

Mumps Resurgence at a Large University Campus Town

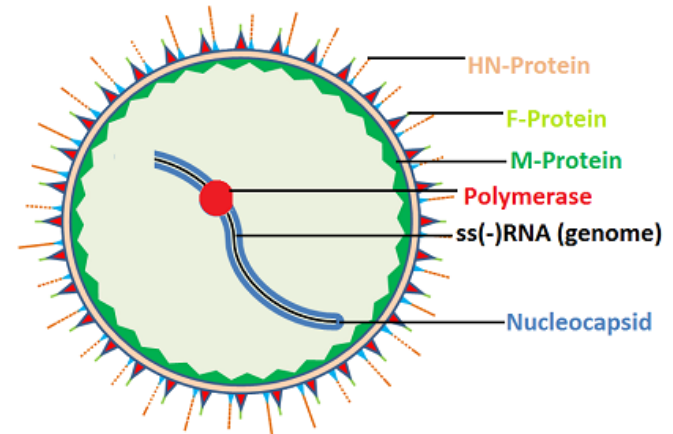
Awais Vaid, MBBS, MPH
Epidemiologist and Director of Planning
Champaign-Urbana Public Health District
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Mumps Virus

- Mumps is an acute viral disease characterized by fever and swelling of the parotid or other salivary glands
- Mumps is caused by the mumps virus (MuV), a member of the Paramyxoviridae family of enveloped, non-segmented, negative-sense RNA viruses. Mumps is characterized by painful inflammatory symptoms, such as parotitis and orchitis.
- The virus is highly neurotropic, with laboratory evidence of central nervous system (CNS) infection in approximately half of cases. Symptomatic CNS infection occurs less frequently.



Paramyxoviridae: Mumps Virus

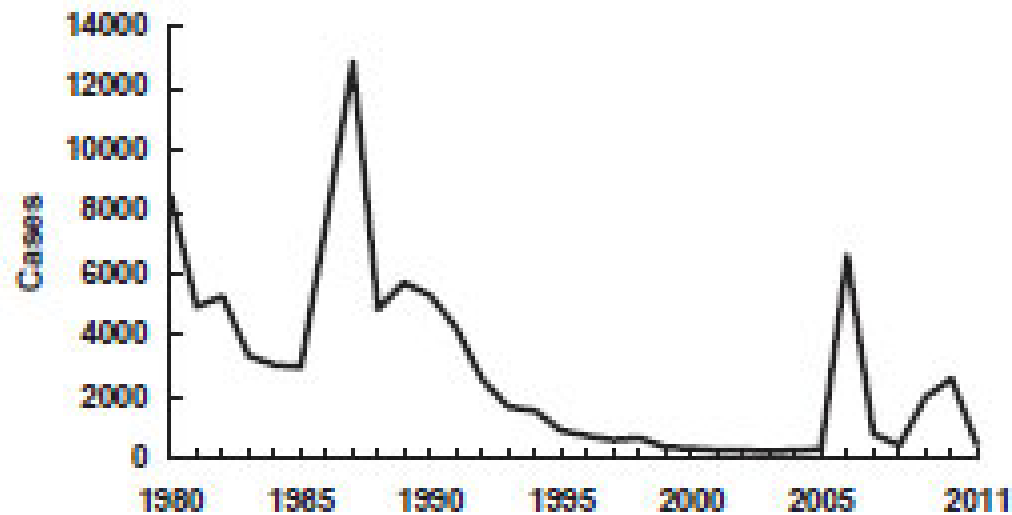
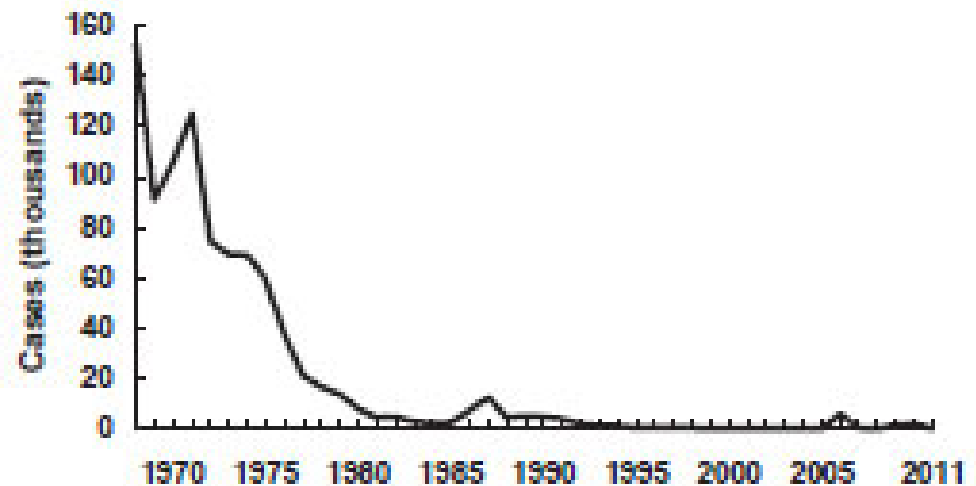


Mumps Vaccine

- The mumps vaccine was introduced in 1967, and the disease became nationally reportable in 1968. The incidence has decreased substantially with vaccination, but periods of resurgence have occurred in recent years.^[1]
- One dose of mumps or MMR vaccine is 78% (49% to 92%) effective. Two dose mumps vaccine effectiveness is 88% (66% to 95%).



Cases in US



Recent Mumps Outbreaks

- In 2006, a multi-state mumps outbreak involving more than 6,500 reported cases. This resurgence predominantly affected college-aged students living in the Midwest.
- In 2009 to 2010, two large outbreaks occurred. One multi-year outbreak involved about 3,000 people religious community in New York City and attended schools in which they had very close contact. The outbreak started when an infected student in this religious community returned from the United Kingdom where a large mumps outbreak was occurring.
- In 2011-2013, there were several smaller mumps outbreaks reported on college campuses in California, Virginia, and Maryland

Timeline of Champaign County Mumps Outbreak

- On April 15, 2015, the university health center reported a male aged 21 years with symptoms of fever and parotitis beginning April 9.
- In the following two weeks, five additional suspect mumps cases were identified.
- On May 1, a seventh suspect mumps case was confirmed by polymerase chain reaction (PCR).
- The six previous suspect cases were epidemiologically linked to the confirmed case, establishing a mumps outbreak at the university.

Timeline Continued

- Probable and confirmed cases were identified using the standard case definition for mumps
- Cases were considered infectious from two days before onset of parotitis to five days after.
- The exposure period was defined as 12 to 25 days prior to onset of parotitis.
- Outbreak control measures recommended to the university health center included standard and droplet precautions for patients in health care facilities, isolation of ill individuals during their infectious period, and exclusion of susceptible contacts from public settings from 12 to 25 days after exposure.

3rd Dose Recommendation

- By July 31, 75 cases had been reported.
- Because of increasing case counts during the summer semester despite high 2-dose MMR vaccination coverage, on August 4, we issued a recommendation for all students and staff born after 1956 to receive an additional dose of MMR vaccine before a large number of students returned to campus for the fall semester.
- Notifications were sent to students and their families to inform them of the current recommendation and an Epi-X notification was posted to inform state health agencies of the recommendation.
- An estimated 50,000 students and staff were targeted for this intervention.

Mass Vaccination Clinics

- Five vaccination clinics were held on the university campus during August 6-27, and C-UPHD and the university health center administered MMR vaccine through the fall semester.
- If off-campus for the summer, students were encouraged to receive vaccine from their health care provider or pharmacy before returning to school.
- A total of 11,199 doses of MMR vaccine were administered from August 4 to October 1



Justification for 3rd Dose MMR

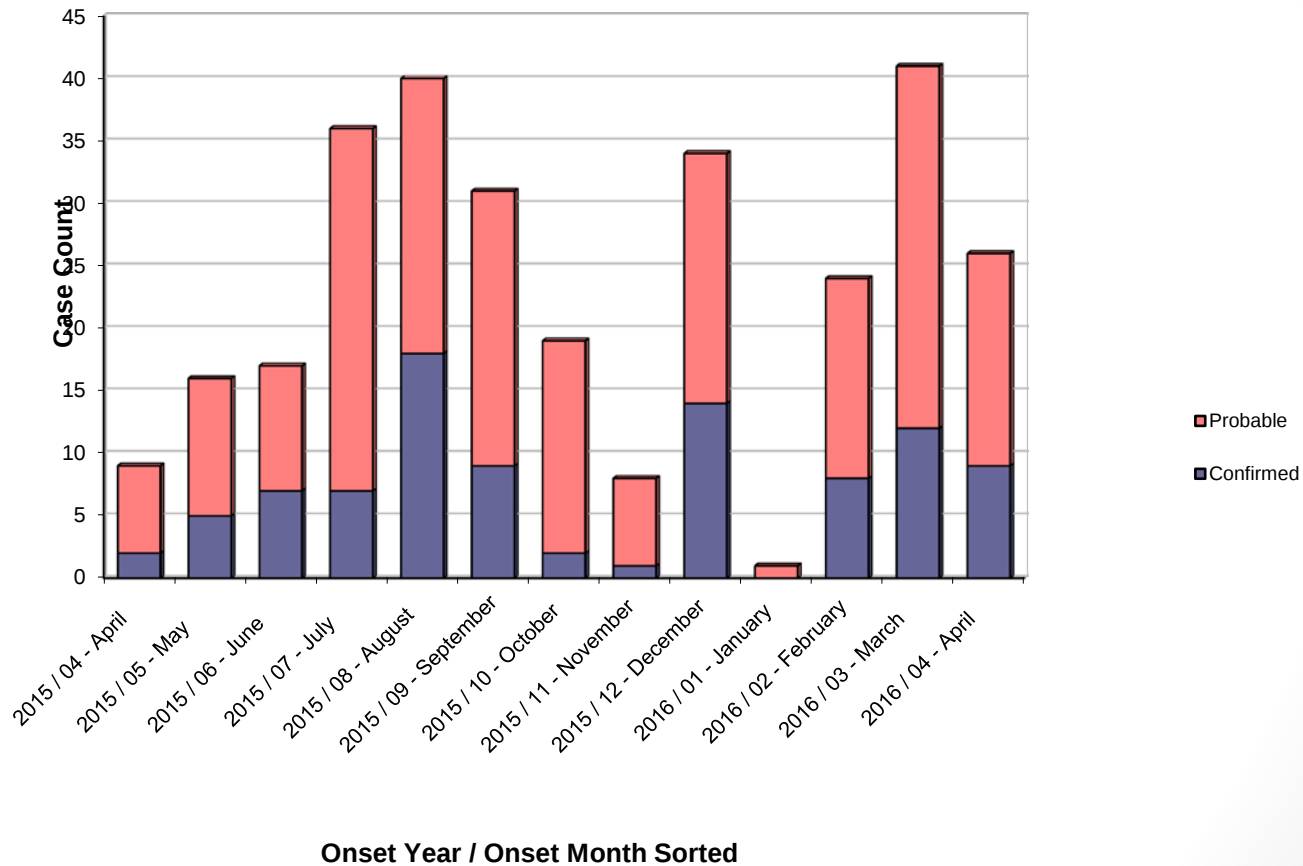
- As in many previously described mumps outbreaks, this outbreak demonstrated sustained transmission of mumps despite high 2-dose MMR vaccination coverage.
- Although no formal recommendation is in place for using a third dose of MMR vaccine as a control measure during mumps outbreaks, CDC has provided guidelines for agencies considering its use.
- Factors that might trigger recommending a third dose include outbreaks among populations with 2-dose MMR vaccination coverage of >90%, intense exposure settings like universities, evidence of sustained transmission for >2 weeks, and high attack rates
- All but the latter were considered when recommending the dose during this outbreak

Justification for 3rd Dose MMR

Three key aspects of this outbreak contributed to the recommendation of a third dose of MMR vaccine.

1. This outbreak did not follow typical seasonal trends for mumps in Illinois.
2. The expectation of a large increase in the number of students returning to the university campus at the start of the fall semester, increasing the population density on campus and adding an unknown number of susceptible individuals to the population.
3. evidence of sustained transmission despite high vaccination coverage among university students

Trend of Confirmed and Probable cases by month



Vaccination Rates of Cases

Vaccine Dose	Mumps Cases	Percentage
1	10	3.31%
2	222	73.51%
3	46	15.23%
0 or Unknown	24	7.95%
Sum:	302	

Vaccination Status of Cases

Vaccine Status	Mumps Cases	Percentage
No	7	2.32%
Unknown	14	4.64%
Yes	281	93.05%
Sum:	302	

Transmission Setting of Cases

Transmission Setting	Case Count	Percentage
College	220	72.85%
Home	7	2.32%
Other	10	3.31%
School	52	17.22%
Unknown	7	2.32%
Work	6	1.99%
Sum:	302	100.00%

Demographic Profile of Cases

Mumps by Gender	Mumps Cases	Percentage
Female	125	41.39%
Male	162	53.64%
Unknown	15	4.97%
Sum:	302	

Epidemiology of Case Status

Case Status	Mumps Cases	Percentage
Confirmed	94	31.13%
Probable	208	68.87%
Sum:	302	



Set up of Mass Vaccination Clinics at the UIUC Campus Recreation Center





Federal Vaccine supplies



Current Status & Cost

- We are currently at 320+ cases
- We continue to see 4-5 cases each week.
- With the University closed after graduation on May 15th, we are hoping that cases will slow down enough to break the chain of transmission.
- Approximate cost of the entire outbreak management was in excess of \$ 1 Million.

Questions?

Awais Vaid

avaid@c-uphd.org

217-531-5360