Massachusetts Department of Public Health

Measles: What Clinicians Need to Know in 2025

American College of Physicians

September 27, 2025

Angela Fowler, MD, MPH
Associate Medical Director for Vaccine Preventable Diseases
Bureau of Infectious Disease and Laboratory Sciences
Massachusetts Department of Public Health

Presenter Disclosure Information

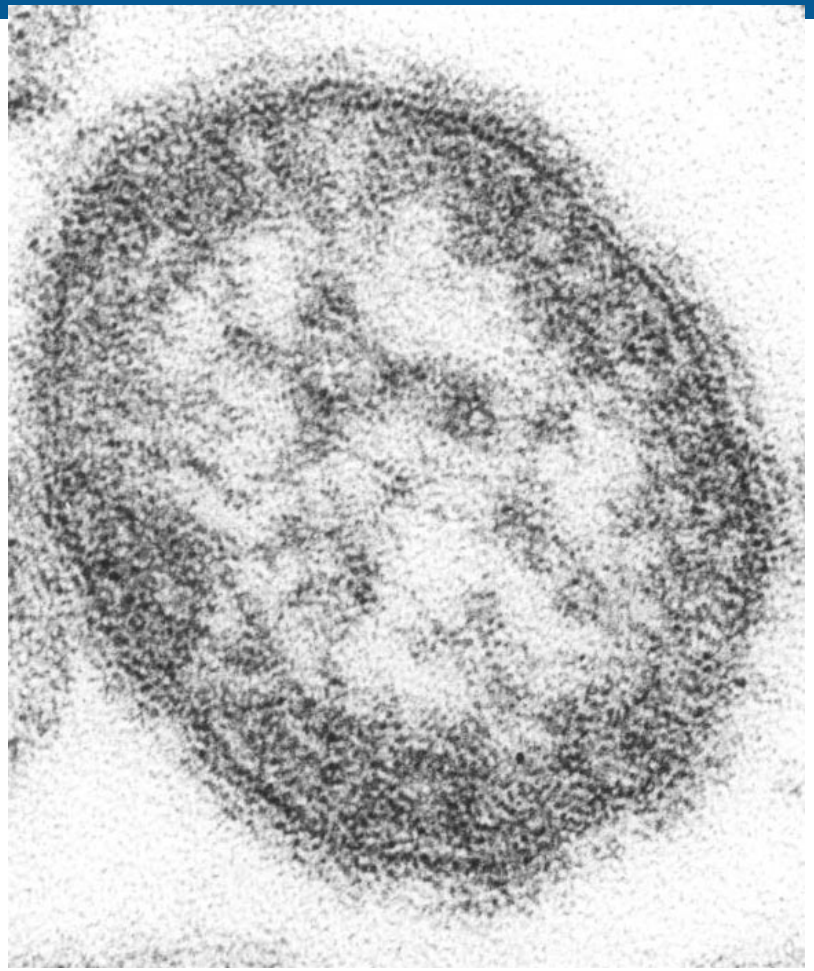
I, Angela Fowler, have been asked to disclose any relevant relationships with commercial entities that are either providing financial support for this program or whose products or services are mentioned during my presentation.

I have no relationships to disclose.

I may discuss the use of vaccines in a manner not approved by the U.S. Food and Drug Administration, but in accordance with ACIP recommendations.

Background and Microbiology

- Enveloped singe stranded RNA virus.
- One of the most contagious diseases - 90% susceptible contacts will get measles.
- Primary site of infection is alveolar macrophages or dendritic cells.
- Transmitted by direct contact with infectious droplets from coughing, sneezing, or breathing, or less commonly by airborne spread.
- Virus can remain in the air for 2 hours.
- Humans are the only natural hosts of measles virus.



Measles can be a serious disease

Acute Complications	Late Complications
Diarrhea (10%)	Immune Amnesia - Post measles increase in susceptibility to other infections.
Pneumonia (1–6%)	
Encephalitis (1 in 1,000)	Sub-acute Sclerosing Panencephalitis (SSPE) - rare (1 in 5,000-10,000) but fatal disease of the central nervous system from a measles virus infection acquired earlier in life.
Hospitalization (20%)	
Death (1–3 in 1,000)	

Measles can be a serious disease

Acute Complications	Late Complications
Diarrhea (10%)	Immune Amnesia - Post measles increase in susceptibility to other infections.
Pneumonia (1–6%)	
Encephalitis (1 in 1,000)	Sub-acute Sclerosing Panencephalitis (SSPE) - rare (1 in 5,000-10,000) but fatal disease of the central nervous system from a measles virus infection acquired earlier in life.
Hospitalization (20%)	
Death (1–3 in 1,000)	

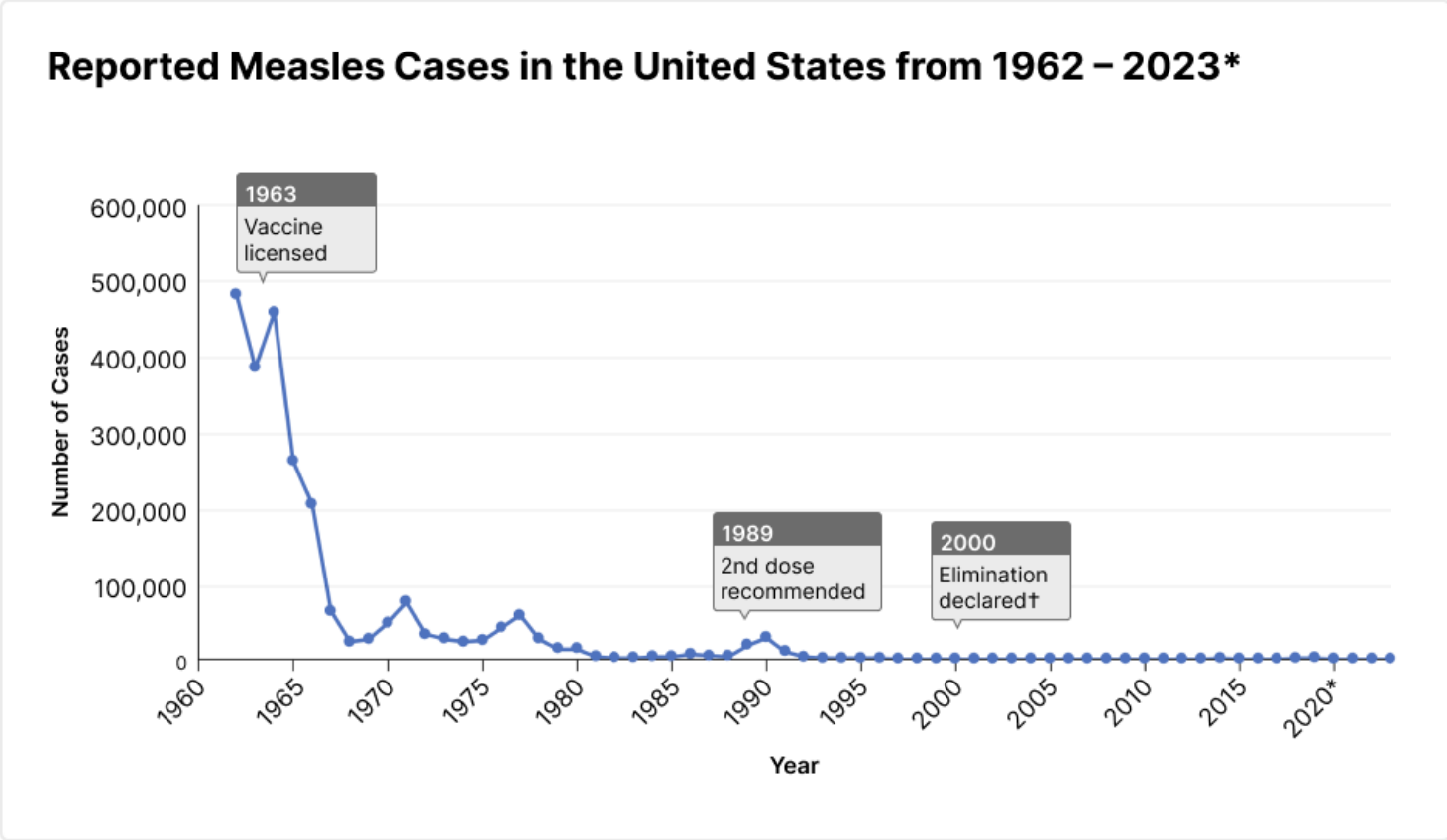
Public Health Approach to Measles Prevention

Measles, Mumps, Rubella (MMR) Vaccine

MMR is an attenuated live virus vaccine.

- **Routine vaccination schedule**
  - Dose 1: age 12–15 months
  - Dose 2: age 4–6 years
- One dose of MMR vaccine is 93% effective against measles.
- Two doses of MMR vaccine are 97% effective against measles.

Rapid decrease in incidence of measles cases after introduction of vaccination



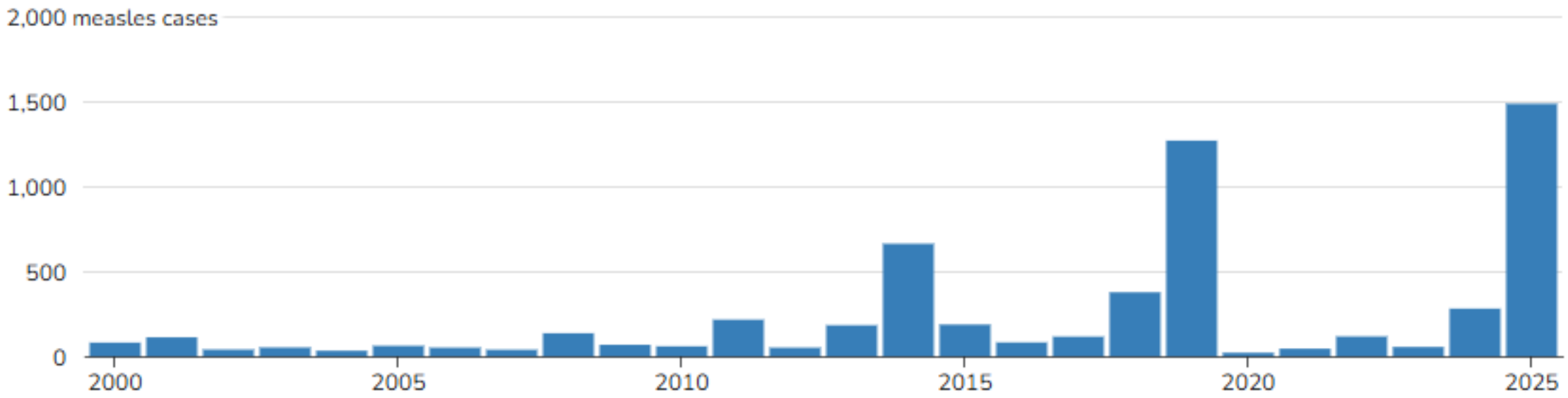
In 2000, measles was declared eliminated from the United States - the absence of endemic measles virus transmission for at least 12 months

Measles Cases by Year in the US

Yearly measles cases

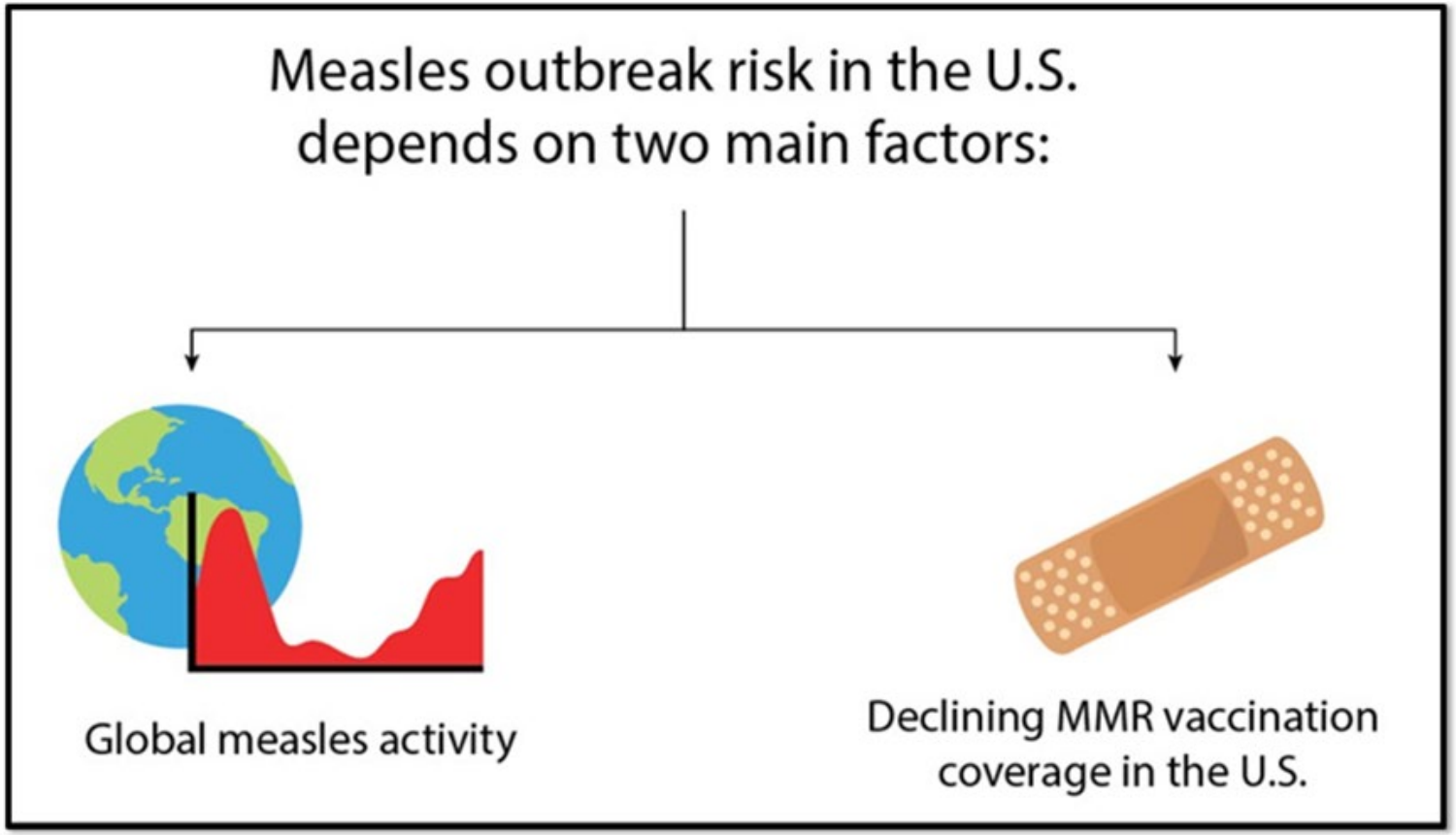
as of September 16, 2025

2000-Present* 1985-Present*

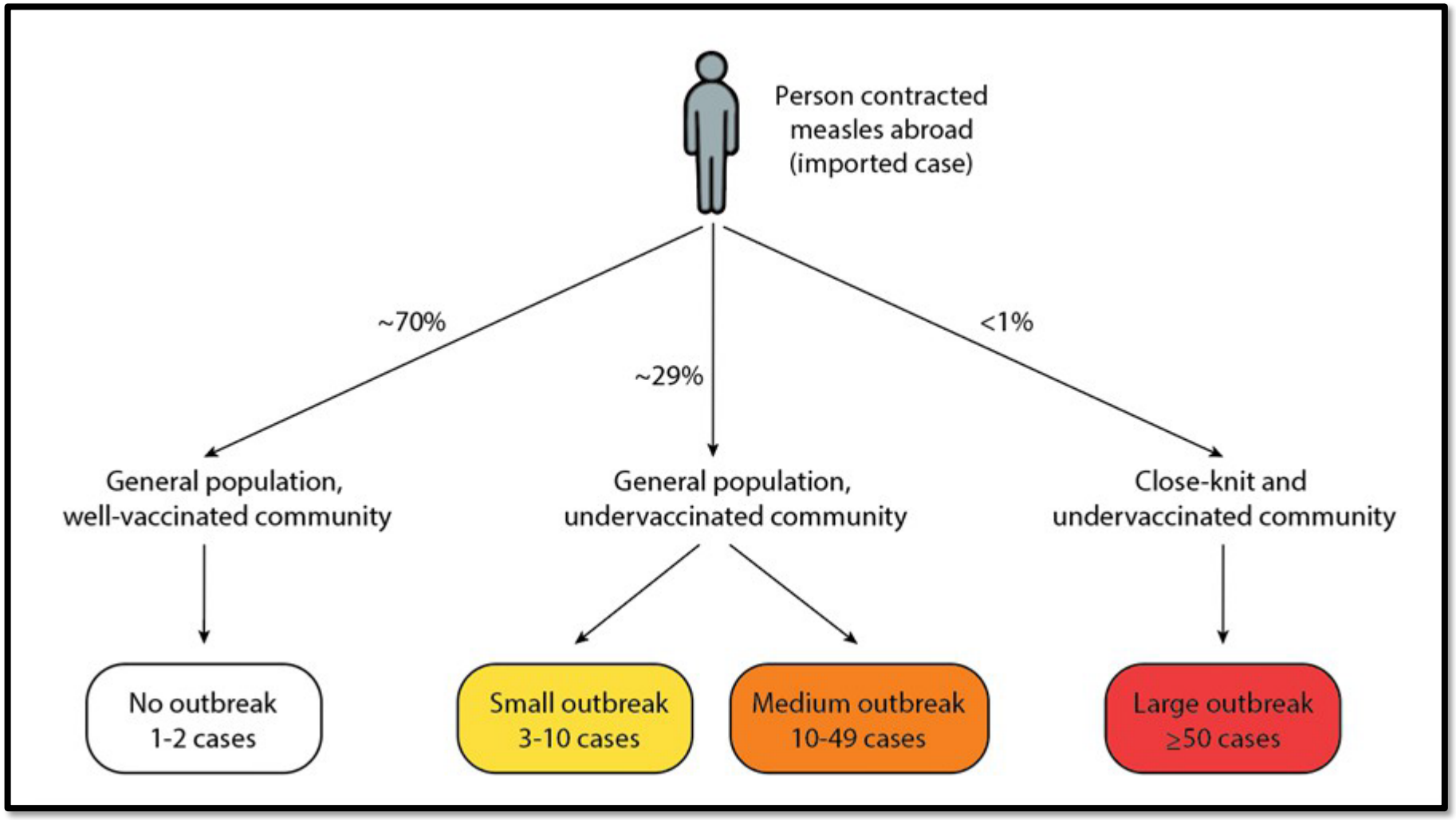


Assessing Measles Outbreak Risk in the United States

"Measles anywhere is a threat everywhere" - CDC



Assessing Measles Outbreak Risk in the United States



2025 National Outbreak

As of September 17, 2025, a total of 1,491 confirmed* measles cases were reported by 36 jurisdictions.

U.S. Cases in 2025

Total cases

1491

Age
Under 5 years: **407 (27%)**
5-19 years: **574 (38%)**
20+ years: **501 (34%)**
Age unknown: **9 (1%)**

Vaccination Status
Unvaccinated or Unknown: **92%**
One MMR dose: **4%**
Two MMR doses: **4%**

U.S. Hospitalizations in 2025

12%

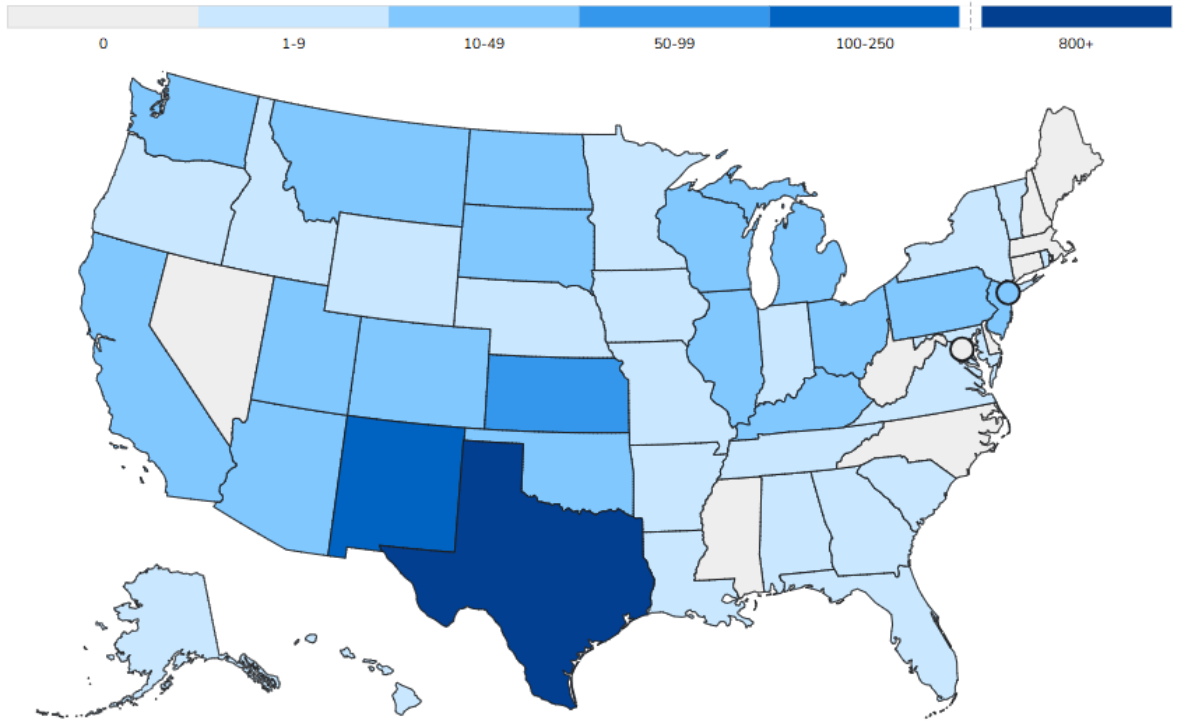
12% of cases hospitalized (181 of 1491).

Percent of Age Group Hospitalized
Under 5 years: **21% (87 of 407)**
5-19 years: **7% (41 of 574)**
20+ years: **11% (53 of 501)**
Age unknown: **0% (0 of 9)**

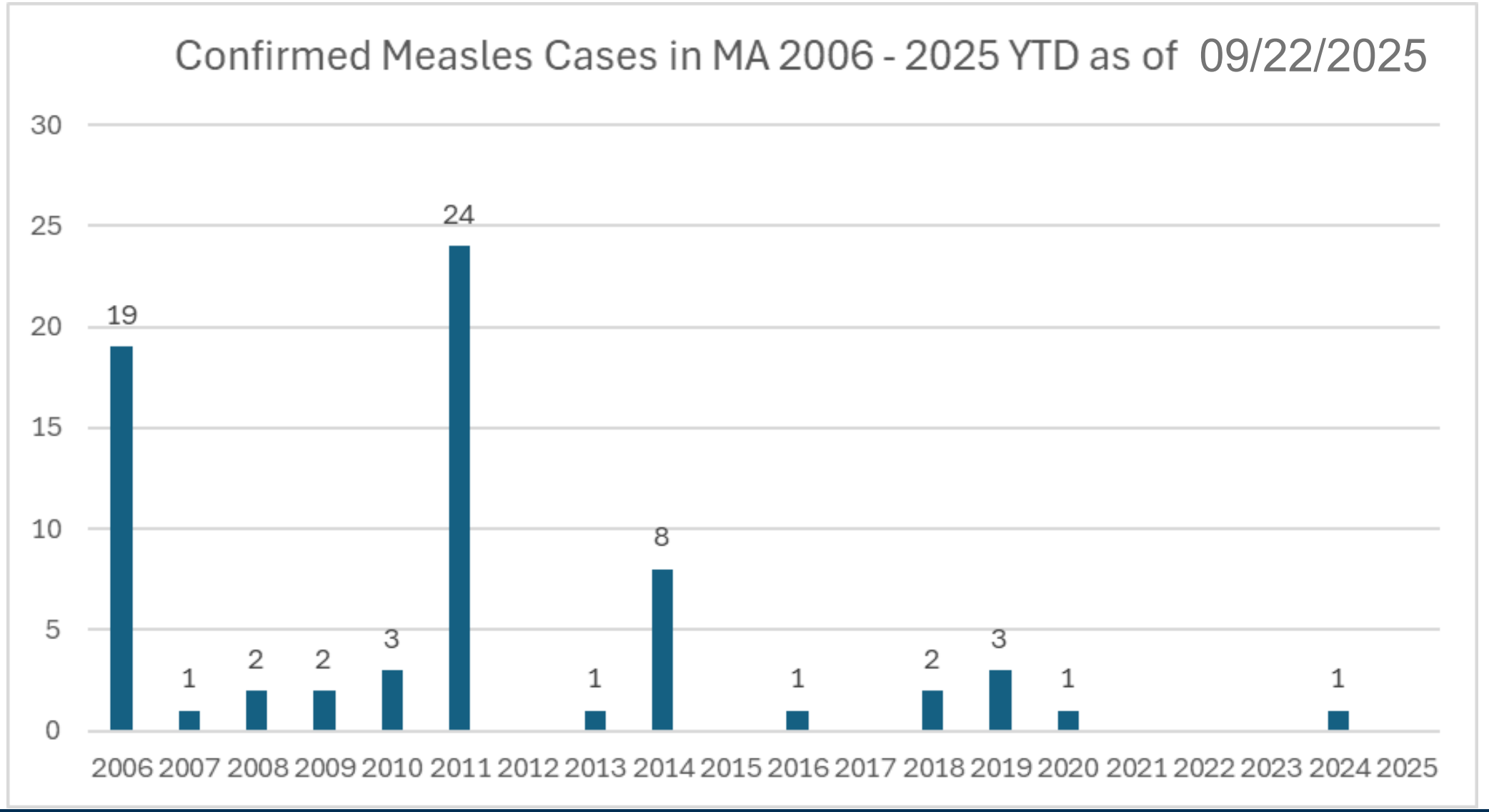
U.S. Deaths in 2025

3

There have been 3 confirmed deaths from measles.



Confirmed Measles in MA 2006 – 2025 YTD



Public Health Approach to Measles Prevention in Adults - Vaccination

No recommended screening of measles immunity of adults in non-outbreak areas.

Adults without presumptive evidence of immunity to measles should get at least one dose of MMR.

What is presumptive evidence of immunity measles?

- Written documentation of 1 dose of MMR (except for adults in settings at high risk for measles transmission)
- Birth before 1957
- Laboratory evidence of immunity (positive IgG)
- Prior laboratory confirmed measles diagnosis

Public Health Approach to Measles Prevention in Adults - Vaccination

Most adults are considered fully vaccinated against measles with one dose of MMR.

Two doses of MMR are recommended for adults in settings that pose a high risk for measles transmission:

- Healthcare personnel
- International travelers
- Close contacts of immunocompromised people

Do adults need additional doses of MMR?

Do adults need additional doses of MMR?

No – history of one dose of measles vaccine for people born after 1957, is sufficient to be considered protected from measles for most adults, unless in a setting that poses a high risk for measles transmission (high risk of transmission- two doses recommended, 28 days apart).

Do adults need additional doses of MMR?

No - one dose of measles vaccine is sufficient to be considered protected from measles for most adults, unless in a setting that poses a high risk for measles transmission (high risk settings two doses recommended, 28 days apart).

What if they were vaccinated between 1963-1968?

Do adults need additional doses of MMR?

No - one dose of measles vaccine is sufficient to be considered protected from measles for most adults, unless in a setting that poses a high risk for measles transmission (high risk settings two doses recommended, 28 days apart).

What if they were vaccinated between 1963-1968?

A very small number of people, representing less than 5% of Americans, may have received the inactivated measles vaccine during childhood, which may not have offered sufficient protection against the virus. If the inactivated vaccine was received – should receive one MMR dose.

Do adults need additional doses of MMR?

No - one dose of measles vaccine is sufficient to be considered protected from measles for most adults, unless in a setting that poses a high risk for measles transmission (high risk settings two doses recommended, 28 days apart).

What if they were vaccinated between 1963-1968?

A very small number of people, representing less than 5% of Americans, may have received the inactivated measles vaccine from 1963 through 1967 during childhood, which may not have offered sufficient protection against the virus. If the inactivated vaccine was received – should receive a MMR dose.

Unsure of measles immunity?

Do adults need additional doses of MMR?

No - one dose of measles vaccine is sufficient to be considered protected from measles for most adults, unless in a setting that poses a high risk for measles transmission (high risk settings two doses recommended, 28 days apart).

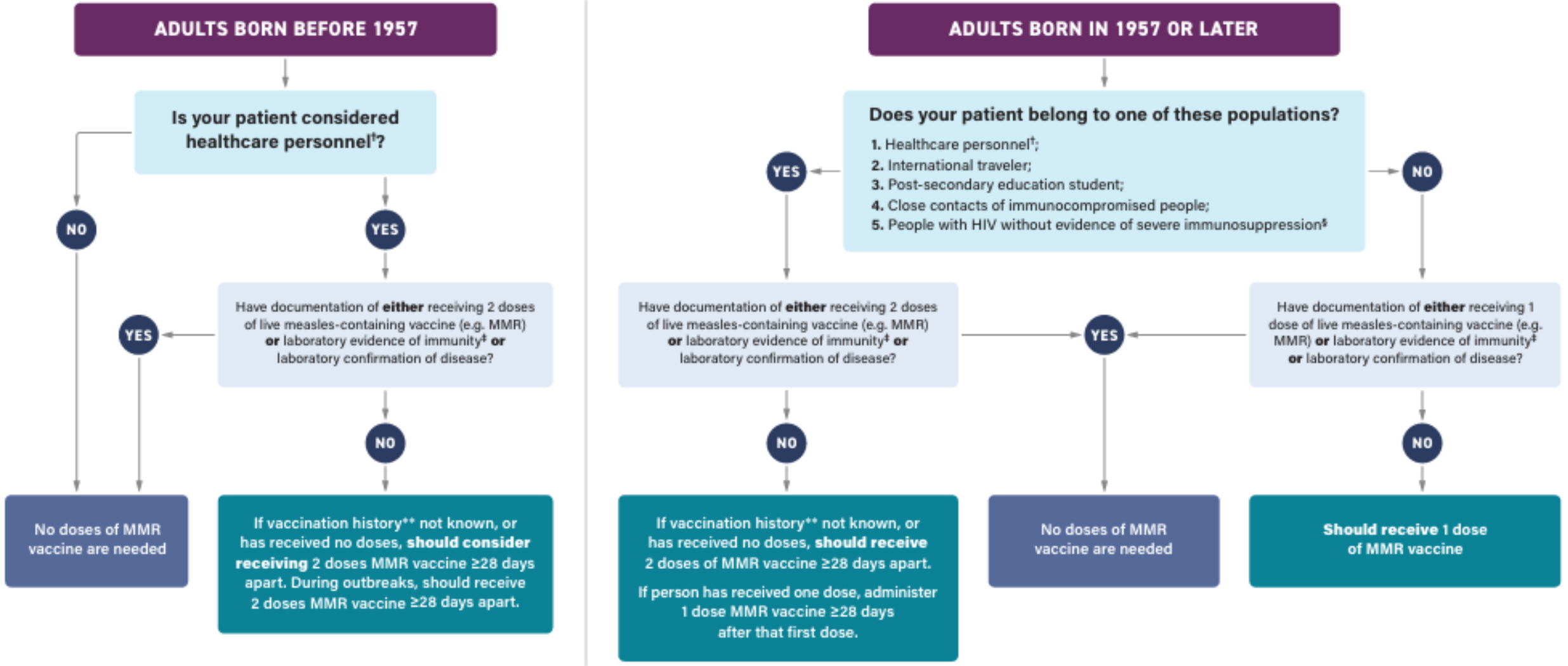
What if they were vaccinated between 1963-1968?

A very small number of people, representing less than 5% of Americans, may have received the inactivated measles vaccine from 1963 through 1967 during childhood, which may not have offered sufficient protection against the virus. If the inactivated vaccine was received – should receive a MMR dose.

Unsure of measles immunity? Try to find vaccination records. If written documentation can not be found, there is generally no harm in receiving another dose of the MMR vaccine. Can also test blood to determine whether someone is immune, but this is generally not recommended.

Measles vaccine recommendations for non-pregnant adults* aged ≥19 years by birth year—United States

This infographic for healthcare providers summarizes ACIP and CDC recommendations



*MMR vaccine should NOT be administered during pregnancy. Refer to Adult Immunization Schedule by Age | Vaccines & Immunizations | CDC (www.cdc.gov/vaccines/hcp/imz-schedules/adult-age.html) for more contraindications and precautions, and other details.

†Healthcare personnel include all paid and unpaid persons working in healthcare settings who have the potential for exposure to patients and/or to infectious materials, including body substances, contaminated medical supplies and equipment, contaminated environmental surfaces, or contaminated air.

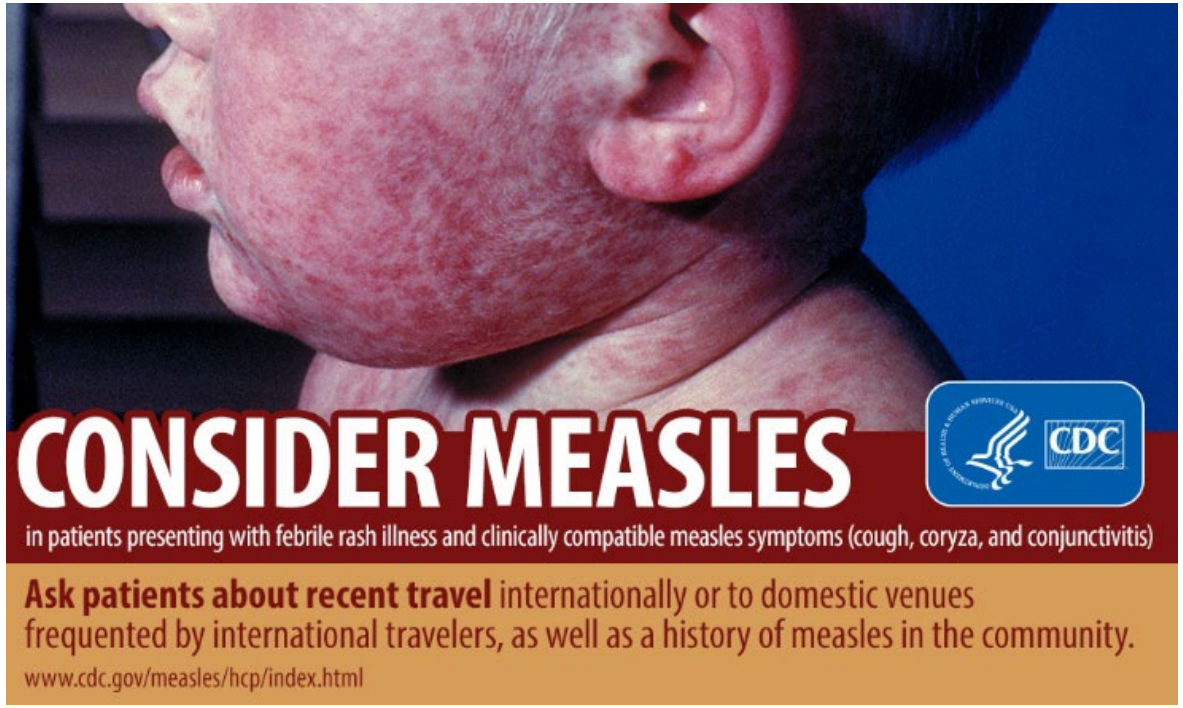
‡Acceptable laboratory evidence of immunity includes: measles IgG in serum (equivocal results should be considered negative).

§Refer to Prevention of Measles, Rubella, Congenital Rubella Syndrome, and Mumps, 2013 (www.cdc.gov/mmwr/preview/mmwrhtml/rr6204a1.htm) for details about absence of severe immunosuppression. In addition to the adults belonging to one of these population groups, health departments may consider a second dose for adults (including visitors) who have received one dose who are living in or traveling to domestic areas with sustained, community-wide measles transmission affecting adults where there is ongoing risk of exposure.
Refer to VPD surveillance manual (www.cdc.gov/surv-manual/php/table-of-contents/chapter-7-measles.html).

**A small number (<5%) of adults vaccinated between 1963–1967 received an inactivated (killed) measles vaccine. Check documentation to ensure that the adult did not receive inactivated vaccine. Adults who received killed vaccine, or do not know what type of vaccine they received between 1963–1967, should receive 1 or 2 doses of current MMR vaccine (i.e. those killed or unknown doses do not count).

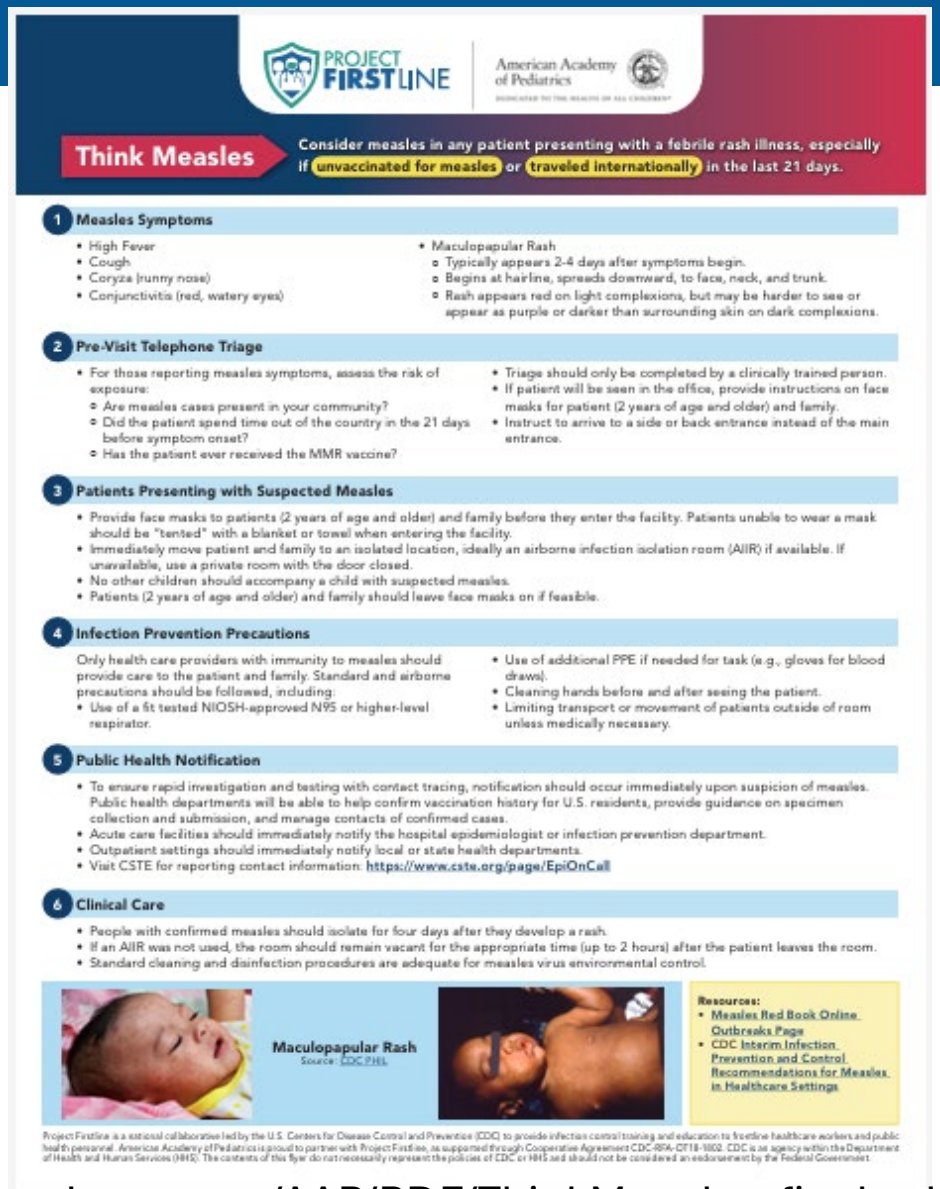
Public Health Approach to Measles Prevention in Adults – Early Identification

Consider measles as a diagnosis in anyone with fever (≥101°F or 38.3°C) and a generalized maculopapular rash with cough, coryza, or conjunctivitis who has recently traveled, especially in places with ongoing outbreaks and especially if unvaccinated.



Public Health Approach to Measles Prevention in Adults – Early Identification

- **Immediately mask** and **isolate the patient** in a room with a closed door (negative pressure room if available). Follow standard and airborne precautions.
- Only allow health care workers with **presumptive evidence of measles immunity** to attend the patient; they must use N-95 masks.
- **Evaluate the patient** and **order measles confirmatory testing** (collect a throat or nasopharyngeal swab for RT-PCR and serum for IgM measles testing).
- **Contact infection control** if available at your facility.
- **Immediately report this suspected case** to your local and/or state health department



PROJECT FIRSTLINE | American Academy of Pediatrics

Think Measles

Consider measles in any patient presenting with a febrile rash illness, especially if unvaccinated for measles or traveled internationally in the last 21 days.

1 Measles Symptoms

- High Fever
- Cough
- Coryza (runny nose)
- Conjunctivitis (red, watery eyes)
- Maculopapular Rash
  - Typically appears 2-4 days after symptoms begin.
  - Begins at hairline, spreads downward, to face, neck, and trunk.
  - Rash appears red on light complexions, but may be harder to see or appear as purple or darker than surrounding skin on dark complexions.

2 Pre-Visit Telephone Triage

- For those reporting measles symptoms, assess the risk of exposure:
  - Are measles cases present in your community?
  - Did the patient spend time out of the country in the 21 days before symptom onset?
  - Has the patient ever received the MMR vaccine?
- Triage should only be completed by a clinically trained person.
- If patient will be seen in the office, provide instructions on face masks for patient (2 years of age and older) and family.
- Instruct to arrive to a side or back entrance instead of the main entrance.

3 Patients Presenting with Suspected Measles

- Provide face masks to patients (2 years of age and older) and family before they enter the facility. Patients unable to wear a mask should be "tented" with a blanket or towel when entering the facility.
- Immediately move patient and family to an isolated location, ideally an airborne infection isolation room (AIIR) if available. If unavailable, use a private room with the door closed.
- No other children should accompany a child with suspected measles.
- Patients (2 years of age and older) and family should leave face masks on if feasible.

4 Infection Prevention Precautions

Only health care providers with immunity to measles should provide care to the patient and family. Standard and airborne precautions should be followed, including:

- Use of a fit tested NIOSH-approved N95 or higher-level respirator.
- Use of additional PPE if needed for task (e.g., gloves for blood draws).
- Cleaning hands before and after seeing the patient.
- Limiting transport or movement of patients outside of room unless medically necessary.

5 Public Health Notification

- To ensure rapid investigation and testing with contact tracing, notification should occur immediately upon suspicion of measles. Public health departments will be able to help confirm vaccination history for U.S. residents, provide guidance on specimen collection and submission, and manage contacts of confirmed cases.
- Acute care facilities should immediately notify the hospital epidemiologist or infection prevention department.
- Outpatient settings should immediately notify local or state health departments.
- Visit CSTE for reporting contact information: https://www.cste.org/page/EpiOnCall

6 Clinical Care

- People with confirmed measles should isolate for four days after they develop a rash.
- If an AIIR was not used, the room should remain vacant for the appropriate time (up to 2 hours) after the patient leaves the room.
- Standard cleaning and disinfection procedures are adequate for measles virus environmental control.

Maculopapular Rash
Source: CDC PHIL

Resources:
- Measles Red Book Online Outbreaks Page
- CDC Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings

Project Firstline is a national collaborative led by the U.S. Centers for Disease Control and Prevention (CDC) to provide infection control training and education to frontline healthcare workers and public health personnel. American Academy of Pediatrics is proud to partner with Project Firstline, as supported through Cooperative Agreement CDC-RFA-OT18-1802. CDC is an agency within the Department of Health and Human Services (HHS). The contents of this flyer do not necessarily represent the policies of CDC or HHS and should not be considered an endorsement by the Federal Government.

https://downloads.aap.org/AAP/PDF/ThinkMeasles-final.pdf

Managing measles exposures

- Persons susceptible to measles will be excluded from work or classes from the 5th through the 21st day after their exposure.

- Susceptible individuals can often avoid exclusion if they receive the measles vaccine within 72 hours after exposure.

Resources - Measles Clinical Advisories

- **CDC HAN Advisory**

Expanding Measles Outbreak in the United States and Guidance for the Upcoming Travel Season

Print

HAN HEALTH ALERT NETWORK

This is an official CDC HEALTH ADVISORY

Distributed via the CDC Health Alert Network
March 7, 2025, 2:00 PM ET
CDCHAN-00522

- **MDPH Clinical Advisory**

The Commonwealth of Massachusetts
Executive Office of Health and Human Services
Department of Public Health
Bureau of Infectious Disease and Laboratory Sciences
305 South Street, Jamaica Plain, MA 02130

MAURA T. HEALEY
Governor

KIMBERLEY DRISCOLL
Lieutenant Governor

KATHLEEN E. WALSH
Secretary

ROBERT GOLDSTEIN, MD, PhD
Commissioner

Tel: 617-624-6000
www.mass.gov/dph

Clinical Advisory - 11 March 2025
Update regarding the spread of measles in the United States

Measles Resources

- CDC measles toolkit https://www.cdc.gov/measles/php/toolkit/index.html
- Measles information for healthcare providers: www.cdc.gov/measles/hcp/clinical-overview/
- Measles vaccine recommendations: www.cdc.gov/measles/hcp/vaccine-considerations/
- Infection control guidelines for measles: www.cdc.gov/infection-control/hcp/measles/
- Surveillance manual chapter on measles: www.cdc.gov/surv-manual/php/table-of-contents/chapter-7-measles.html

Challenging Time for Vaccine Policy

Massachusetts is Committed to Maintaining Vaccine Access

We're forming a public health collaboration with states in New England and across the Northeast

to develop recommendations for safe, science-backed vaccines.

Insurance plans in Massachusetts will keep covering vaccines recommended by the Department of Public Health

including flu, COVID and routine children's vaccines like measles and chickenpox.

CVS and Walgreens will continue to schedule and administer COVID vaccines in Massachusetts.

Thank you!

24/7 Epidemiology/disease reporting line: 617-983-6800