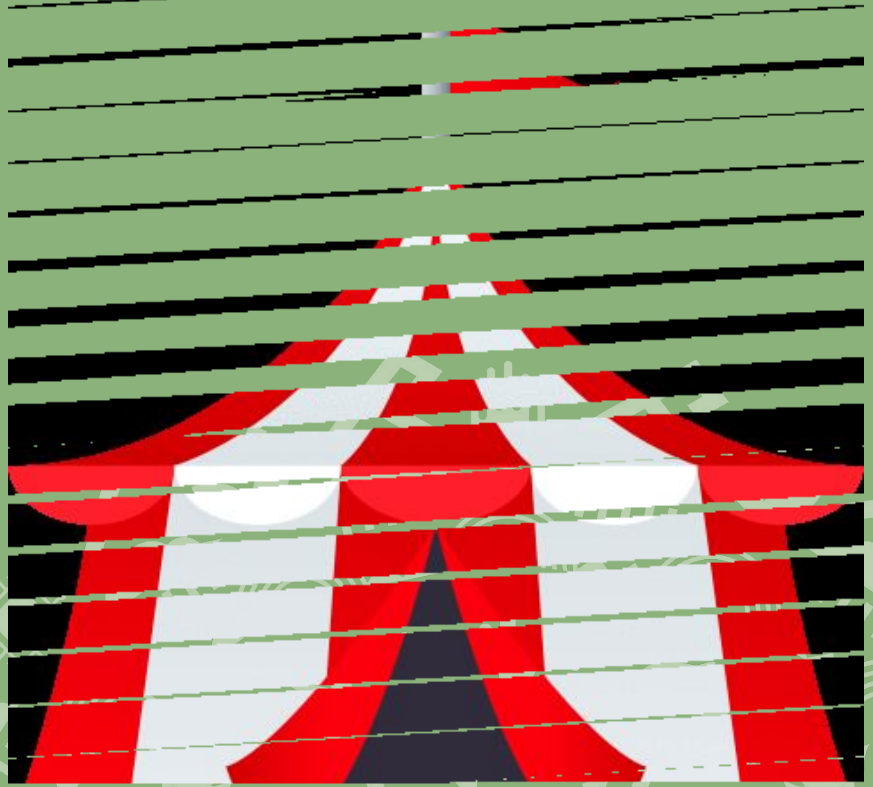
Adults (aged ≥18 years)

- **VE against any influenza-associated ARI was 36% in outpatient settings and 41% against influenza-associated hospitalization.**
  - VE effectiveness against influenza A(H1N1)pdm09 was 42% in outpatients settings and was not statistically significant against hospitalization. VE effectiveness against influenza A(H3N2) was 51% against influenza-associated hospitalization, but not statistically significant in the outpatient setting

Frutos, A. M. (2025). Interim estimates of 2024–2025 seasonal influenza vaccine effectiveness—four vaccine effectiveness networks, United States, October 2024–February 2025. *MMWR. Morbidity and mortality weekly report*, *74*.

Carnival Quiz!

Step up to win a prize!



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This 12-year-old boy is seen by his pediatrician with 3 day history of fever, sore throat, hoarsenss and very painful glands in his neck. He feels his throat is closing. Which vaccine would prevent this type of infection?

a. Pneumococcal conjugate vaccine
b. Haemophilus influenzae b vaccine
c. DTaP
d. Meningococcal serogroup B vaccine
e. HPV vaccine

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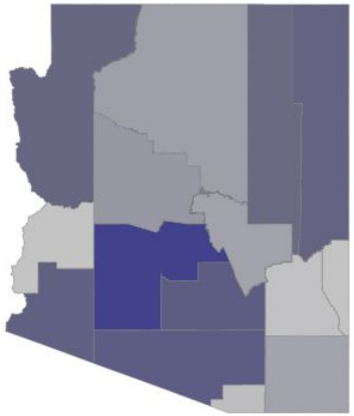
RSV in Arizona



Season Total RSV Cases

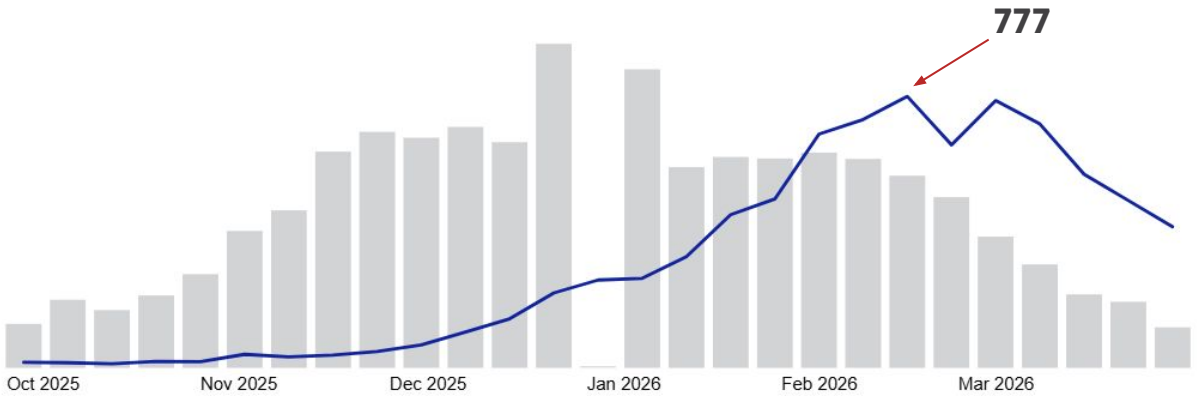
8,188

Current Week Cases

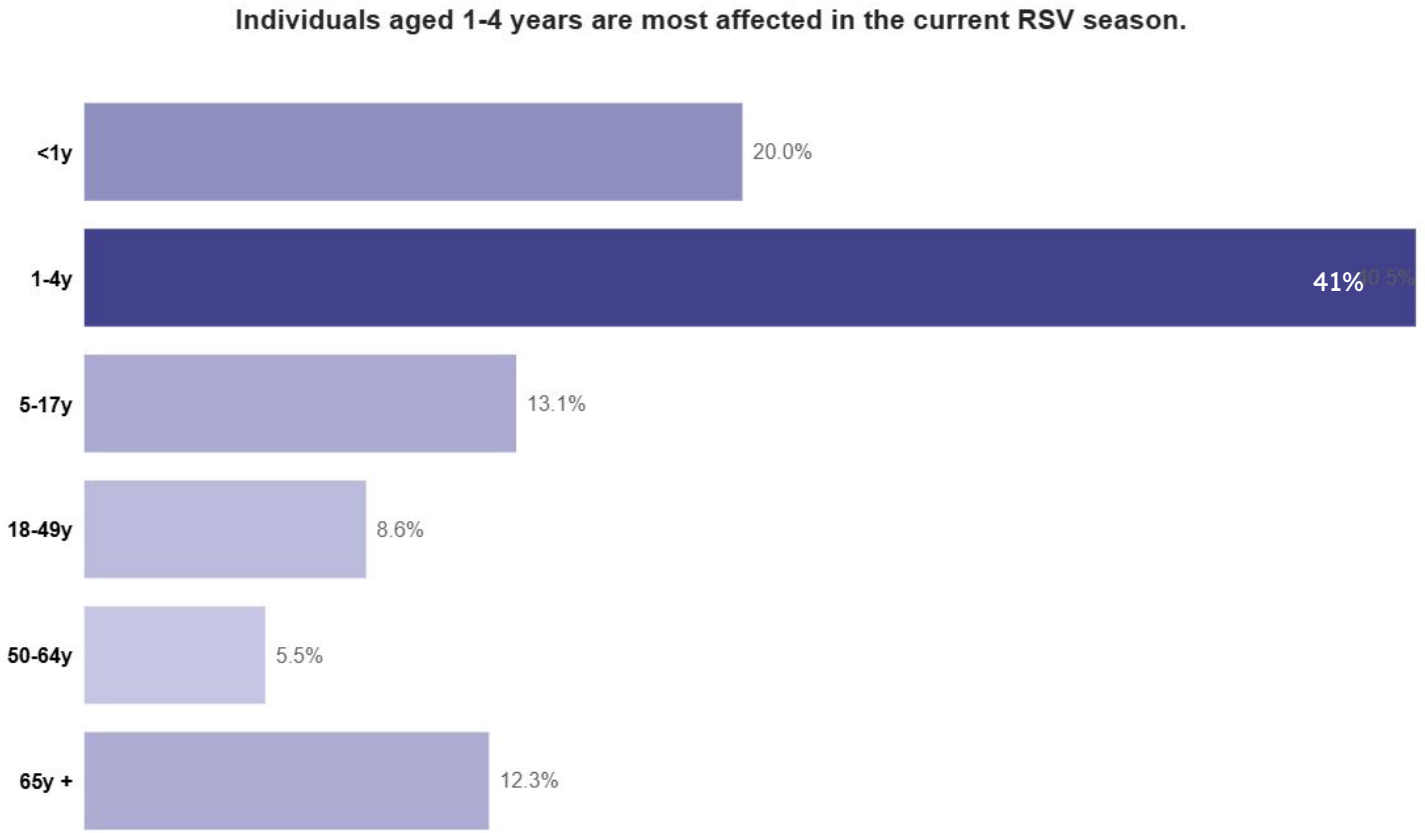
404

% Change From Last Week

-15.7%



RSV in Arizona



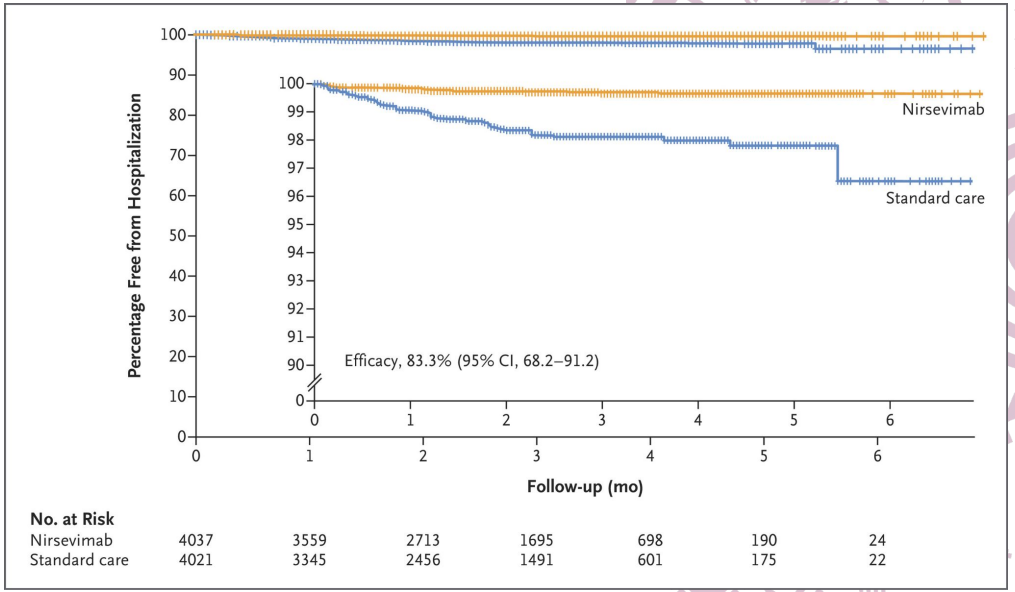
RSV Special Considerations

Special Considerations:

- With every new season, ADHS recommends use of nirsevimab for infants with the first sign of a 3 consecutive week increase of cases in Arizona.
  - CDC recommends administration during Oct-Mar
  - AZ continued recommendation through April
- RSV Vaccine is recommended for 75+ OR individuals 50-74 who are at increased risk
  - Maternal Vaccine recommended if between 32-36 weeks of pregnancy during Sep-Jan
- RSV pediatric mortalities are now retrospectively reportable for the current season as of 9/28/25

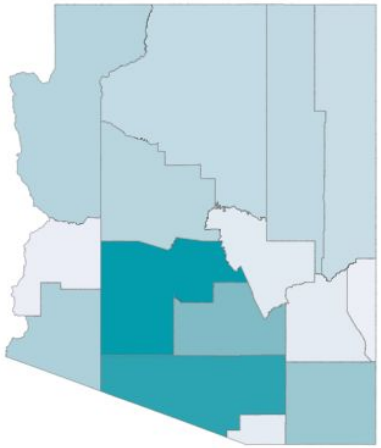
Nirsevimab effectiveness

- HARMONIE- randomized controlled trial
- 8058 infants were randomized to receive nirsevimab (n=4037) or standard care (n=4021).
- 0.3% in the nirsevimab group vs 1.5% in the standard-care group were hospitalized for RSV-associated LRI (nirsevimab efficacy of 83.2%)
- Very severe RSV-associated LRI occurred in 0.1% in the nirsevimab group vs 0.5% in the standard-care group (nirsevimab efficacy of 75.7%)



Drysdale, S. B., Cathie, K., Flamein, F., Knuf, M., Collins, A. M., Hill, H. C., ... & Faust, S. N. (2023). Nirsevimab for prevention of hospitalizations due to RSV in infants. *New England Journal of Medicine*, *389*(26), 2425-2435.

COVID-19 in Arizona



Season Total COVID-19 Cases

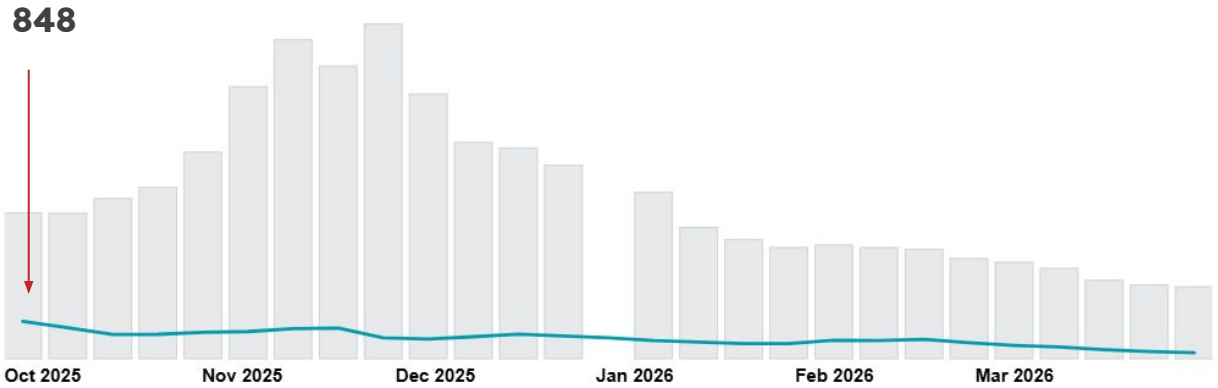
12,500

Current Week Cases

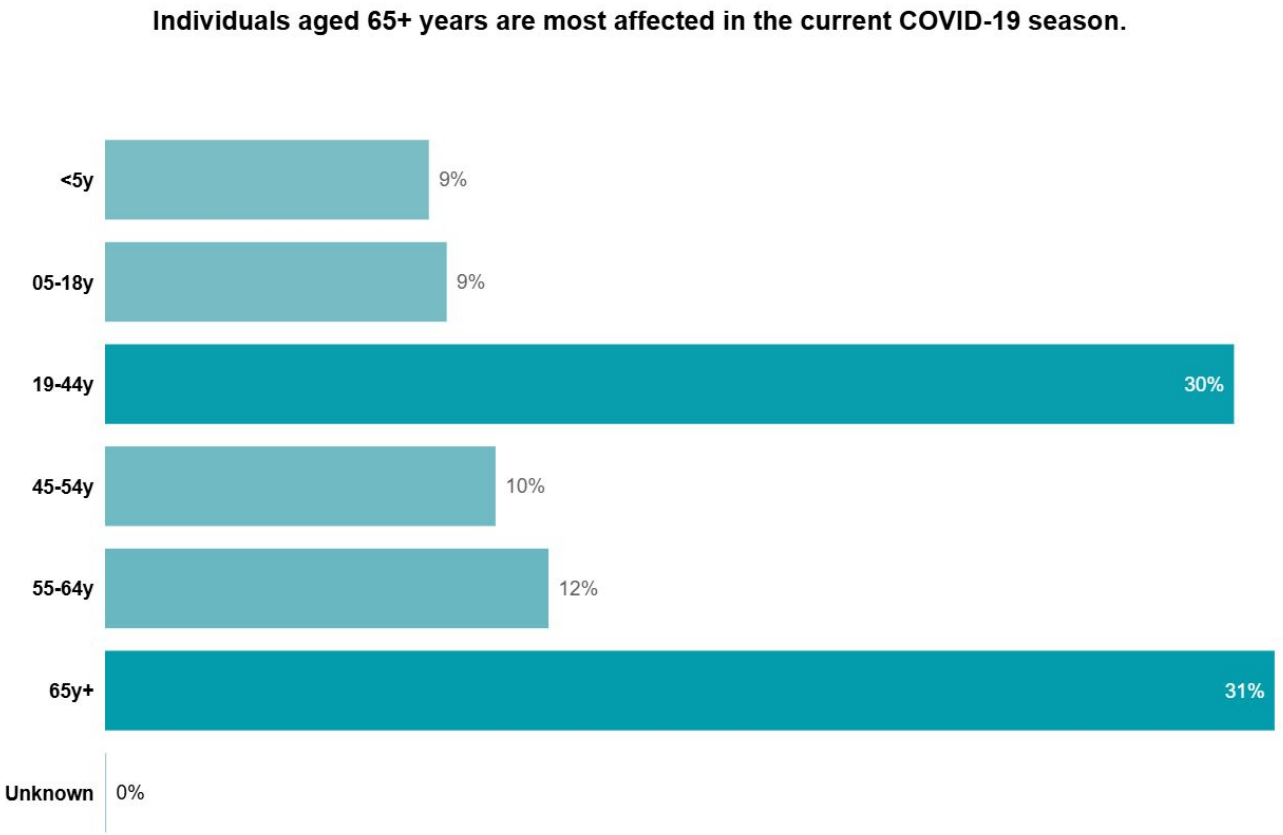
142

% Change From Last Week

-16.0%



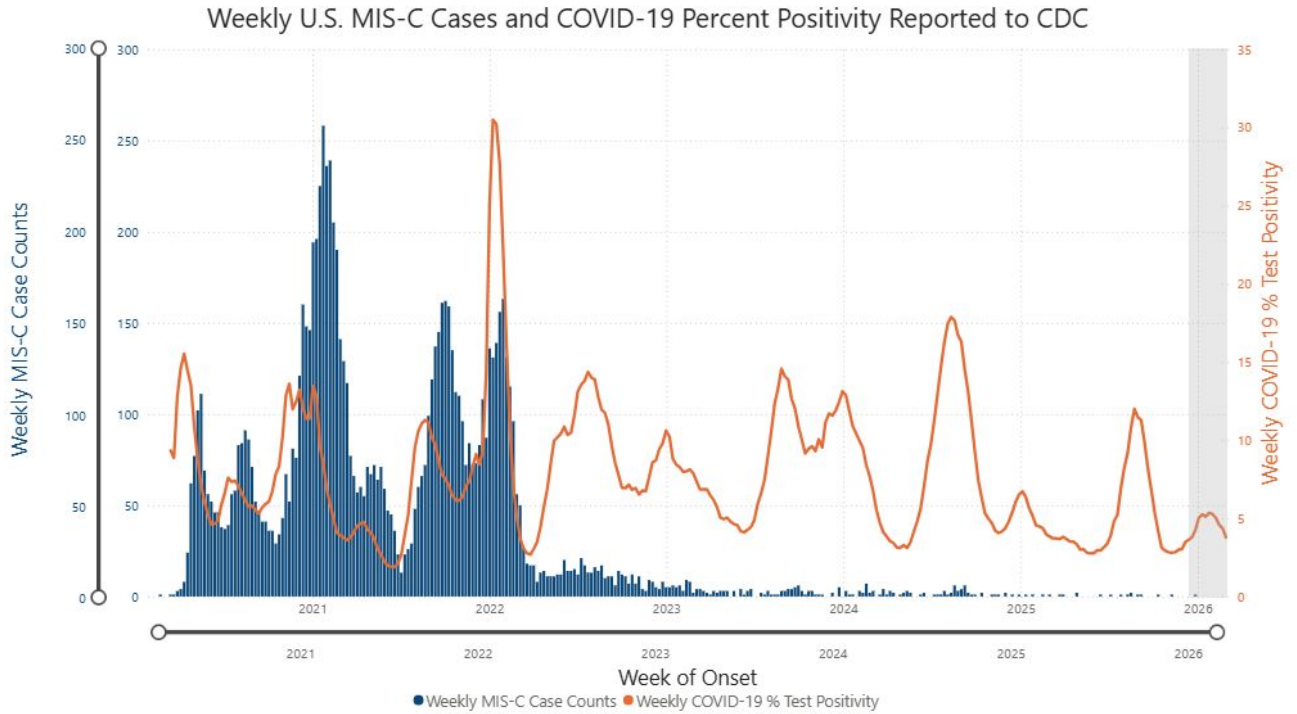
COVID-19 in Arizona

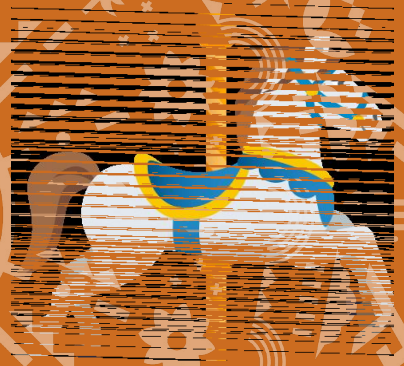


COVID-19 Special Considerations

MIS-C is still reportable condition in Arizona, less common

- 125 Cases in AZ
- Last Case in 2023





Current Viral Threats & Emerging Infections

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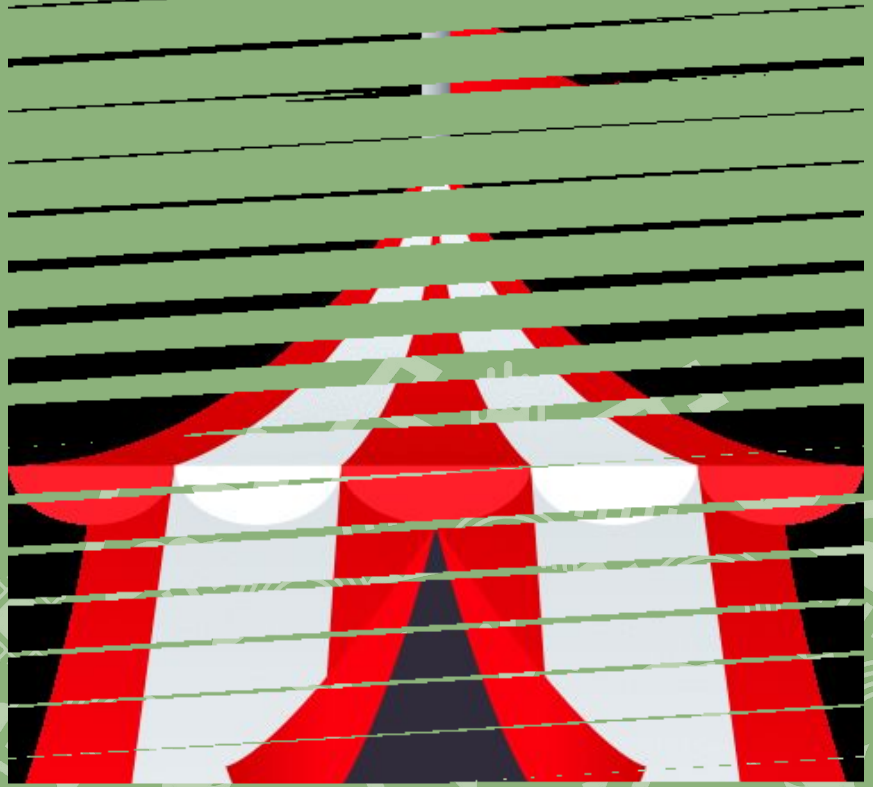
Carnival Quiz!

Step up to win a prize!



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Which infection is considered the biggest current threat due to pandemic potential?

a. Hantavirus
b. Avian influenza
c. Human metapneumovirus
d. Ebola
e. MERS-CoV
f. Mpox (Monkeypox)

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23-year-old male, no medical history, MSM, here with low grade fever and rash that started around the mouth. He reports very painful swallowing and tender neck glands (lymph nodes).

What is the diagnosis?

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2. Smallpox
3. Monkeypox
4. Herpes
5. Meningococcus

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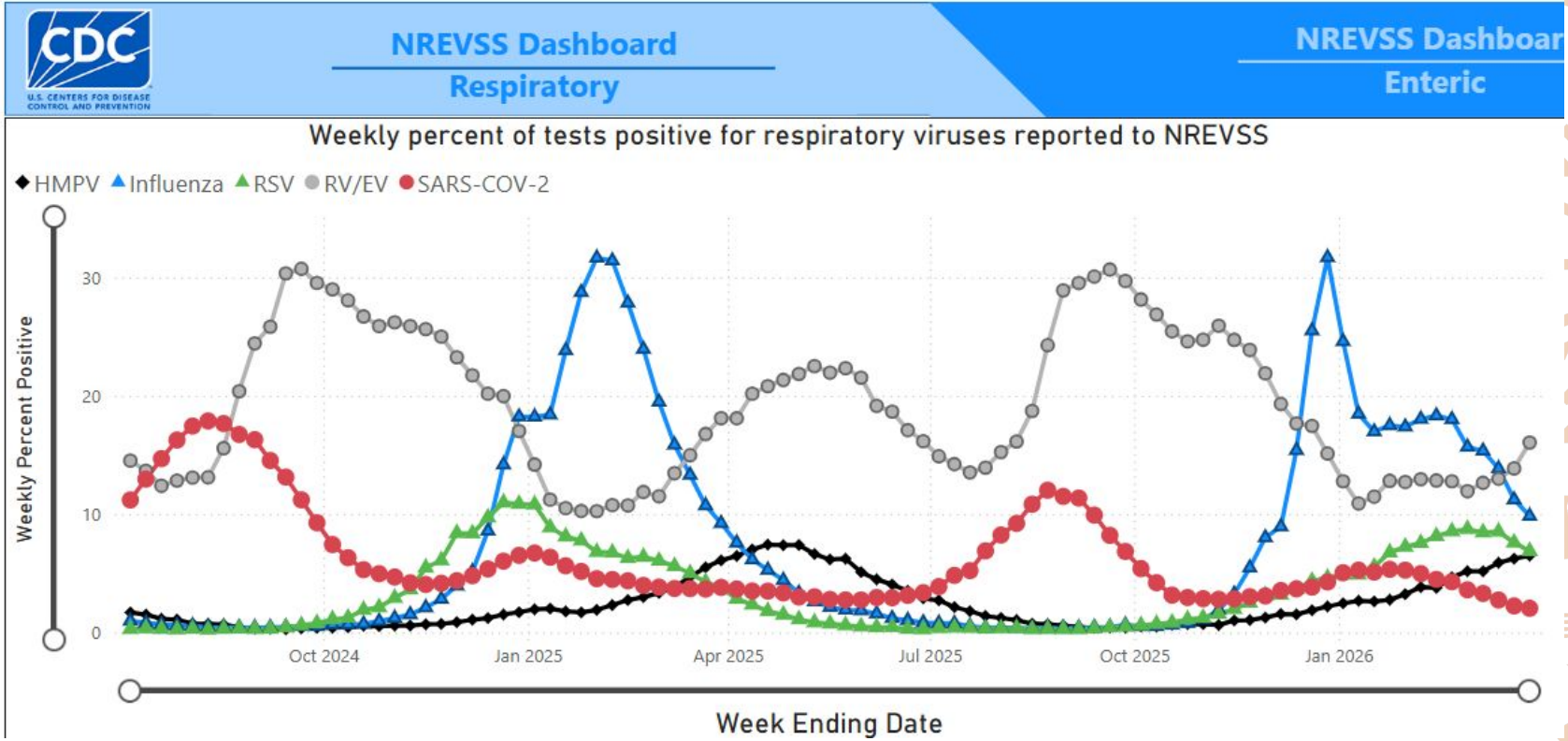
National Respiratory Virus Surveillance



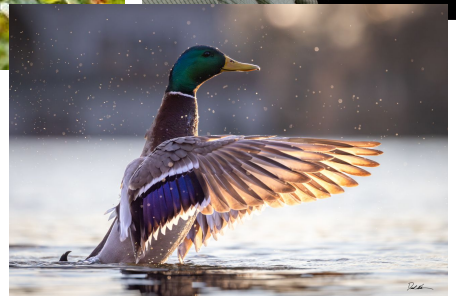
What is the next pandemic?

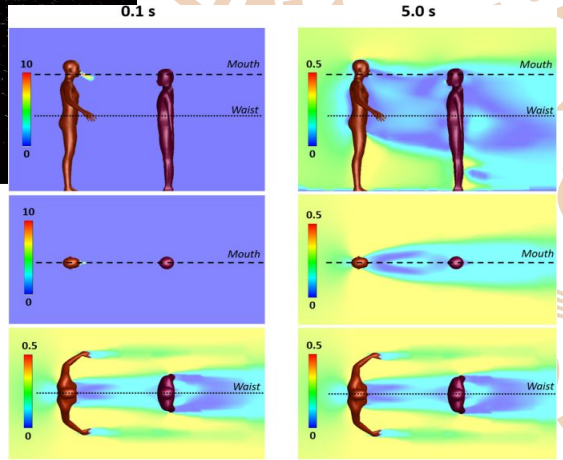
Taking aim

In 2022, researchers at the U.S. National Institute of Allergy and Infectious Diseases singled out a dozen viral families that include "priority pathogens" with high pandemic potential. The agency planned to support research exploring the basic biology of these viruses and developing potential countermeasures.

Viral family	Viruses
Corona	SARS-CoV-1, SARS-CoV-2, MERS-CoV
Orthomyxo	Influenza A, B, C
Arena	Lassa, Junín
Hanta	Andes, Sin Nombre, Hantaan
Nairo	Crimean-Congo hemorrhagic fever
Peribunya	La Crosse, Cache Valley
Phenui	Rift Valley fever, Punta Toro
Filo	Ebola, Marburg
Flavi	West Nile, Dengue
Paramyxo	Parainfluenza, Nipah, Hendra
Picorna	Enterovirus A71
Toga	Venezuelan equine encephalitis

Where is the next pandemic coming from?





Is the next pandemic going to be a virus?

VIRUS

- Viruses, especially RNA have high mutation rates
- Mechanism of transmission (respiratory) enhanced by population density
- Ability to adapt and adjust to different hosts
- Challenging diagnostic testing and limited treatment options

BACTERIA

- Predictable- zoonotic bacteria rarely develops spontaneous resistance to antibiotics
- Defined life cycles and mechanisms of transmission
- Treatment options*
- Concerns:
  - Infecting water sources
  - MDR organisms
  - Engineered resistance (bioterrorism)

Garcia-Blanco, M. A., Ooi, E. E., & Sessions, O. M. (2022). RNA viruses, pandemics and anticipatory preparedness. *Viruses*, *14*(10), 2176.

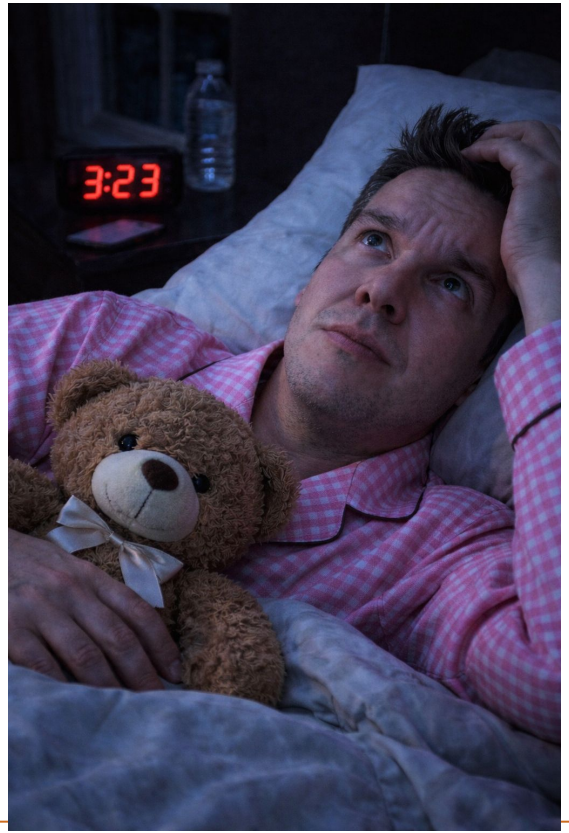
Why are we at risk?

- Access to travel
- Zoonotic spillover (animal contact)
- Environmental changes-deforestation
- Climate change
- Misinformation and impact to vaccination rates (for VPI)
- International conflict- bioengineered pathogens?

My wild guess

Something respiratory
- hMPV
- HPAI
- MERS-CoV

Something new
- Disease “X”



Something from mosquitoes
- West Nile virus
- Dengue
- Equine encephalitis

Something very bad
- Ebola
- Marburg
- Crimean Congo

An unexpected mutation
- Hantavirus
- Lassa fever

Human metapneumovirus

- hMPV is a common respiratory virus associated with acute respiratory infections
- Most susceptible to hMPV infections are neonates, children, older adults, and immunocompromised individuals.
- hMPV disease burden: non-classical ARI symptoms such as exacerbations of chronic diseases (asthma or COPD), upper and lower respiratory infection
- Estimated ~473 000 hospitalizations per year in people aged 65 years (231 per 100 000 people)

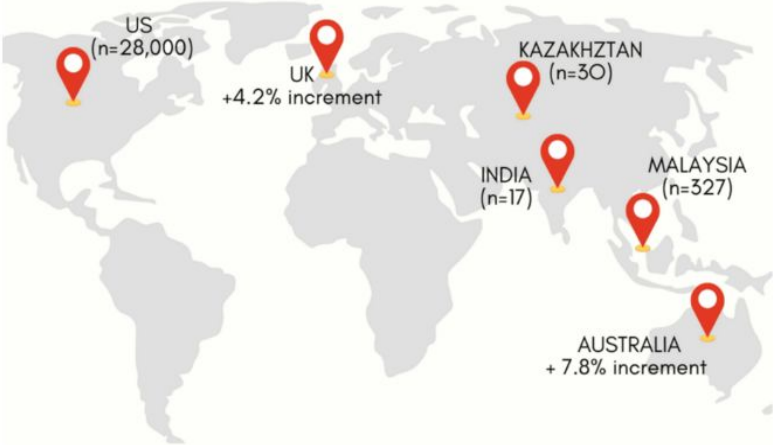
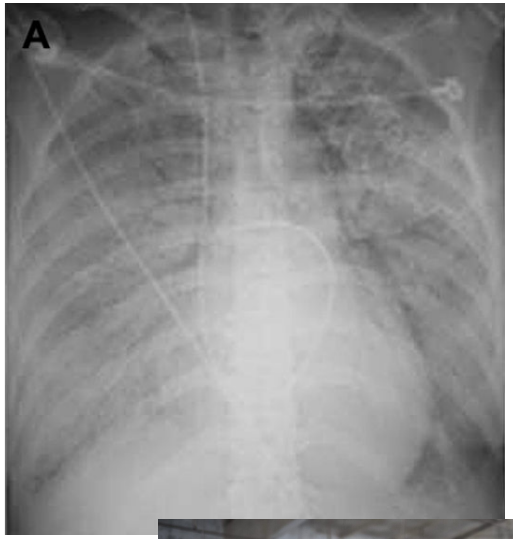


FIGURE 2: Global human metapneumovirus data from January 2024 to January 2025.

Image credits: Dr. Saba Kondkari, Dr. Sayem A Mulla, Dr. Laresh N Mistry.

Mistry, L. N., Agarwal, S., Jaiswal, H., Kondkari, S., Mulla, S. A., & Bhandarkar, S. D. (2025). Human metapneumovirus: emergence, impact, and public health significance. *Cureus*, *17*(3).

Highly pathogenic Avian influenza (H5N1)



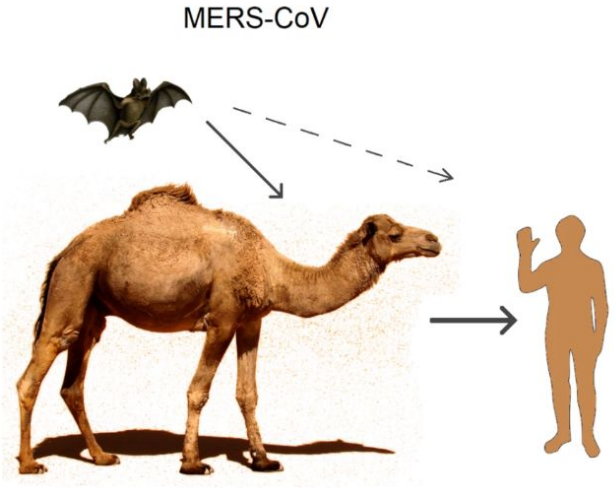
- H5N1 bird flu is widespread in wild birds worldwide and is causing outbreaks in poultry and U.S. dairy cows with sporadic human cases in U.S. dairy and poultry workers.
- No proven person to person spread
- 71 cases in U.S. (2 deaths)

Symptoms:

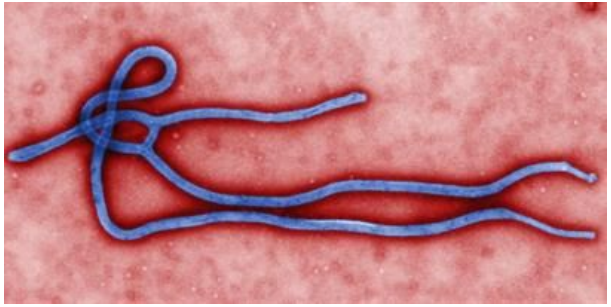
- Conjunctivitis >90%
  - Only symptom 33%
- Fever (40-60%)
- Respiratory symptoms (~36%)
- Days with symptoms 2-5 days
- Susceptible to oseltamivir and baloxavir

MERS-CoV

- Middle Eastern Respiratory Syndrome Coronavirus first identified in Saudi Arabia and Jordan in 2012.
- Symptoms include fever, cough and shortness of breath
- MERS-CoV can be transmitted between dromedary camels and people; onwards person-to-person transmission can lead to outbreaks.
- Over 2600 laboratory-confirmed cases of human infection- majority (84%) were reported from the Arabian Peninsula.
- Approximately 37% of cases reported have died (likely is an overestimation as surveillance systems can miss mild or asymptomatic cases).
- No specific treatment



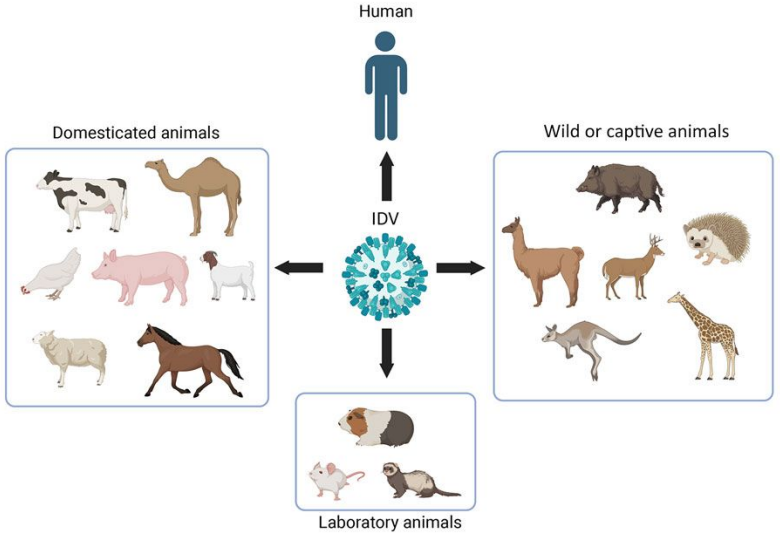
Viral hemorrhagic fevers



- Ebola disease is a severe, often fatal illness in humans.
- Fruit bats are natural hosts. Human transmission when close contact with infected animals (fruit bats, chimpanzees, gorillas, monkeys, forest antelope or porcupines.
- Incubation 2-21 days: Fever, fatigue, muscle pain, headache and sore throat, GI symptoms, abdominal pain, rash, sepsis, bleeding.
- Case fatality rate is around ~50% (25–90%)
- Early intensive supportive care improves survival.
- Approved vaccines and treatments are available for one of the viruses

Emergent pathogens to watch in 2026

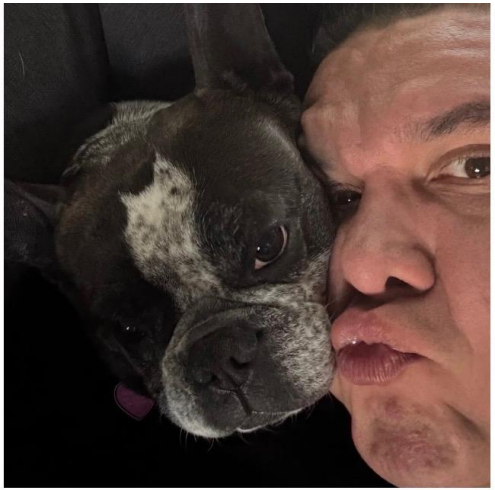
- **Influenza D virus**
  - Cattle and pigs, but now expanding to other species
  - IDV has been isolated from humans, evidence indicates that the virus is zoonotic (animal handlers)- probably subclinical infection.
- **Oropouche virus**
  - Fever, headache, joint and muscle aches
  - Transmission: bites of infected midges and some mosquitoes.
  - The Oropouche virus is present mostly in South America and the Caribbean, but cases seem to be extending to other areas



Emergent pathogens to watch in 2026

- **Mpox clade 1**
  - Predominant clade in central Africa with some travel associated cases
  - More severe disease, higher fatality 3-10%
- **Canine cornavirus**
  - Novel canine–feline recombinant alphacoronavirus, CCoV-HuPn-2018
  - First isolated in 2021- child hospitalized with pneumonia in Malaysia, causing some respiratory illness in Thailand, Vietnam, Haiti and Arkansas

So worth dying for!!!! 😍💀 (that’s Winnie)...



Preventable Diseases in the post-pandemic era.

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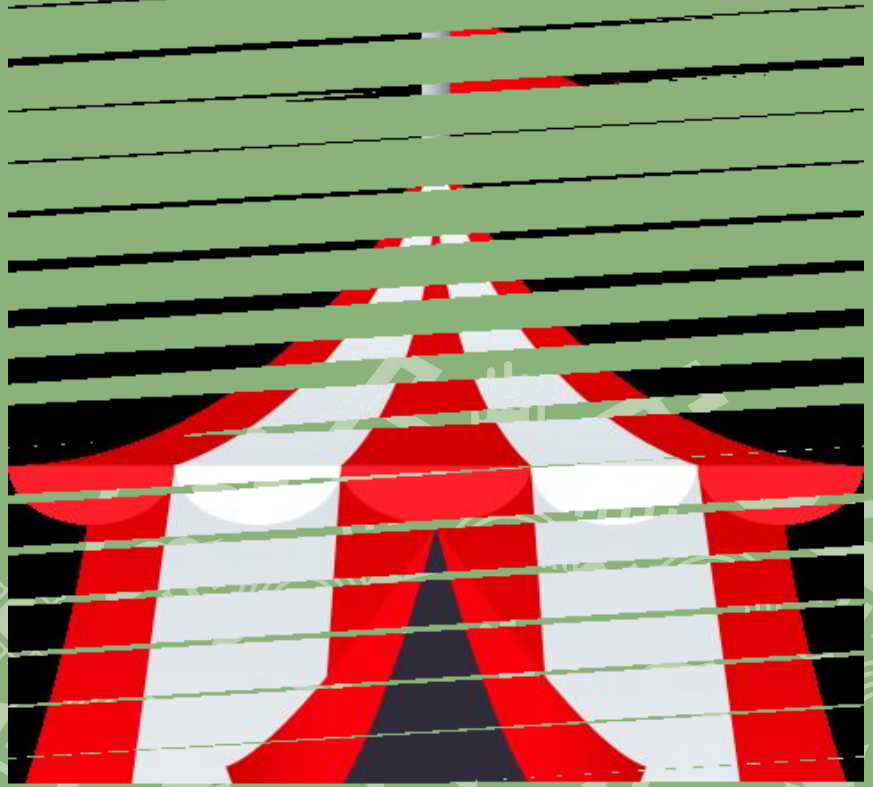
Carnival Quiz!

Step up to win a prize!



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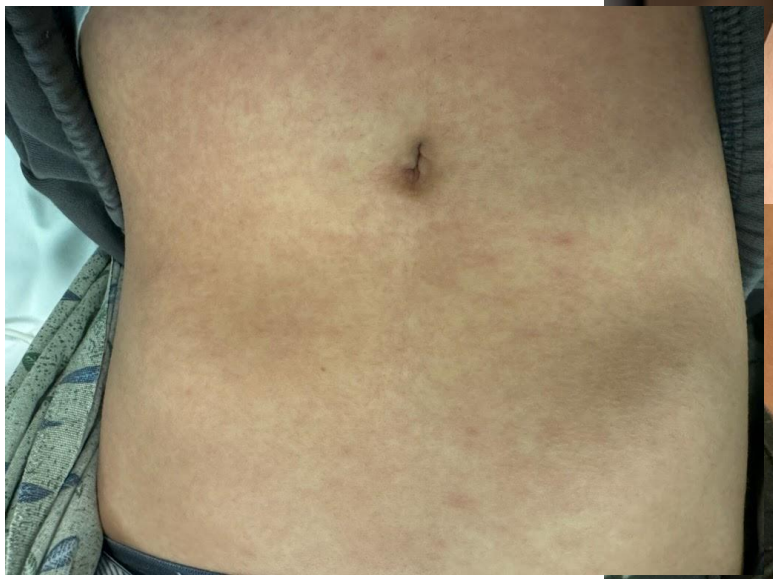
16-year-old female, no medical history, comes in with 2-day history of fever, chills, followed by rash that started on her face; very faint. She also has runny nose, sneezing and conjunctival redness.

What is the diagnosis?

a. Parvovirus
b. Measles
c. Chickenpox
d. Meningococcus
e. Mononucleosis



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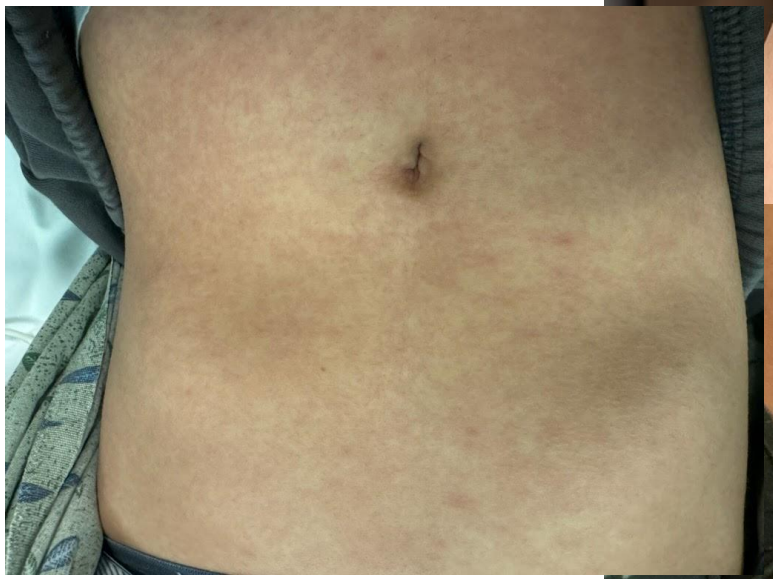

Pertussis

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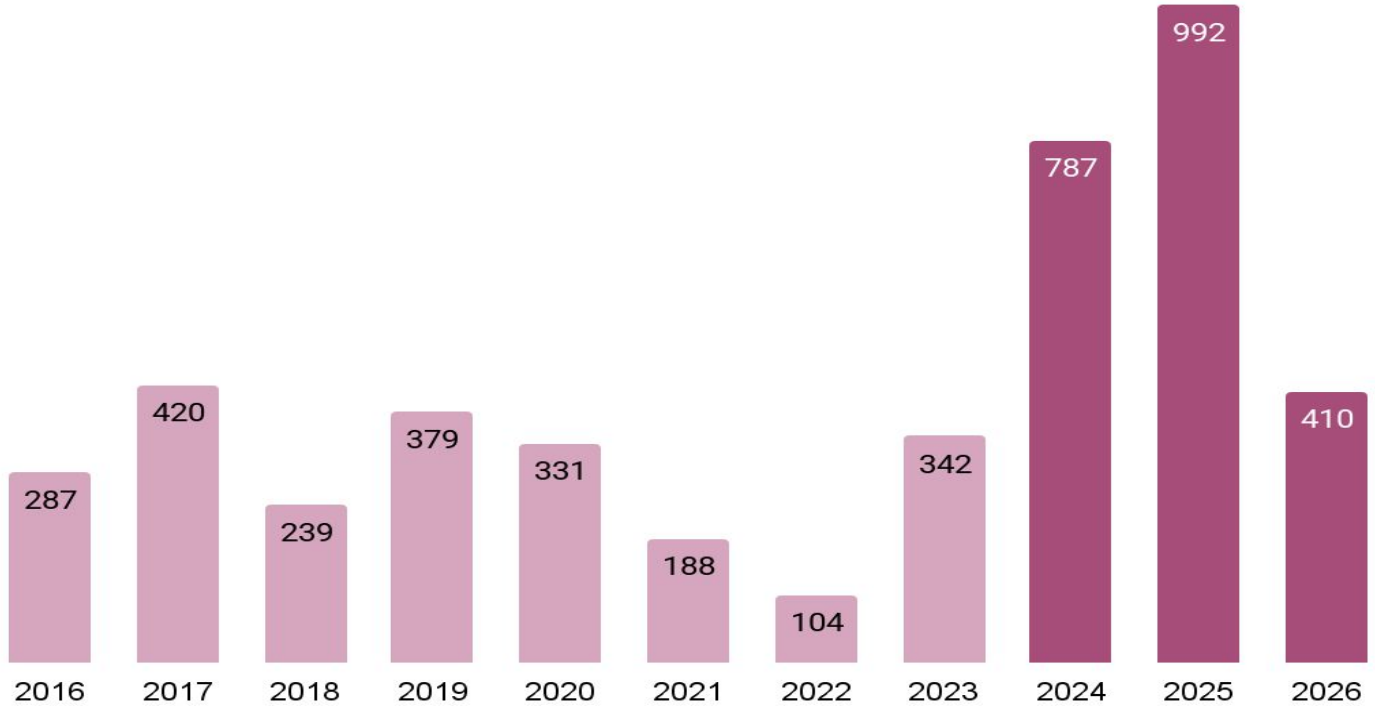
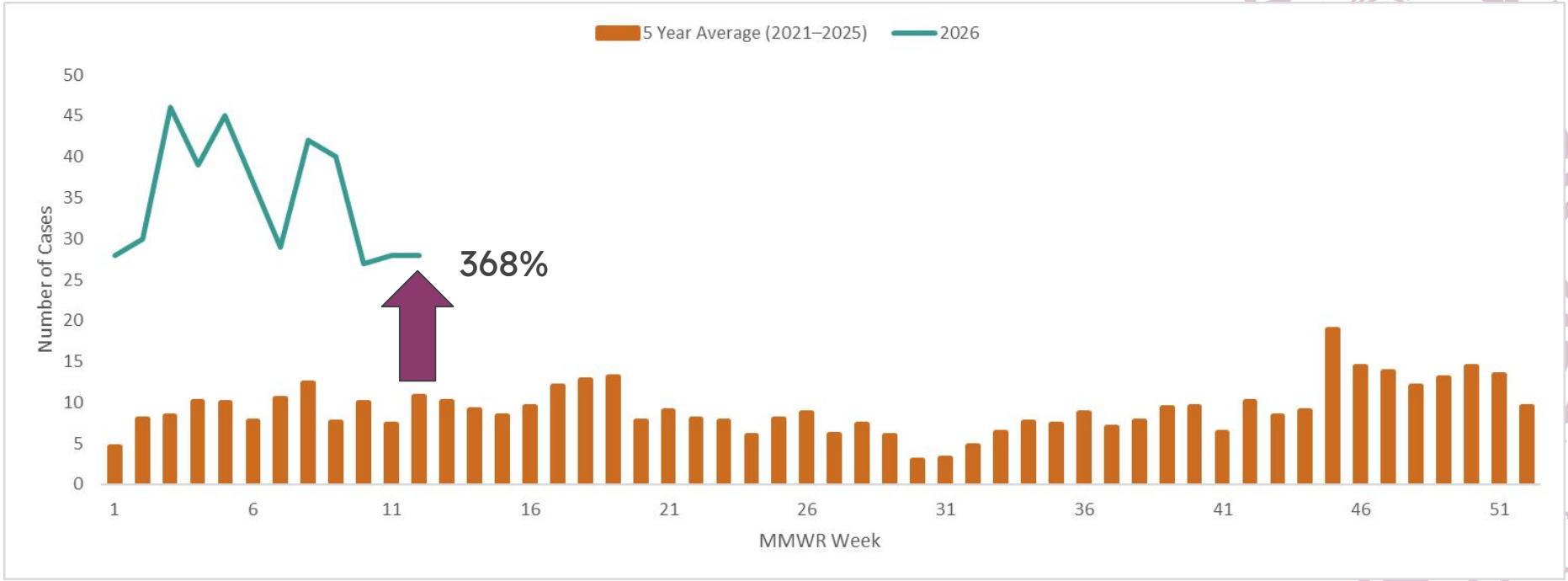
Pertussis in Arizona

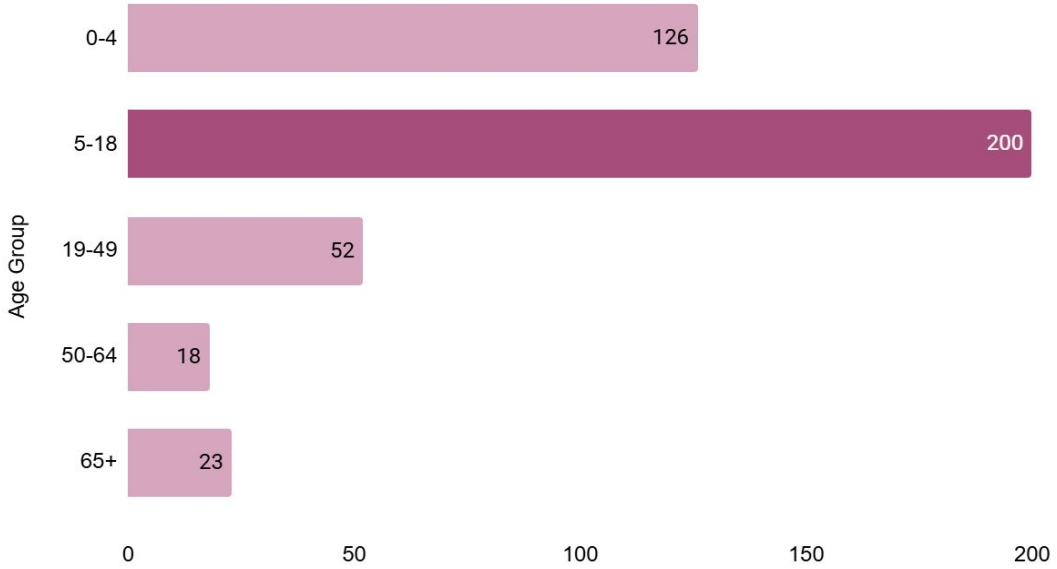


Pertussis in Arizona

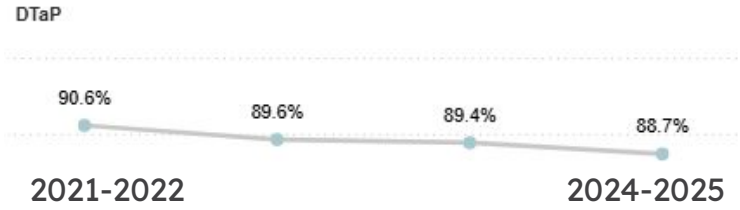


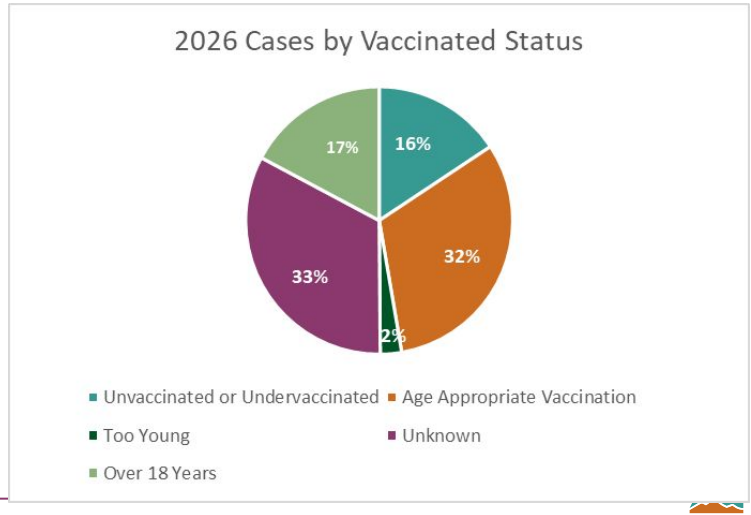
Pertussis in Arizona

Infants, toddlers and school aged children are most affected by pertussis thus far in 2026.



Immunization coverage for kindergarten





Pertussis Special Considerations

- PCR is gold standard for testing.
- Vaccine can aerosolize in the environment
  - Ensure clinic is maintaining appropriate cleaning protocols.
  - Ensure PPE & appropriate hand hygiene when collecting specimens
  - ≥ 2 weeks cough + (paroxysm, whoop, post-tussive vomiting, or apnea)
- Entire household will need antibiotics!

Bordetella species

- Small encapsulated bacteria, human reservoir, respiratory transmission
- *B. pertussis*, *B. parapertussis*, and *B. bronchiseptica* have almost identical virulence factors
- ***B. bronchiseptica*** can colonize a wide range of mammals (pigs, dogs, cats, rodents, and humans) ⇒ causes chronic respiratory infections and can survive in the environment outside the host.
- ***B. pertussis*** **and** ***B. parapertussis*** can infect only humans, causing acute respiratory infections; it cannot survive in the environment.

Whooping cough

- Life-threatening in neonates and young children.
- Cold-like symptoms- progressing to a paroxysmal cough.
- Cough is compulsive, with a characteristic ‘whooping’ sound due to the effort required to breathe that can lead to apnea and cyanosis
- Teenagers and adults can be asymptomatic; but when severe, can cause chronic cough, post-tussive vomiting or seizures
- Adults are the main source of transmission to neonates before the completion of their vaccination
- Pertussis is an extremely contagious

Stages of Whooping Cough

	INCUBATION	CATARRHAL	PAROXYSMAL	CONVALESCENT
Duration	7-10 days	1-2 weeks	2-4 weeks	3-4 weeks (or longer)
Symptoms	None	Rhinorrhea, malaise, sneezing, anorexia	Repetitive cough with whoops, vomiting, leukocytosis	Diminished paroxysmal cough, development of secondary complications (pneumonia, seizures, encephalopathy)

Severe cough can cause conjunctival hemorrhages

Vaccines

- *Bordetella* is mostly an extracellular pathogen
- *Bordetella pertussis* and *B. bronchiseptica* survive intracellularly in different cells, such as macrophages
- Combination of humoral and Th1/Th17 cellular responses are required to ensure protection
- Two vaccines available: whole cell pertussis vaccine (wP) and acellular pertussis vaccine (aP)

Vaccines

Whole-cell pertussis vaccine (wP)

- Inactivated vaccine (1940-1950) ⇒ Highly successful in terms of protection.
- Multiple antigens trigger the immune response, mimics natural infection (induction of mature Th1 responses like those observed during infection) ⇒ higher risk for adverse events, mainly at the site of injection

Acellular pertussis vaccine (aP)

- Initially made with only 1 of the major antigens (pertussis toxin). Later, additional antigens were incorporated (FHA, PRN, FIM2, and FIM3)

FACTS:

- **Natural infection can induce protection lasting from 7 to 20 years, vaccines provide protection for 4 to 12 years.**
- **The protection wanes over time after aP vaccine, with a vaccine efficacy of 85% after 6 doses, decreasing by 11.7% each year**
- **The overall risk of pertussis was 1.6 times higher in children vaccinated with aP than in those vaccinated with wP**

Measles

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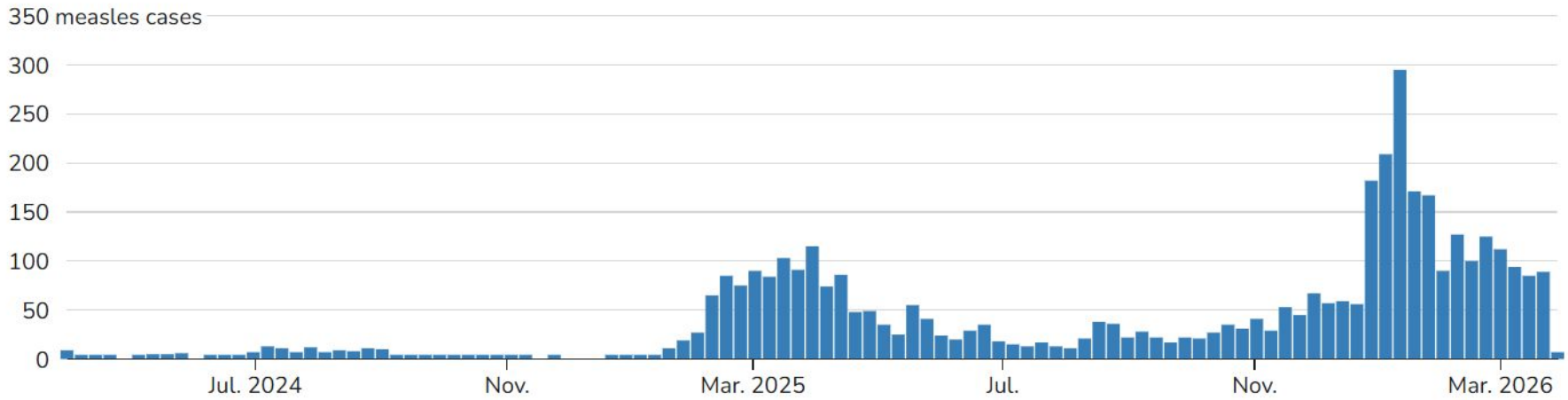
HEALTH SERVICES

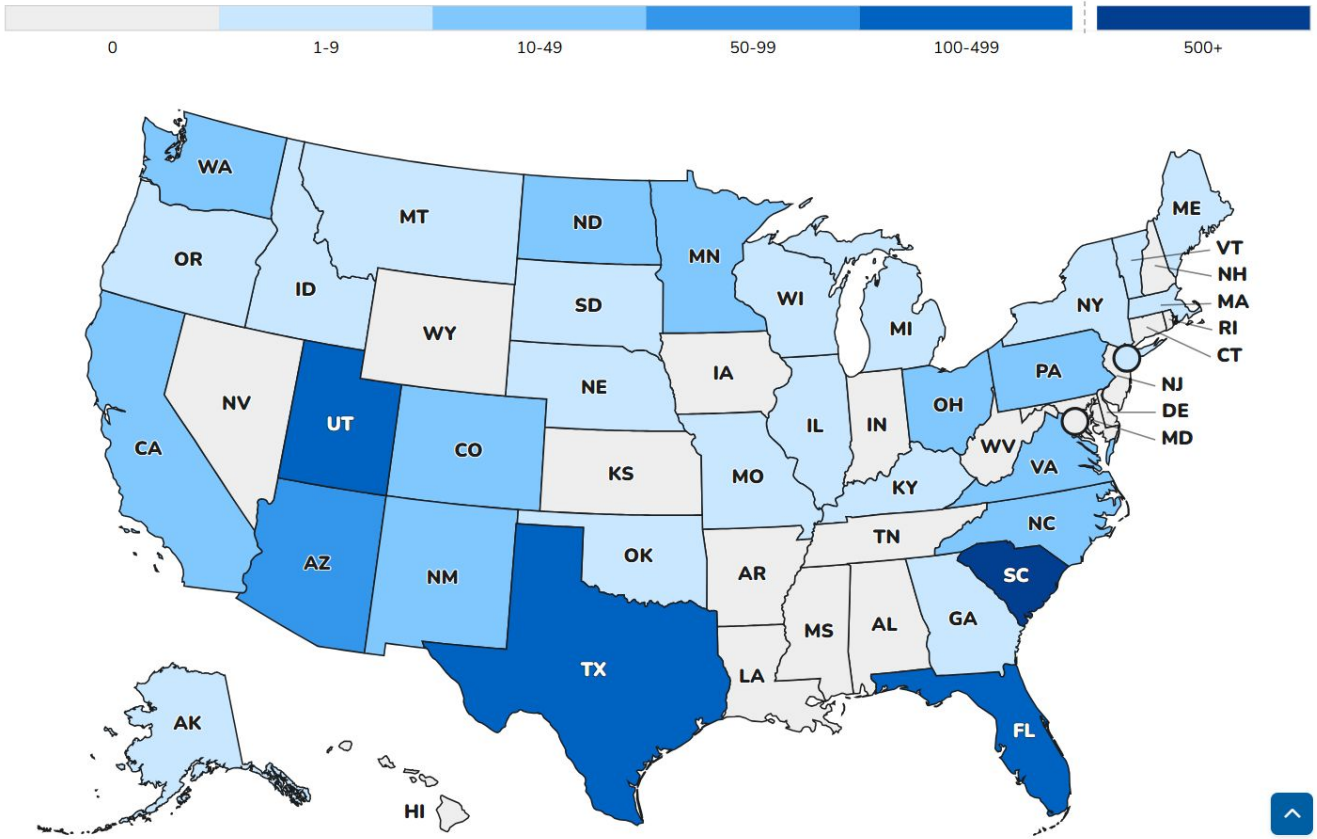
National Measles Surveillance National

Weekly measles cases by rash onset date

2022–2026* (as of April 2, 2026)



National Measles Surveillance 2026



National Measles Surveillance National

U.S. Cases

	2026 To date	2025 Full year
Total Cases	**1,671**	**2,286**
Age		
Under 5 years	346 (21%)	584 (26%)
5-19 years	868 (52%)	1,015 (44%)
20+ years	452 (27%)	674 (29%)
Age unknown	5 (0%)	13 (1%)
Vaccination Status		
Unvaccinated or Unknown	92%	93%

National Measles Surveillance National

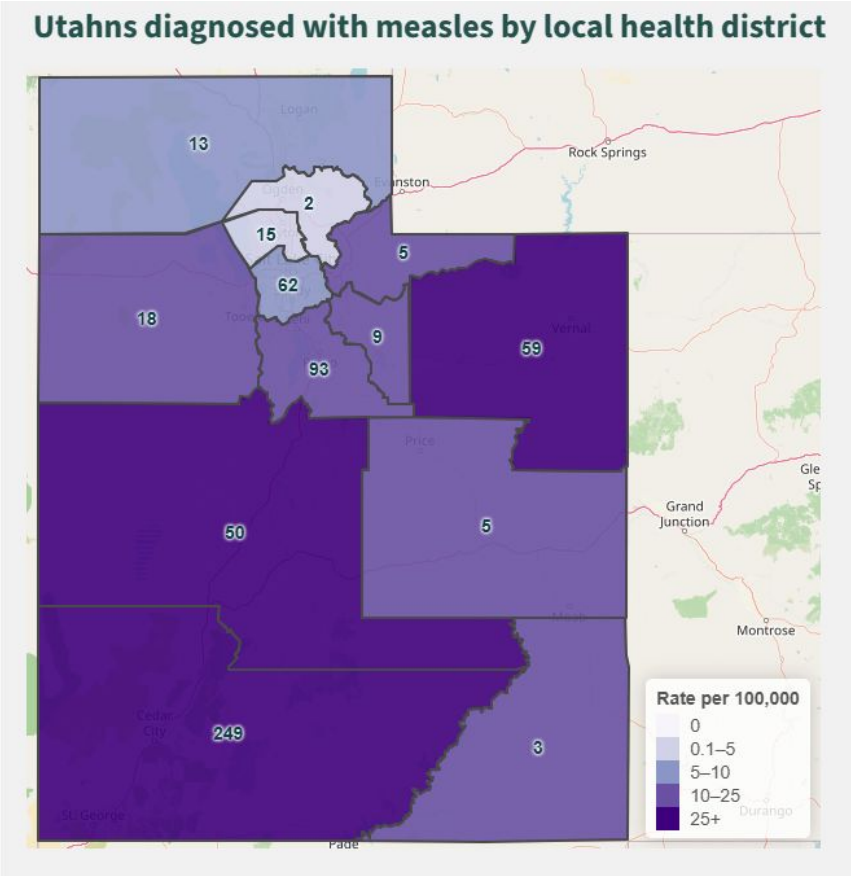
	2026	2025
Total Hospitalized	**5%** (91 of 1,671 cases)	**11%** (242 of 2,286 cases)

	2026	2025
Total Deaths	**0**	**3**

Measles Surveillance in Arizona

Measles Cases by County Jurisdiction		
Jurisdiction of Cases	**2025**	**2026**
Apache	0	0
Cochise	0	0
Coconino	1	2
Gila	0	0
Graham	0	0
Greenlee	0	0
La Paz	0	0
Maricopa	0	4
Mohave	214	61
Navajo	4	0
Pima	1	2
Pinal	0	3
Santa Cruz	0	0
Yavapai	0	0
Yuma	0	0
Totals	**220**	**72**

Measles Surveillance in Utah



2025	2026
197	386
583	

Measles Surveillance in Arizona

292 Total Cases

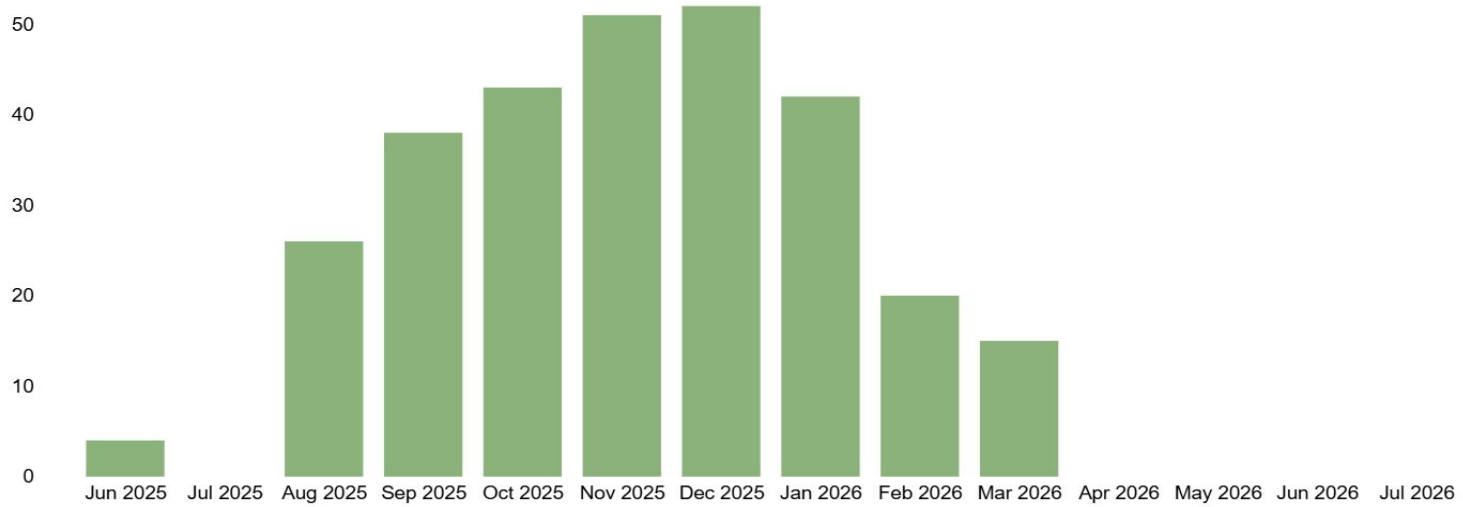
22 Hospitalizations

97% Unvaccinated

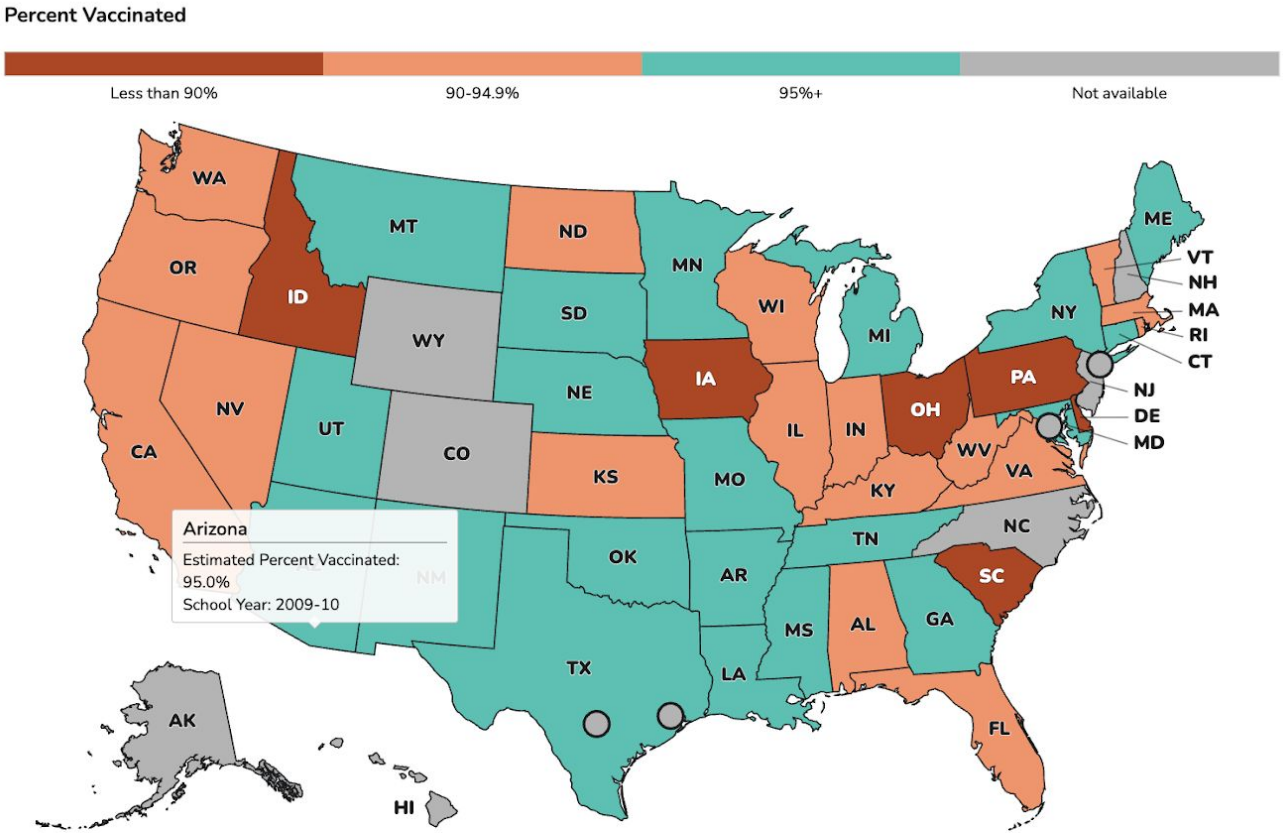
1 New Cases

0 Deaths

66% Age Under 18 Years



2009-2010


Percent Vaccinated
Less than 90%
90-94.9%
95%+
Not available
WA
OR
CA
ID
NV
MT
WY
UT
AZ
CO
NM
ND
SD
NE
KS
OK
TX
MN
IA
MO
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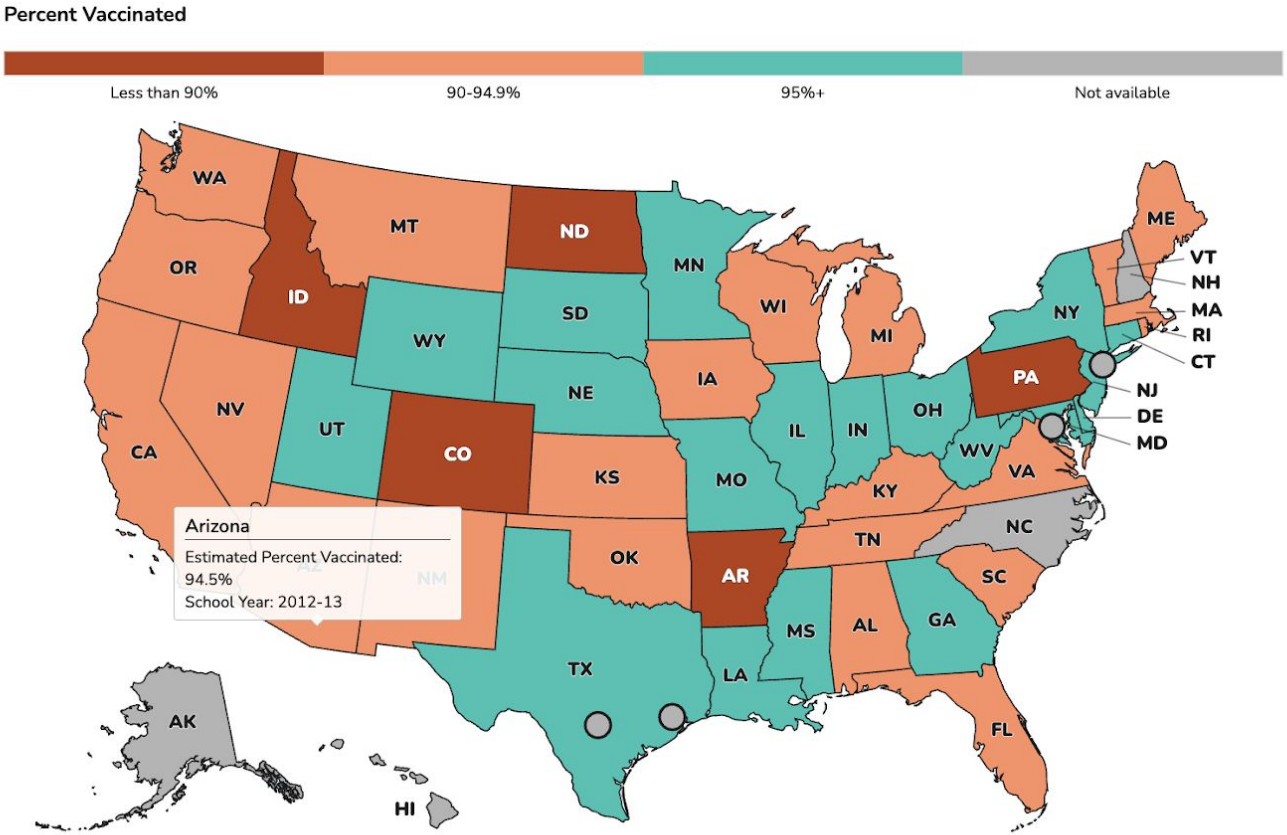
LA
WI
IL
MS
MI
IN
KY
TN
AL
OH
WV
GA
FL
SC
NC
VA
PA
NY
ME
VT
NH
MA
RI
CT
NJ
DE
MD
AK
HI
Arizona
Estimated Percent Vaccinated: 95.0%
School Year: 2009-10

2012-2013


Percent Vaccinated
Less than 90%
90-94.9%
95%+
Not available
WA
OR
CA
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MT
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KS
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WV
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SC
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VA
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ME
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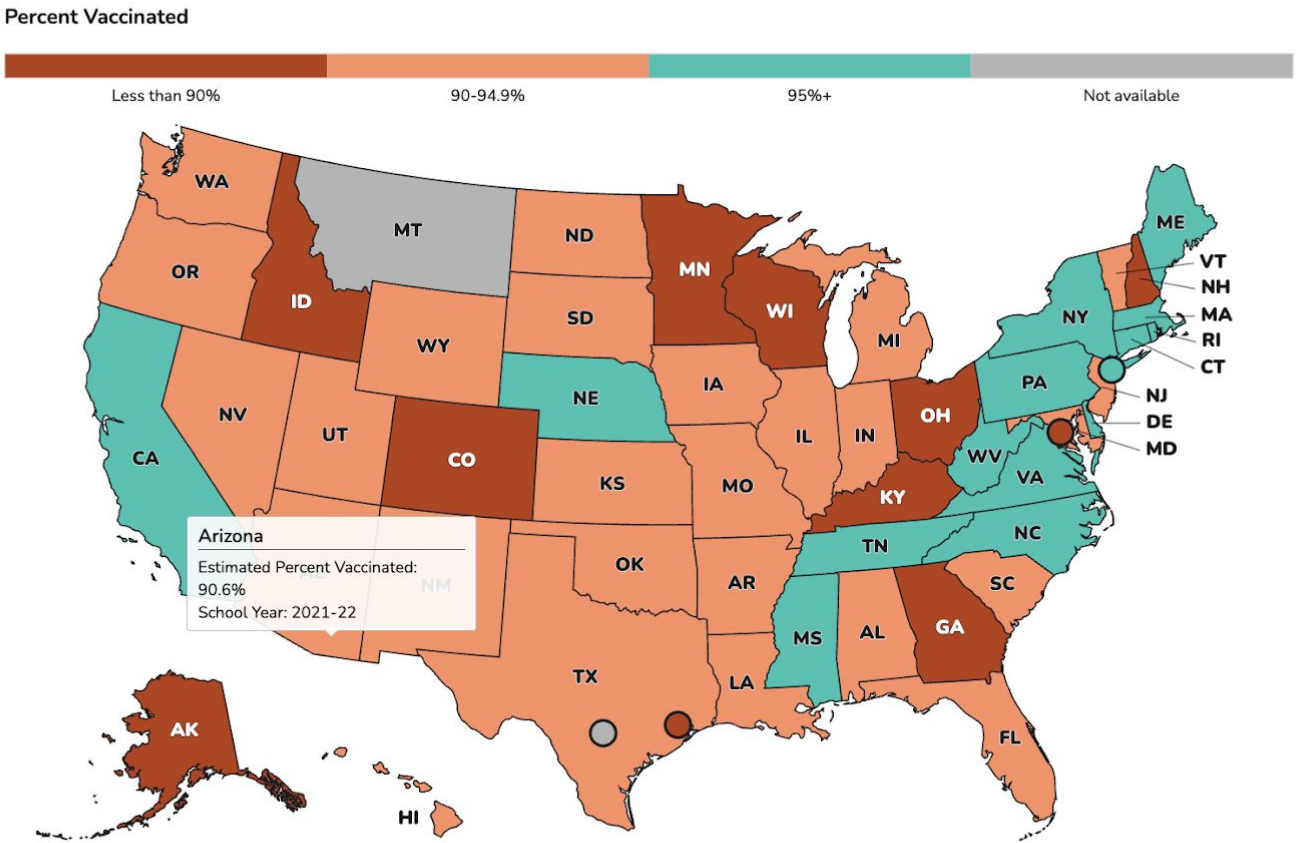
Arizona
Estimated Percent Vaccinated: 94.5%
School Year: 2012-13

2021-2022


Percent Vaccinated
Less than 90%
90-94.9%
95%+
Not available
WA
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VA
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NY
ME
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MA
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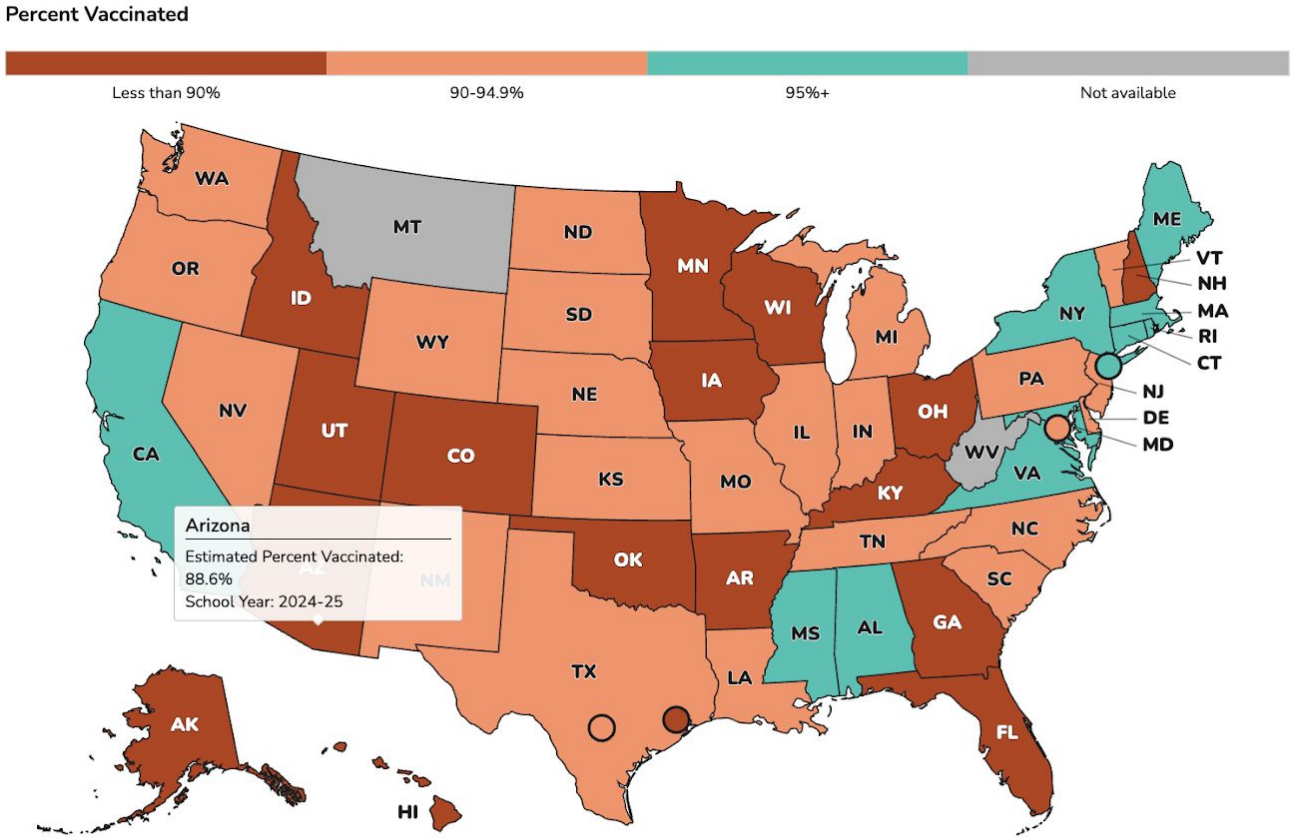
MD
AK
HI
Arizona
Estimated Percent Vaccinated: 90.6%
School Year: 2021-22

2024-2025


Percent Vaccinated
Less than 90%
90-94.9%
95%+
Not available
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AK
HI
Arizona
Estimated Percent Vaccinated:
88.6%
School Year: 2024-25

Special Considerations

- Exposures
  - Post signage at the door, mask or not = Exposed
  - Use path of least exposures and direct to negative pressure room
- Post-Exposure Prophylaxis
  - Promote vaccine past PEP window for continued exposures
  - Immunocompromised individuals still need to quarantine despite IG
    - Quarantine for 21 days, 7 additional days symptom watch

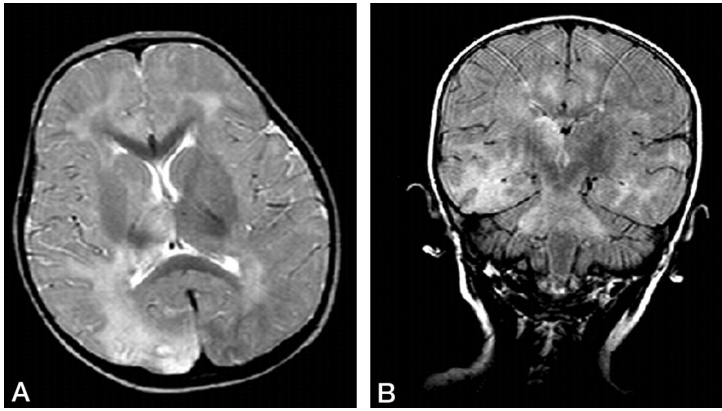
Measles clinical presentation

- Measles typically begins with fever, cough, runny nose, and pink eye that lasts 2-4 days before a rash begins.
- A person with measles is contagious from 4 days before the start of the rash through 4 days after the rash begins.
- Measles can cause severe health complications including pneumonia, encephalitis, and death.

“COUGH, CORYZA, CONJUNCTIVITIS”

Subacute Sclerosing Panencephalitis (SSPE)

- SSPE is a rare complication due to persistent measles infection- Usually presents in early adolescence- progressive course with a high mortality rate.
- U.S. has 4 to 5 cases of SSPE per year.
- 4 to 11 per 100,000 cases of measles result in SSPE but **18 per 100,000 cases if the child is <5 years old**.
- SSPE tends to have an earlier onset and a more fulminant course in individuals with HIV/AIDS and children whose mothers had measles during pregnancy



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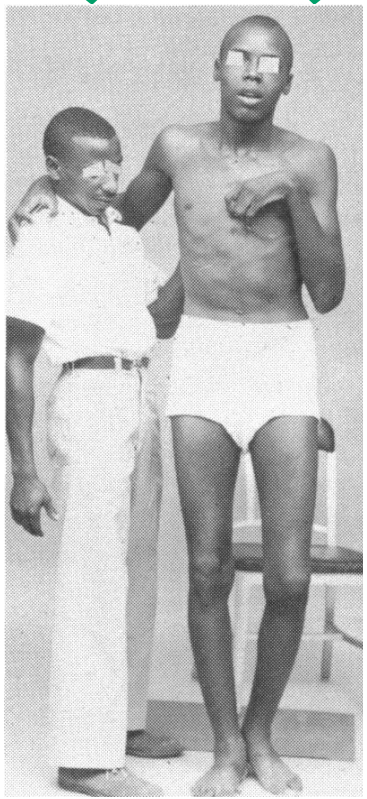


- Stage I Personality or behavioral changes (irritability, dementia, lethargy, social withdrawal, or speech regression).
- Stage II Progressive decline in motor function (myoclonus, dyskinesia, and dystonia).
- Stage III Progression to extrapyramidal symptoms, posturing, and spasticity.
- Stage IV Akinetic mutism, autonomic failure, vegetative state and die.
- Mortality rate is very high- about 95%; (remaining cases undergo spontaneous remission)
- The average life span after the initial presentation is about 3.8 years (45 days to 12 years)

Vitamin A- Fact or Fiction?

- In countries where vitamin A deficiency is prevalent, measles case-fatality rates can exceed 30%.
- Vitamin A deficiency is associated with delayed recovery and increased risk of post-measles complications.
- During febrile illnesses such as measles, retinol is lost through increased urine excretion and in the gut- depleting stores ⇒ impacts immune function.
- Vitamin A supplementation has been shown to reduce both overall and pneumonia-specific mortality (vitamin A deficient countries)

ARIZONA

Thank you

Which infection is considered the biggest current threat due to pandemic potential?

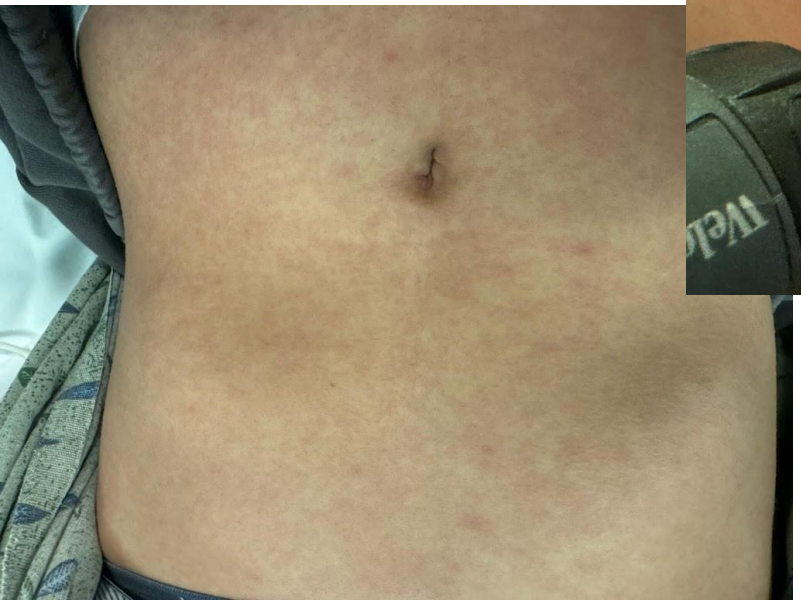
a. Hantavirus
b. Avian influenza
c. Human metapneumovirus
d. Ebola
e. Coronavirus K6-7
f. Mpox (Monkeypox)

23-year-old male, no medical history, MSM, here with low grade fever and rash that started around the mouth. He reports very painful swallowing and cervical lymph nodes.

What is the diagnosis?

16-year-old female, no medical history, comes in with 2-day history of fever, chills, followed by rash that started on her face; very faint. She also has runny nose, sneezing and conjunctival redness.

What is the diagnosis?



This 12-year-old boy is seen by his pediatrician with 3 day history of fever, sore throat, hoarsenss and very painful glands in his neck. He feels his throat is closing. Which vaccine would prevent this type of infection?

a. Pneumococcal conjugate vaccine
b. Haemophilus influenzae b vaccine
c. DTaP
d. Meningococcal serogroup B vaccine
e. HPV vaccine

What strains of viruses are covered by the 2025-2026 influenza season trivalent vaccine?

a. Influenza A (H5N1), Influenza A (H3N2) and influenza B
b. Influenza A (H1N1), Influenza A (H3N2) and COVID-19
c. Influenza A (H1N1), Influenza A (H3N2) and Influenza B
d. Influenza A (H1N1), Influenza A (H2N3) and influenza B
e. Influenza A (H1N1), Influenza A (H5N1) and Influenza B

In what animal was the influenza virus isolated first?

a. Birds
b. Pigs
c. French bulldogs
d. Camels
e. Bats
f. Cattle

UNCLE SAM'S ADVICE ON FLU

U. S. Public Health Service Issues Official Health Bulletin on Influenza.

Epidemic Probably Not Spanish In Origin—Germ Still Unknown—People Should Guard Against "Droplet Infection"—Surgeon General Blue Makes Authoritative Statement.

Coughs and Sneezes Spread Diseases

As Dangerous as Poison Gas Shells