

Mumps



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Epidemiology

- Mumps is a mild acute viral illness, often asymptomatic
- Etiologic agent is paramyxovirus, a member of the Rubulavirus family
- Transmission (droplets, contact)
 - Coughing, sneezing, or talking,
 - Sharing items, such as cups or eating utensils, with others
 - Touching objects or surfaces with unwashed hands that are then touched by others
- Onset of symptoms 16 – 18 days, range 12 -25 days
- Period of communicability 3 days prior to onset of symptoms to 5 days after onset
- Case counts vary from year to year
 - 2012 - 229 cases
 - 2016 - 5311 cases



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Susceptibility to Mumps Infection

- Never had mumps
- Never received mumps vaccine
- Received Mumps Vaccine – Documented
 - Never received a second dose of vaccine
 - Never developed immunity to mumps



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Signs and Symptoms

- Prodrome
 - Low-grade fever up to 3-4days
 - Myalgia
 - Anorexia
 - Malaise
 - Headache
- Parotitis
 - Can last 7-10 days in unvaccinated individuals



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Parotitis

- Most common manifestation in 30-40% of infected persons
 - Is unilateral or bilateral
 - Affects combination of single or multiple salivary glands
 - Tends to occur within the first 2 days
 - Initially earache and tenderness on palpation of the angle of the jaw
 - Swollen lymph nodes confused with parotitis
- Symptoms tend to
 - Decrease after 1 week
 - Resolve after 10 days

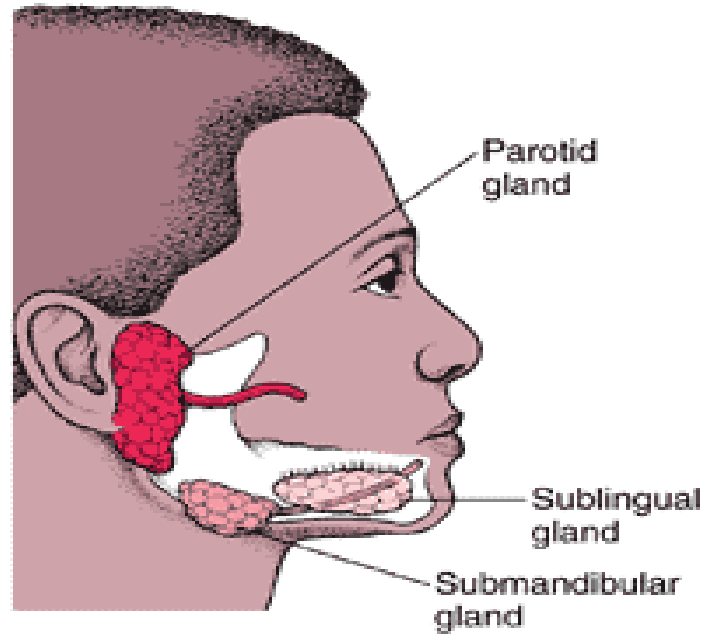


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Parotitis



Source: Merck Manual Consumer Version, edited by Robert Porter.
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Parotitis



Fig. 1 : Right parotid enlargement



Fig. 3 : Right parotid normal within 24 hours



Fig. 2 : Left parotid enlargement



Fig. 4 : Left parotid normal within 24 hours



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<http://www.iapi.org/february2008/CR-128.htm>

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Influenza + Parotitis = “Flumps”

- 2014-2015 Influenza
 - Parotitis associated with confirmed H3N2
 - Primarily mild cases in school aged children and in males
 - >80% presented with:
 - Cough
 - Sore throat or
 - Rhinorrhea
 - No associated deaths
- 2016-2017
 - H3N2 predominant strain



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Complications of Mumps

- Hearing loss
- Aseptic meningitis in about 10% of cases
- Orchitis in 20% to 30% of males who have reached puberty, infertility is rare
- Mastitis 30% of women who have reached puberty
- Oophritis– very rare
- Spontaneous abortion particularly in early pregnancy) – very rare



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Diagnosis - Lab Testing Options

- Mumps
 - Serum IgM
 - RT-PCR (serum collected within two days of onset of symptoms)
 - PCR from buccal swab, throat washing, saliva or CSF
 - IgG paired sera
 - Acute within a few days of onset
 - Convalescent two weeks later
- Influenza
 - Screening Tests (swabs)
 - Reverse Transcription-Polymerase Chain Reaction (RT-PCR)
 - Less common
 - Immunofluorescence
 - Viral culture
 - Serology



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Diagnosis – Interpreting Lab Results

- IgM results in individuals having received 1-2 doses of MMR
 - There might be no response (false negative)
 - Collect serum specimens at least 5-10 days after onset of parotitis
- Negative IgM and/or PCR (vaccinated or unvaccinated)
 - Symptomatic considered suspect mumps by CDC
- Influenza positive (could be flumps)
- IgG paired sera – fourfold increase acute to convalescent
- Positive IgG results
 - Indicates previous mumps exposure, including clinical and subclinical infections, and vaccination



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Prevention Messages

- Check vaccine records (clinicians, schools, public health)
 - Two doses of MMR vaccine
 - Vaccination after exposure is not harmful and might prevent later disease
- Practice good hand hygiene
- Practice good cough hygiene
- Clean off surfaces routinely (toys, doorknobs, tables, counters, etc) with soap and water, or with cleaning wipes
- Stay home from work, school or day-care when you are sick



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MMR Vaccine Efficacy

Mumps

- 1 dose 78% (range: 49%–92%)
- 2 doses 88% (range: 66%-95%)

Measles

- 1 dose 93% (range: 39%–100%)
- 2 doses 97% (range: 67%–100%)

Rubella

- 1 dose 97% (range: 94%–100%)



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<https://www.cdc.gov/vaccines/vpd/mmr/hcp/about.html>

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MMR Recommendations

- **Pregnant women** should not receive MMR
- **Children**
 - First dose at 12-15 months
 - Second dose at least 28 days after the first dose
 - 3 doses are currently not recommended; there is no booster
 - Students with 1 dose of vaccine require a second dose between ages 4-6 years upon school entry or older
 - Per CDC the second dose can be given to children prior to 4th birthday provided it is at least 28 days after the first dose.



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MMR Recommendations

- **Teens and Adults**

- Do not need any further vaccine if they can produce vaccine documentation for 2 doses
- Should receive at least one dose of MMR if they have had no written documented vaccine or no written documentation of mumps



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Mumps Outbreaks

- Mumps outbreak reporting is not mandatory to CDC
- They occur throughout the year
- Frequently associated with colleges and universities
- Laboratory confirmed mumps cases are reportable



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Outbreak Timeline

2006

- Primarily Midwestern campuses – 6500 cases

2009-2010

- Mostly high school students – 3000 cases
 - Index case had been studying in UK during a large mumps outbreak
 - Religious community in NYC – close knit

2011-2013

- Small outbreaks with limited spread on college campuses in CA, VA, and MD
- National case count several hundred per year

2014

- Several related to universities
- 1 university in Ohio >400 cases
- National Hockey League outbreak (14 known cases)
 - Pittsburgh Penguins
 - Minnesota Wild
 - Vancouver Canucks

2015-2016

- Small outbreaks with limited spread on college campuses
- 2 large outbreaks in IA and Ill

January 1-Feb 25, 2017

- 37 State and DC - provisional number 1,077 case



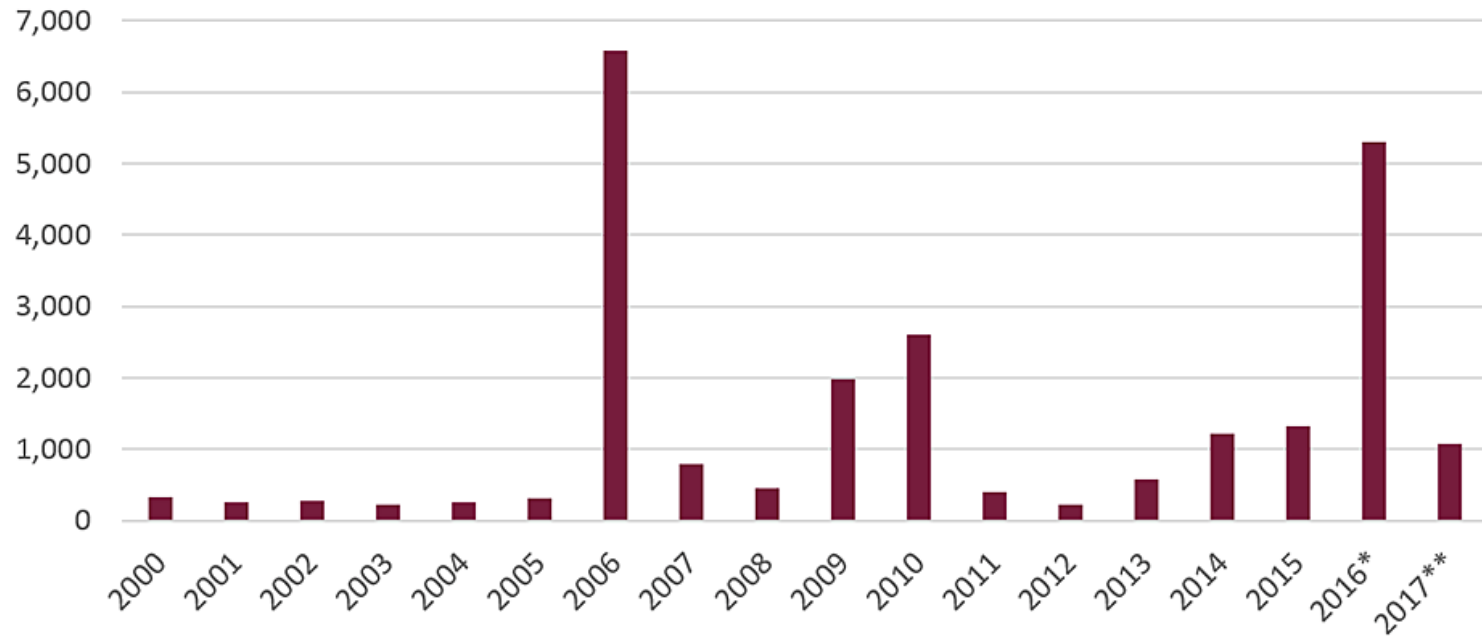
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Mumps Outbreaks

Mumps Cases in U.S., by Year



*Cases as of December 31, 2016. Case count is preliminary and subject to change.

**Cases as of February 25, 2017. Case count is preliminary and subject to change.

Source: [Morbidity and Mortality Weekly Report \(MMWR\), Notifiable Diseases and Mortality Tables](https://www.cdc.gov/mmwr/publications/index.html)(<https://www.cdc.gov/mmwr/publications/index.html>)

<https://www.cdc.gov/mumps/outbreaks>

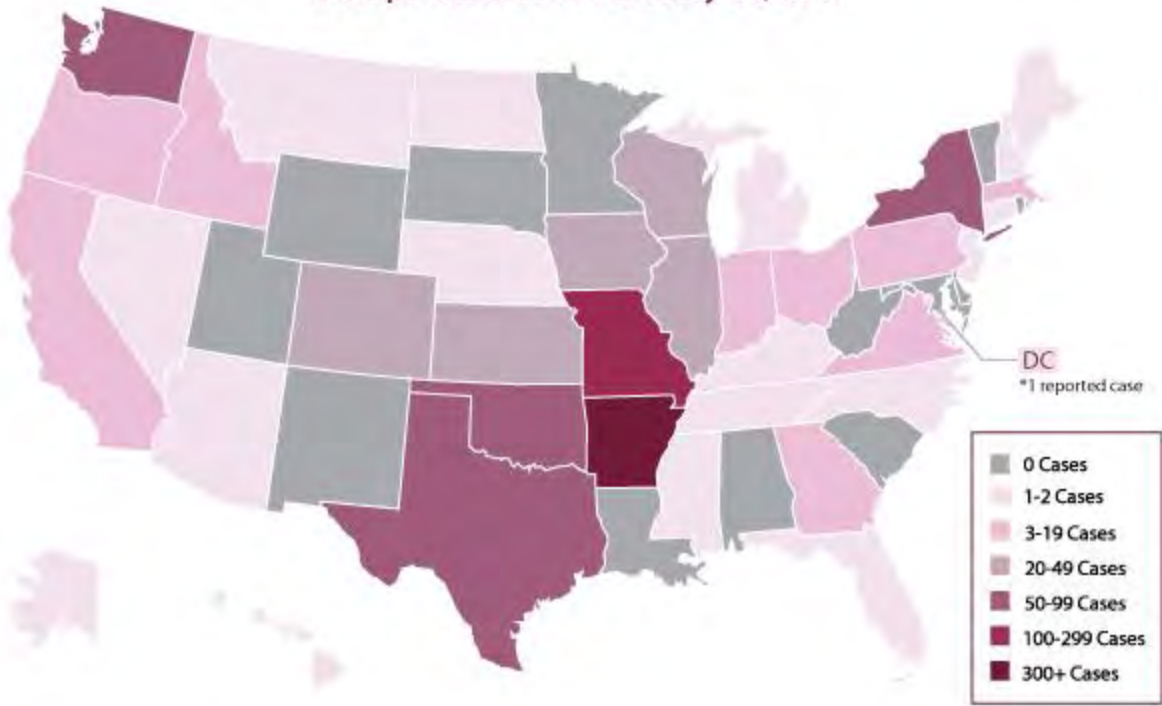


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Mumps Cases as of February 25, 2017



*AK, AR, CA, CO, FL, IL, IN, IA, KS, KY, MA, MI, MO, NV, NH, NY, NC, ND, OH, OK, OR, PA, TN, TX, VA, WA, and WI

**Preliminary data reported to CDC. Mumps outbreaks are not reportable.

<https://www.cdc.gov/mumps/outbreaks>



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Mumps Highlights - Missouri

- Seventy-five jurisdictions have investigated mumps cases since 8/1/2016
- Confirmed case at MSU - students living in a campus dorms and Greek houses
- As of March 8, 2017, more than 4,012 MU students have received a third dose of MMR School
- MU and AR associated cases (provisional)
 - MU 408
 - AR 17



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School	Mumps Cases	Total Student Pop.	International Student Pop.	Greek	Mumps Vaccine Requirements	Spring Break	Last Day of Semester
408	360	33,000	3000 (9%)	~22%	2 MMR	3/27 - 3/31	5/12
Truman State	19	6,379	410 (6.4%)	18% women, 22% men	None	3/13 - 3/17	5/12
SEMO	57	11,978	992 (9.2%)	13%	None	3/13 - 3/17	5/12
SLU	15	13,000	1000 (7.7%)	1800 (14%)	One dose of live mumps or MMR	3/13 - 3/17	5/16

Source: Missouri Department of Health and Senior Services

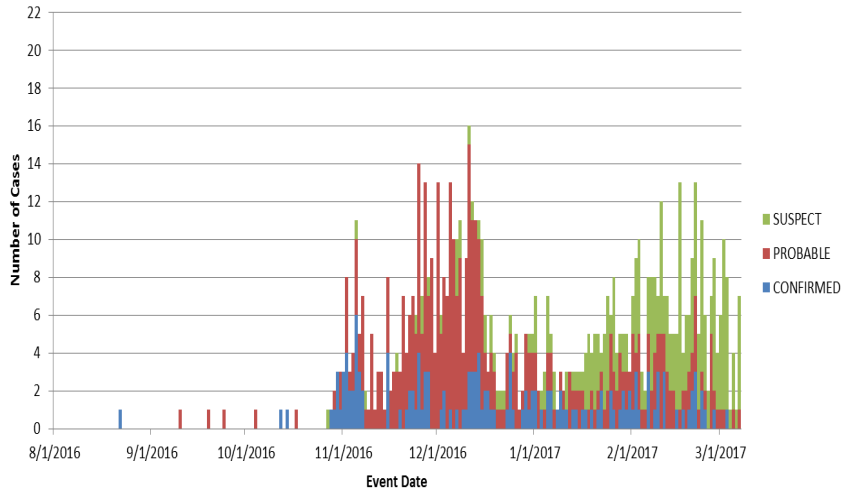


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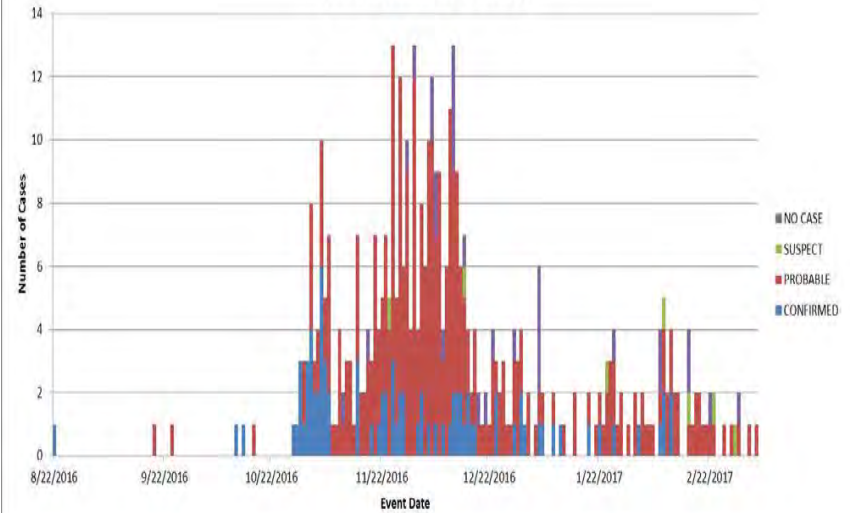
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Mumps Cases in MO (Confirmed, Probable, & Suspect 8/1/2016 - 3/7/2017)



Boone County Mumps Cases (All 8/1/2016 - 3/7/2017)



Source: Missouri Department of Health and Senior Services



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References

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- Missouri Department of Health and Senior Services www.health.mo.gov
- Source: Merck Manual Consumer Version, edited by Robert Porter. Copyright 2015 by Merck Sharp & Dohme Corp., a subsidiary of Merck & Co, Inc, Kenilworth, NJ. Available at merckmanuals.com. Accessed June 2015



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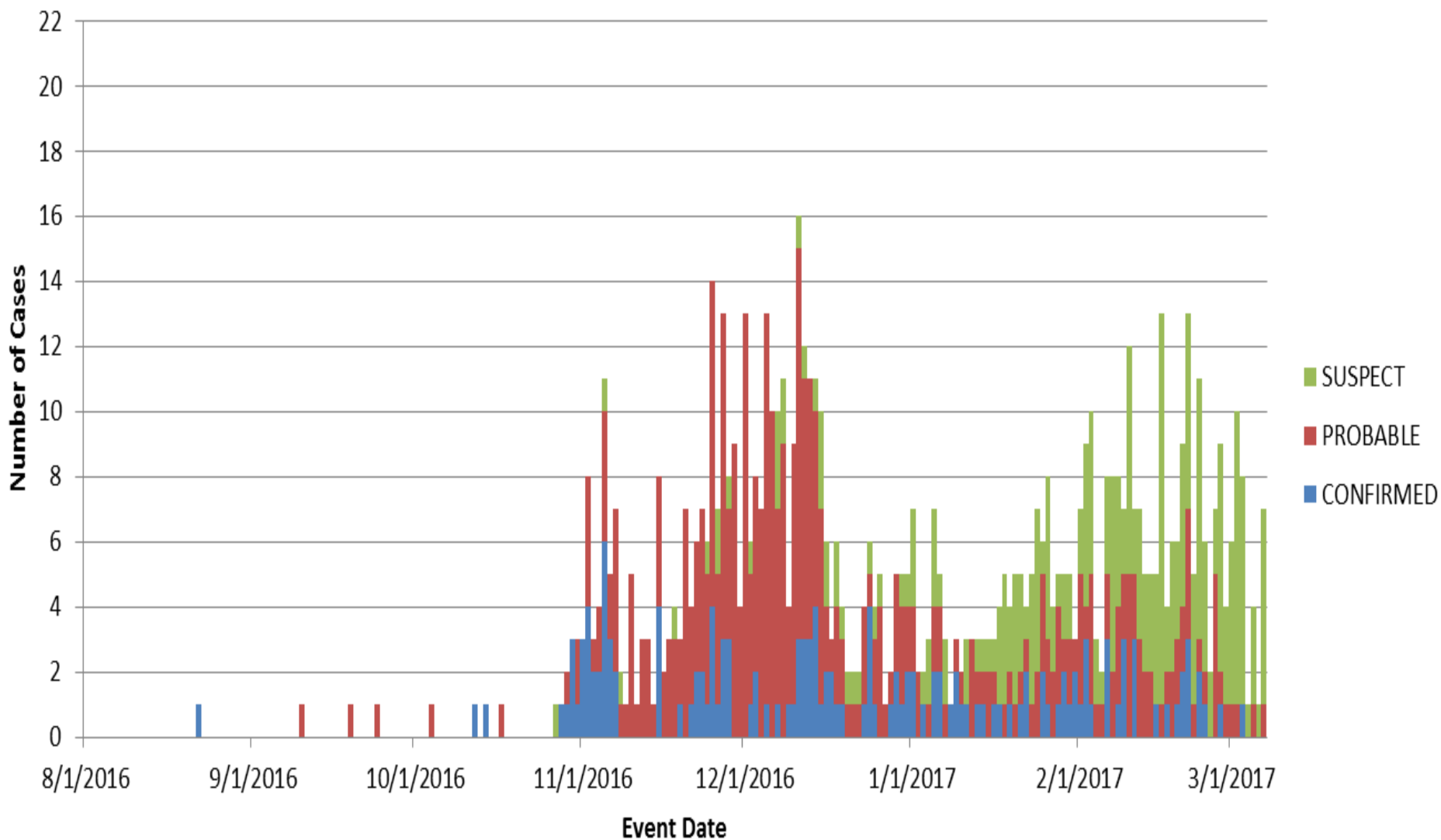
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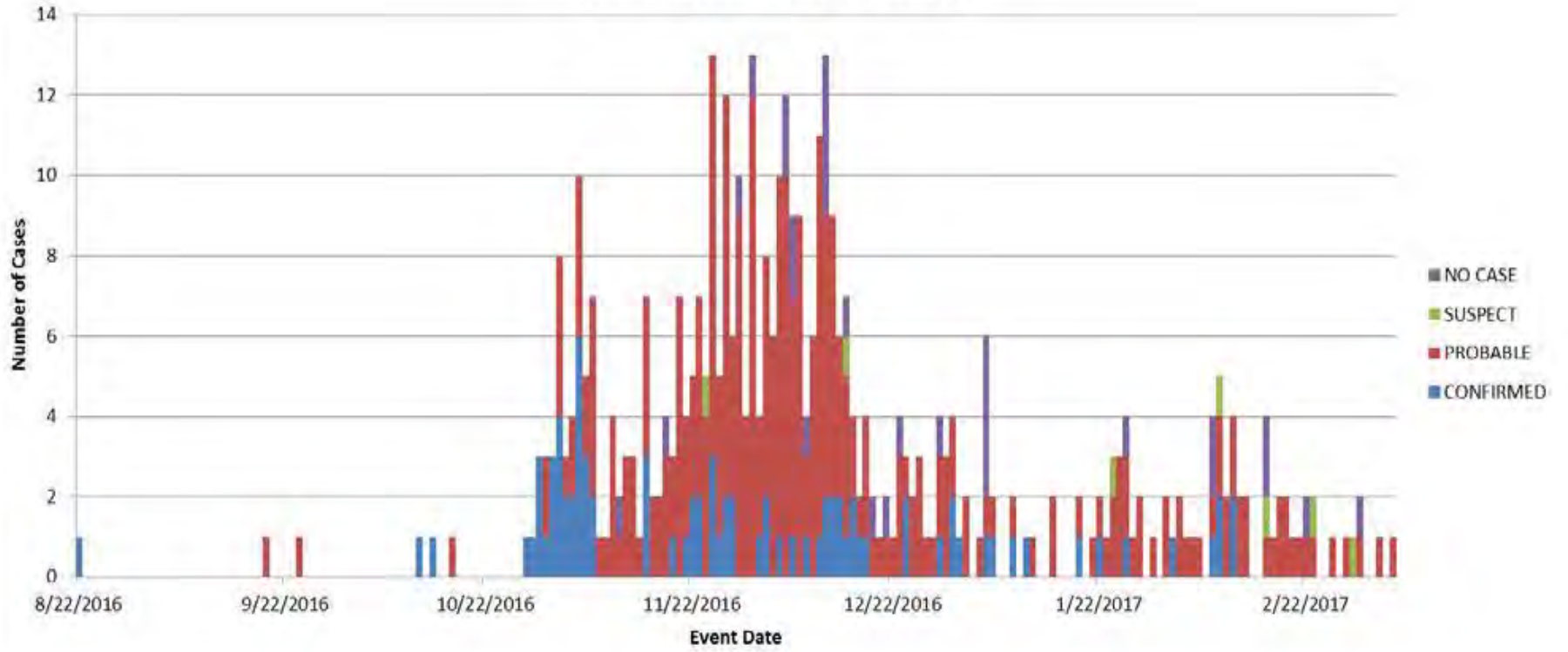


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