Massachusetts Department of Public Health

Epidemiology of Vaccine Preventable Diseases in MA

October 1, 2026

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Agenda

- Viral Respiratory Illness
  - MA epidemiology
- Measles
  - Brief overview provided for reference only
  - National and MA epidemiology
- Pertussis
- Mumps
- Varicella
- Invasive meningococcal disease

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Vaccine Preventable Diseases in MA, 2016-2026[1]

- VPD report is updated monthly!

Vaccine-Preventable Diseases Reported in Massachusetts, 2016 - 2026[2]

Disease	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026 YTD[3]
Measles[2]	1	0	2	3	1	0	0	0	1	0	2
Mumps[2]	258	192	44	64	19	2	9	7	14	8	1
Rubella[2]	0	1	0	0	0	0	0	0	0	0	0
Meningococcal	11	16	21	15	10	9	13	10	11	13	4
Pertussis[3]	204	393	255	286	43	5	5	12	895	217	87
Hib[4] < 5	1	2	1	0	0	0	1	2	0	0	0
Hepatitis A	64	53	373	153	31	19	27	41	32	33	23
Hepatitis B[2] (Acute)	33	53	47	38	16	14	24	36	44	38	20
Tetanus[2]	0	0	0	1	1	1	0	1	0	1	0
Diphtheria	0	0	0	0	0	0	0	0	0	0	0
Polio	0	0	0	0	0	0	0	0	0	0	0
Pneumococcal Disease < 5	31	21	26	23	14	19	30	18	13	17	6
Varicella[2]	296	380	293	299	93	99	100	153	168	105	93

[1]Data are current as of 09/01/2026 and include yearly case counts through 08/31/2026. Data are preliminary and subject to change.

[2]Measles, Mumps, Rubella and Varicella counts include confirmed and probable cases to better reflect disease burden. Tetanus cases are probable cases only. All other diseases include confirmed cases only, including hepatitis B (acute confirmed only). An update to the hepatitis B case definition in 2024 may lead to higher case counts in 2024 and 2025.

[3]Pertussis counts include *Bordetella Pertussis* species only. Upon retrospective review of 10-year case counts in Spring 2025, some *B. pertussis* cases were reclassified, producing higher case counts from 2015 to 2018 than previously published.

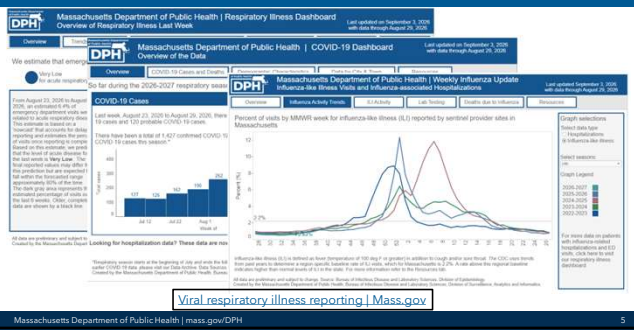
[4]*Haemophilus influenzae* Type b

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Respiratory Illness

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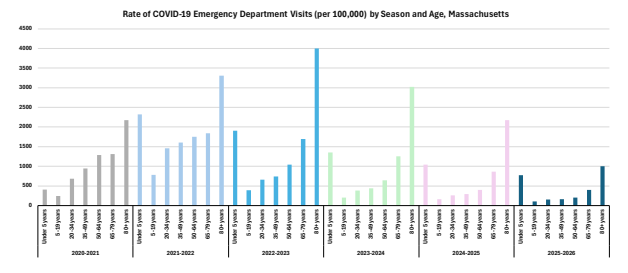
Viral Respiratory Illness: Dashboards



Viral respiratory illness reporting | Mass.gov

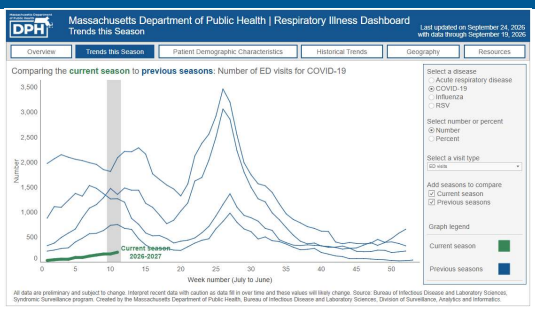
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Historic COVID Data – ED Visits



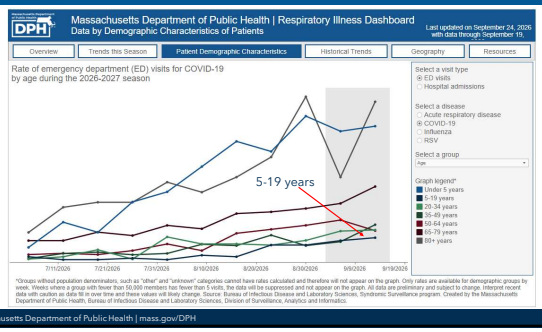
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COVID ED Visits: Current Season



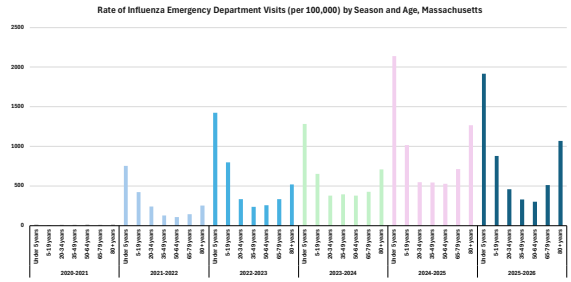
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COVID ED Visits by Age: Current Season



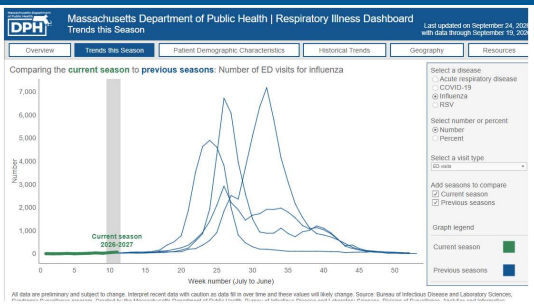
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Historic Influenza Data - ED Visits



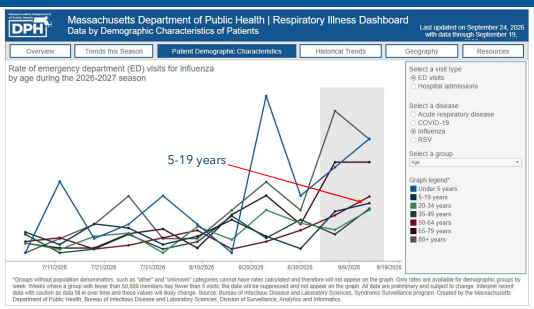
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Influenza ED Visits: Current Season



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Influenza ED Visits by Age: Current Season



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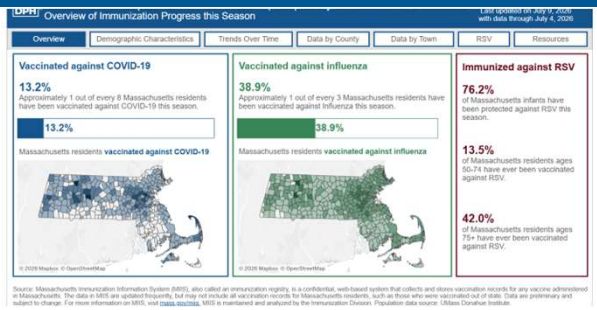
Pediatric Influenza-Associated Deaths in MA

- 9 pediatric influenza- associated deaths have been reported for the 2025- 2026 season
  - Among children who are eligible for influenza vaccination, 7 out of 9 were not vaccinated for influenza this season
- 4 pediatric COVID-19 associated deaths reported for the 2025-2026 season
  - 2 were not vaccinated

Pediatric Influenza-associated deaths in MA by season 2015 - 2026	
2025 – 2026	9
2024 – 2025	10
2023 – 2024	5
2022 - 2023	7
2021 – 2022	1
2020 - 2021	0
2019 – 2020	1
2018 -2019	4
2017 -2018	1
2016 -2017	2
2015 - 2016	2

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Respiratory Illness: Vaccination



Massachusetts Department of Public Health | mass.gov/DPH 13

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COVID and Flu Vaccination Rates – 5-19 years



Massachusetts Department of Public Health | mass.gov/DPH 14

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Measles

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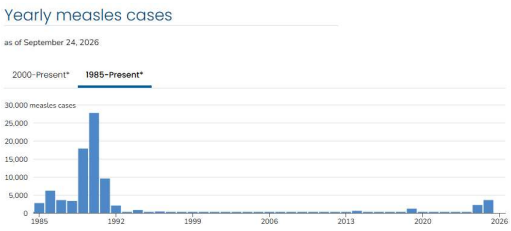
Measles

- Measles is a highly contagious viral airborne disease spread through respiratory droplets.
- Clinical presentation
  - Fever
  - Koplik spots
  - Rash: appearance (maculopapular) & spreads from hairline/head downwards
  - Three Cs: cough, coryza, conjunctivitis
- Incubation period: 8-12 days from exposure to onset of symptoms, with a range of 7-21 days
- Infectious period: 4 days before rash onset through 4 days after.



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Measles: From Elimination to Not

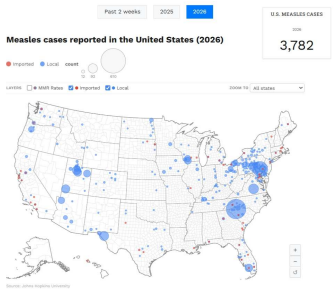


Measles Cases and Outbreaks | Measles (Rubeola) | CDC

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Measles: Epidemiology in the US

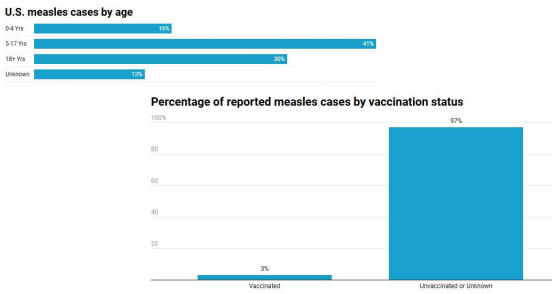
- Data from Johns' Hopkins measles tracker
- Data are current as of 9/28/2026
- 4 deaths have been reported publicly by states this year



US Measles Tracker | Johns Hopkins

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US Measles Cases by Age and Vaccination Status



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Measles: Epidemiology in MA

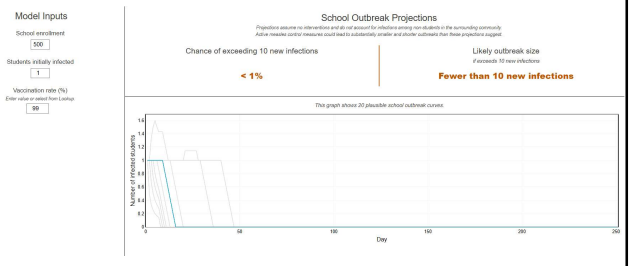
FD1



- 1st case was exposed in a different state
  - No MA residents exposed
- 2nd case returned from international travel
  - Two medical facilities involved/exposed
  - One community setting involved

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Measles: Possibility of Outbreaks – 99% vaccination



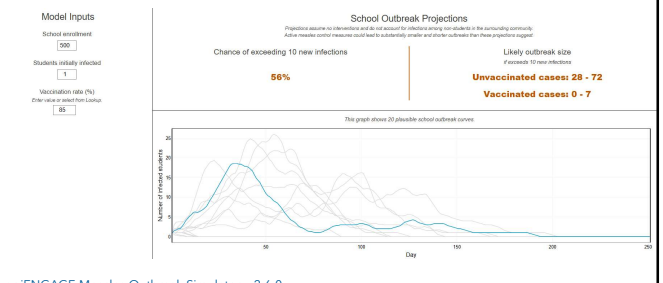
epiENGAGE Measles Outbreak Simulator v-2.6.0

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Slide 20

FD1 Delete "the" unless writing "the Commonwealth of MA."
Fukuda, Dawn (DPH), 2026-09-23T14:01:45.079

Measles: Possibility of Outbreaks – 85% vaccination



epiENGAGE Measles Outbreak Simulator v-2.6.0

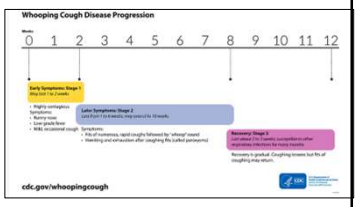
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Pertussis

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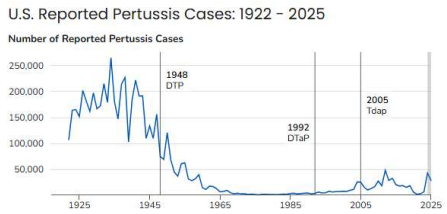
Pertussis

- Fastidious, gram-negative bacterium called ***Bordetella pertussis*.**
- **Infants at higher risk for complications**. Atypical presentations of pertussis occur more often in young infants
- Incubation period: range of 5-21 days with an average of 7-10 days
- Infectious period: 1 week prior to cough onset through 3 weeks from cough onset **OR** until 5 days of appropriate antibiotics have been completed



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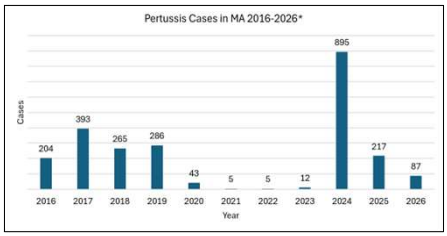
Pertussis: U.S. Epidemiology, 1925-2025



Pertussis Surveillance and Trends | Whooping Cough | CDC

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Pertussis: Massachusetts Epidemiology



Age Range	Proportion of Cases†
<5 years	13.81%
5-19 years	70.21%
20-34 years	6.67%
35-49 years	2.25%
50-64 years	2.95%
65-79 years	3.41%
80+ years	0.70%

†Age range of cases reported between 1/1/2024 and 9/29/2026

*Data are current as of 9/1/2026 with data through 8/31/2026 and are subject to change

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Mumps

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Mumps

- Contagious viral disease spread through direct contact with saliva or respiratory droplets from the mouth, nose and throat.
- Common symptoms: fever, tiredness, headache, loss of appetite and painful swelling (usually of the jaw, parotitis)
- Incubation period: typically, 16-18 days but it can range from 12 – 25 days.
- Infectious period: 2 days before swelling onset until 5 days post swelling onset.

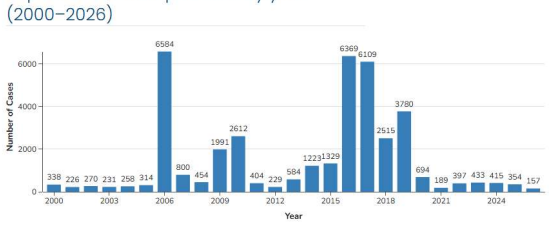




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Mumps: U.S. Epidemiology

Reported U.S. mumps cases by year (2000–2026)

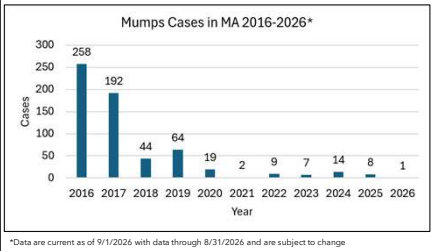


Mumps Cases and Outbreaks | Mumps | CDC

NOTE: In 1968, before 2 dose MMR, there were 152,209 cases

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Mumps: Massachusetts Epidemiology



*Data are current as of 9/1/2026 with data through 8/31/2026 and are subject to change

- Outbreaks occur in groups of people with close contact (e.g. congregate settings)
- In MA, ~25% of cases occur in people under the age of 20 years
- 56% of cases in ages 20-49 years
- Vaccination reduces frequency and severity of disease
- In 1968, before 2 dose MMR, there were 152,209 cases

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Varicella

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Varicella (chicken pox)

- Infection caused by the varicella-zoster virus
- Symptoms
  - Fever, malaise
  - Rash with or without vesicles
- Incubation period: 14-16 days; range 10-21 days
- Infectious period: 2 days prior to rash onset until lesions have scabbed or crusted over

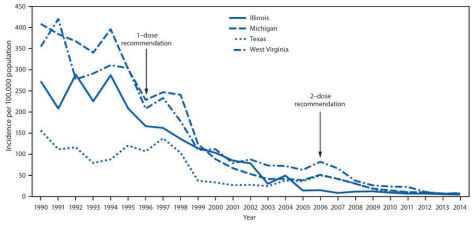




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Varicella: U.S. Epidemiology

FIGURE 3. Varicella incidence per 100,000 population* in states that have reported varicella cases to CDC annually since before implementation of the varicella vaccination program — Illinois, Michigan, Texas, and West Virginia, 1990–2014



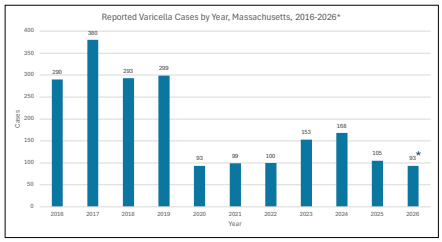
Largest declines
- 5-9 yrs – 89.3%
- 10-14 yrs – 84.8%

* Varicella incidence declined 97.4% overall from 1993–1995 to 2013–2014 (range = 92.9%–97.9%) in the four states (Illinois, Michigan, Texas, and West Virginia) that have reported varicella cases to CDC every year since before implementation of the varicella vaccination program.

Epidemiology of Varicella, 2005-2014

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Varicella: Massachusetts Cases by Year



- Outbreaks occur in groups of people with close contact (e.g. congregate settings)
- In MA, 1/3 of cases occur in children <5 years
- Another 1/3 of cases occur in those 5-19 years of age
- Two dose vaccination has reduced incidence by 85% across age groups
- Outbreak size and duration have decreased with vaccination
- Outbreaks occur primarily among un- or under-vaccinated persons

*Data are current as of 9/1/2026 with data through 8/31/2026 and are subject to change

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Varicella: Clusters in MA

2025: 3 clusters

- Daycare – 5 cases total
- 1 Household – 7 cases total
- 2 Households plus one contact – 8 cases total

2026: 4 clusters as of 9/10/26*

- Daycare – 5 cases total
- Elementary School - 4 cases total: 2 sibling groups
- 2 Household clusters – 6 cases total

*Data are current as of 9/10/2026 and are subject to change

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Meningococcal Disease

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Meningococcal Disease

Pathogen

- *Neisseria meningitidis*
- 6 serogroups: A, **B**, **C**, W, X & **Y**
- 1/10 people are carriers



Presentation

- Fever
- Chills
- Headache
- Body aches
- Rash
- Vomiting
- Meningitis
  - Photophobia, altered mental status (AMS)
- Septicemia



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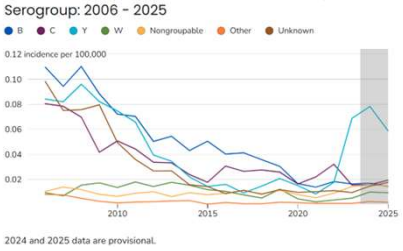
Meningococcal Disease

- Incubation period: 2-4 days (range 1-10 days)
- Infectious period: 7 days prior to symptom onset until 24 hours of antibiotic therapy have been completed
- Close contacts should receive antibiotic prophylaxis
- Spread via respiratory and oral secretions and close contact
  - Kissing
  - Sharing drinks, food, utensils etc.

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Meninge: U.S. Epidemiology

Trends in Meningococcal Disease Incidence by Serogroup: 2006 - 2025

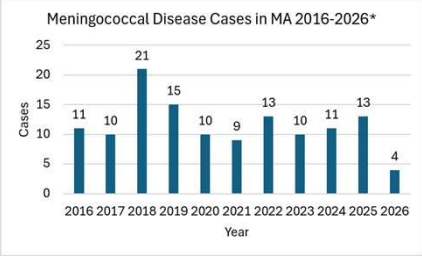


- Historically highest rates of disease in children under 1 year and those age 16-23
- Recent increases due to serogroup Y more common in adults

Meningococcal Disease Surveillance and Trends | Meningococcal | CDC

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Meningococcal Disease: Epidemiology



*Data are current as of 9/1/2026 with data through 8/31/2026 and are subject to change

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Thank you!

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