Background

Mumps is an acute viral illness that classically presents with parotitis. Infected persons who are asymptomatic or have non-specific respiratory symptoms (~30%) can still transmit disease. Complications include orchitis, oophoritis, deafness, aseptic meningitis, and encephalitis. The United States experienced a 99% reduction in mumps cases by 2005 following implementation of 2-dose MMR vaccination program in 1989.

A resurgence of mumps in 2016-2017 was noted. There was a significantly higher number of mumps cases in 2017 compared to 2016. The Centers for Disease Control and Prevention (CDC) estimated that 2017 mumps outbreaks accounted for 2.5 million cases in the United States. The majority of patients with mumps had received at least 2 doses of MMR vaccine before symptoms onset (range 72%-87%).

Methods

The Centers for Disease Control and Prevention (CDC) analyzed reports of confirmed and probable mumps cases transmitted through the National Notifiable Diseases Surveillance System (NNDSS) by 52 states/local health departments (jurisdictions). Case-based data was analyzed from Jan 1st, 2016 to July 31st, 2018. Overall and age-specific incidence rates (IR) per 1,000 persons, 95% CI were calculated by dividing the annual number of mumps cases by U.S. Census Bureau’s population estimates. SAS (v9.4) was used for all analyses.

Results

Between January 1st - July 31st, 2018, 14,166 mumps cases were reported to NNDSS (Figure 1).

- 2016: (n=1,906), IR = 20.1/million
- 2017: (n=1,109), IR = 18.0/million
- 2018: (n=8,868), IR = 5.3/million

Young adults (18-24 yrs) had the highest IR (all three years).

- 2016: (n=1,913), IR = 88.6/million
- 2017: (n=572), IR = 76.8/million
- 2018: (n=305), IR = 15.8/million

The majority of patients with mumps had received at least 2 doses of MMR vaccine before symptoms onset (range 72%-87%).

Comparison of 2016 - 2018 Data

- Significantly lower numbers of reported total and outbreak-related mumps cases in 2016 vs. 2017 (Table, Figure 2).
- 361 more mumps cases were reported in 2016 and twice as many cases were reported in 2017 compared with 2016.
- Two times as many outbreak-related cases were reported in 2016 and three times as many outbreak-related cases were reported in 2017 as there were in 2016.
- There was a significantly higher number of jurisdictions reporting outbreak cases in 2017 compared to 2016.
- There was no significant difference in the number of jurisdictions reporting any mumps cases between 2016 - 2018.

Summary

- Preliminary data suggest that the overall and outbreak-related mumps cases may be decreasing in 2018 after two years of increased cases.
- Young adults continue to be the primary group affected by mumps.
- However, the number of jurisdictions reporting mumps cases has not decreased.
- Thorough investigations of sporadic cases may lead to improved identification of epidemiologic linkages and earlier identification of outbreaks.
- Providers who see sporadic mumps cases in high-risk groups (e.g. institutional settings with close contact or close-knit communities) should make sure their health department is aware of these cases.
- ACP recommended in October 2017 a third dose of MMR vaccine for persons previously vaccinated with 2 doses who are identified by public health authorities as being part of a group or population at increased risk for acquiring mumps because of an outbreak.

Limitations

- NNDSS is a passive surveillance system.
- It is possible that not all cases for this timeframe have been reported into the system.
- It is possible that not all cases and outbreaks have been captured by the system.
- Detailed data on mumps cases may not always be routinely collected, leaving knowledge gaps.

National Center for Immunization and Respiratory Diseases
Division of Viral Diseases

Table: Reported Mumps Data, United States, January 1-31, 2016-2018

<table>
<thead>
<tr>
<th>Month and Year</th>
<th>Jan-Jul 2016</th>
<th>Jan-Jul 2017</th>
<th>Jan-Jul 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total No. of cases (IR/million)</td>
<td>1952 (6.1)*</td>
<td>4445 (13.8)*</td>
<td>1688 (5.3)*</td>
</tr>
<tr>
<td>No. reported outbreak cases (%)</td>
<td>1424 (7.2)*</td>
<td>3054 (9.0)*</td>
<td>829 (4.9)*</td>
</tr>
<tr>
<td>No. jurisdictions reporting outbreak cases</td>
<td>23</td>
<td>32*</td>
<td>23</td>
</tr>
</tbody>
</table>

*Statistically significant when compared to 2018, I.R. = Incidence rate per 1,000,000 persons