

# Mumps Outbreak Before and After a Large 3<sup>rd</sup> Dose MMR Vaccination Campaign, Iowa, July 13 2015—May 13 2016

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## BACKGROUND

- Mumps is an acute viral illness that classically presents with parotitis
- Complications can include orchitis, hearing loss and meningitis
- 2 measles-mumps-rubella (MMR) doses recommended for university students since 2006 (ACIP)
- Recent large mumps outbreaks have frequently involved universities

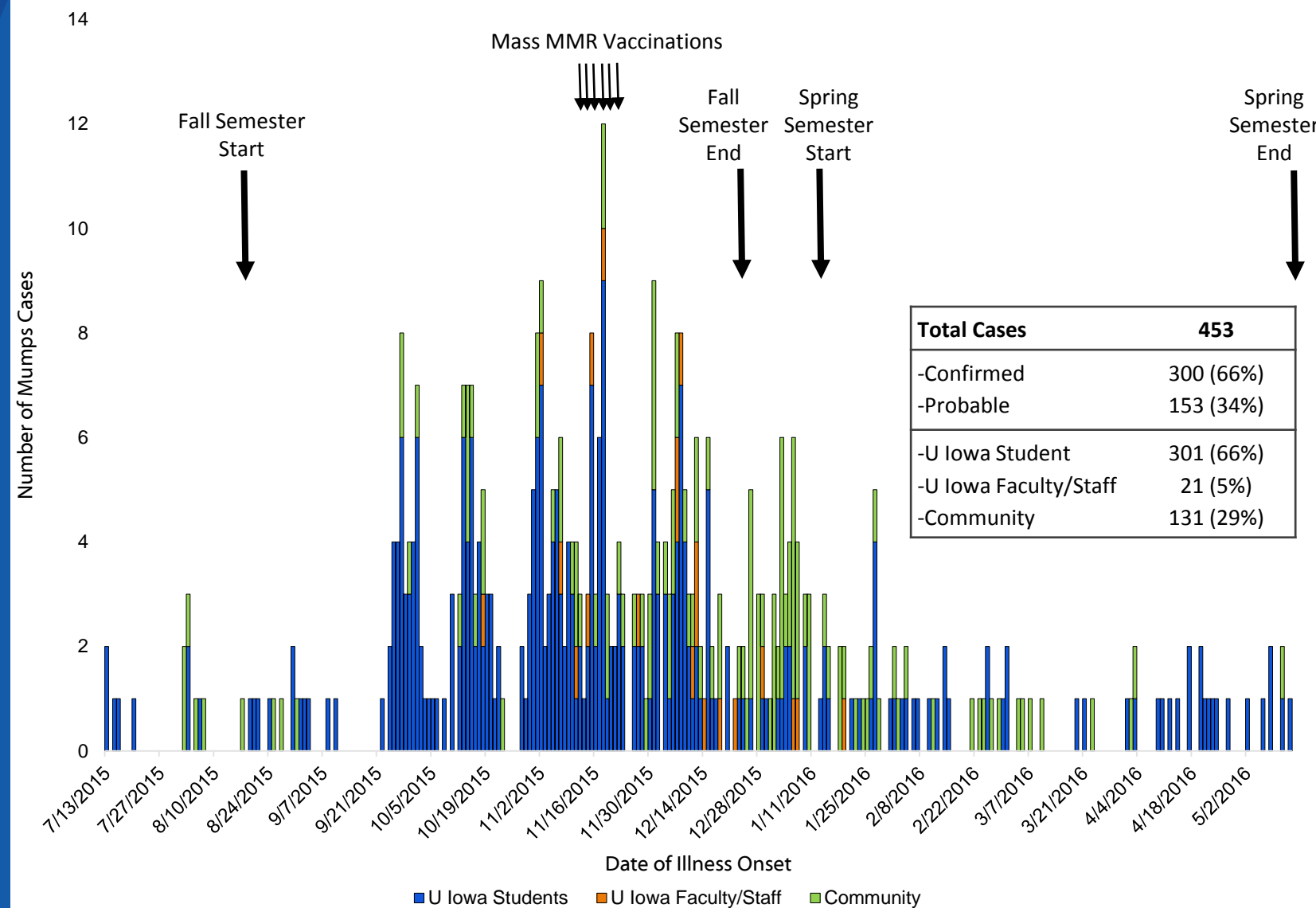
## UNIVERSITY OF IOWA

- >30,000 students
- 2-dose MMR requirement
  - Began in 2003, fully implemented in 2012
  - Required for course registration
- Mass MMR vaccination campaign
  - Nov 10, 11, 13, 16, 17, 19, 2015
  - Students < 25 years old
  - >4,500 doses administered

## INVESTIGATION METHODS

- Review of state and county reportable disease records, state public health laboratory results, and medical visits
- Investigation of student cases
  - Medical chart abstractions
  - Interviews
  - Vaccination records
- Data collected on demographics, university activities and affiliations, mumps contacts and exposures
- Analysis of case count and age distribution before and after 21 days (one incubation period) post last mass vaccination clinic
- Analysis of Mumps RT-PCR test results by time from illness onset

## MUMPS CASES IN JOHNSON COUNTY, IOWA, JULY 13, 2015 – MAY 13, 2016



## DEMOGRAPHICS/EXPOSURES

Student Cases	N=301
-Median age (IQR)	21 y (20-22 y)
-Female	155 (52%)
-Undergraduate	271 (90%)
Exposures	n=219
-Shared housing	207 (94%)
-Mumps contact	76 (34%)

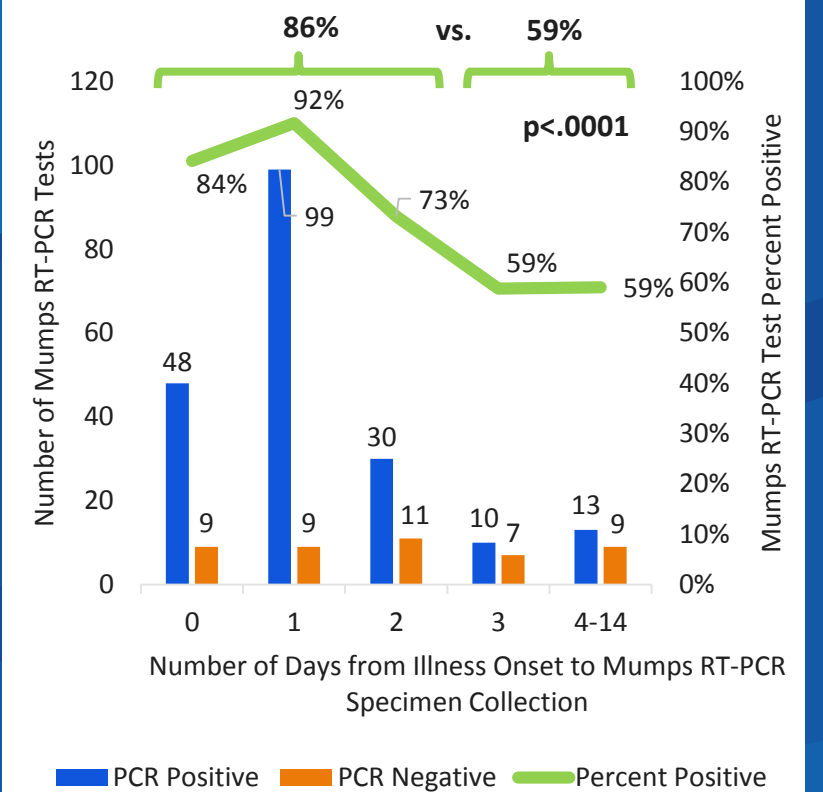
## AGE DISTRIBUTION PRE- AND POST-CAMPAIGN

	Pre-Campaign 7/13/15-12/10/15	Post-Campaign 12/11/15-5/13/16	p-value
<b>Students (n)</b>	<b>226</b>	<b>75</b>	
-Age <25 years	222 (98%)	68 (91%)	0.0064
<b>Faculty/Staff (n)</b>	<b>11</b>	<b>10</b>	
-Age <25 years	6 (55%)	6 (60%)	1
<b>Community (n)</b>	<b>59</b>	<b>72</b>	
-Age <25 years	36 (61%)	35 (49%)	0.16

## VACCINATION OF STUDENT CASES

MMR vaccinations at time of illness	N=301
1 dose	2 (0.7%)
2 doses	260 (86%)
3 doses	36 (12%)
0 doses - Medical Exemption	1 (0.3%)
0 doses - Religious Exemption	1 (0.3%)
Unverified	1 (0.3%)

## MUMPS RT-PCR RESULTS OVER TIME



## CONCLUSIONS

- A large, university-based mumps outbreak occurred in 2015-2016 despite high MMR coverage in students
- The case count declined in the target population after a mass 3<sup>rd</sup> MMR vaccination campaign
- Coordinated response by state, local and university partners to promote early case detection and isolation of cases likely led to reduced case count

\*For the Iowa Mumps Outbreak Response Team: Manisha Patel, Matthew Donahue, Allison Schneider, Ugochi Ukegbu, Kathleen Wittich, James Kellogg, Doug Beardsley, Ngoc Tran, Don Callaghan, Adam Pyatt, Dave Koch, Tricia Kitzmann, Bethany Kintigh, Kelli Smith

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