Update on Mumps and Current Status of Outbreak in NW Arkansas

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Arkansas Department of Health
Vaccines have been proven to prevent millions of illnesses and thousands of deaths each year in the United States.

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Pre-Vaccine Cases</th>
<th>% Decrease</th>
<th>Recent Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diptheria</td>
<td>23,053</td>
<td>100%</td>
<td>0</td>
</tr>
<tr>
<td>H. Influenza</td>
<td>26,008</td>
<td>99%</td>
<td>249</td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>117,333</td>
<td>91%</td>
<td>11,049</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>66,222</td>
<td>83%</td>
<td>11,259</td>
</tr>
<tr>
<td>Measles</td>
<td>530,217</td>
<td>99%</td>
<td>61</td>
</tr>
<tr>
<td>Mumps</td>
<td>162,344</td>
<td>99%</td>
<td>982</td>
</tr>
<tr>
<td>Polio</td>
<td>206,752</td>
<td>93%</td>
<td>13,506</td>
</tr>
<tr>
<td>Pneumococcal Disease</td>
<td>16,059</td>
<td>74%</td>
<td>4,167</td>
</tr>
<tr>
<td>Rubella</td>
<td>16,214</td>
<td>100%</td>
<td>8</td>
</tr>
<tr>
<td>Congenital Rubella</td>
<td>47,745</td>
<td>99%</td>
<td>4</td>
</tr>
<tr>
<td>Smallpox</td>
<td>152</td>
<td>99%</td>
<td>1</td>
</tr>
<tr>
<td>Tetanus</td>
<td>29,005</td>
<td>100%</td>
<td>0</td>
</tr>
<tr>
<td>Varicella</td>
<td>589</td>
<td>98%</td>
<td>14</td>
</tr>
</tbody>
</table>

Vaccine infographic created by Leon Farrant
Mumps

- Acute viral illness
- Parotitis and orchitis described by Hippocrates in 5th century B.C.
- Major cause of outbreaks in pre-vaccine era
  - Particularly in military recruits living in dorms
- Recently, a few outbreaks have centered around colleges and schools
Marked Swelling of Cheek and Neck Seen with Mumps

CDC Public Health Image Library
Mumps Clinical Case Definition

• Acute onset of unilateral or bilateral swelling of parotid or salivary gland lasting >2 days without other apparent cause.
Mumps Clinical Features

- Incubation period 12-25 days
- Often starts with low-grade fever, headache, malaise, myalgias
- Parotitis in 9-95% (typically 30%-40%)
- Up to 27% of infections asymptomatic
- May present as lower respiratory illness, particularly in preschool-aged children
<table>
<thead>
<tr>
<th>Complication</th>
<th>Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNS involvement</td>
<td>15% of clinical cases</td>
</tr>
<tr>
<td>Orchitis</td>
<td>3-10% in post-pubertal males</td>
</tr>
<tr>
<td></td>
<td>(up to 66% in pre-vaccine era)</td>
</tr>
<tr>
<td>Pancreatitis</td>
<td>2%-5%</td>
</tr>
<tr>
<td>Deafness</td>
<td>1/20,000</td>
</tr>
<tr>
<td></td>
<td>(4% in pre-vaccine era)</td>
</tr>
<tr>
<td>Death</td>
<td>1-3/10,000</td>
</tr>
</tbody>
</table>
Mumps Laboratory Diagnosis

- Identification of viral genetic material in a swab of the cheek
  - PCR

- Identification of antibodies in blood
  - positive IgM antibody
  - 4x increase in IgG antibodies between acute and convalescent specimens
Mumps Transmission

- Respiratory transmission of virus
  - Subclinical infections may transmit

- Virus multiplies in mouth nose and lymph nodes

- Typical $2^{nd}$ attack rate of 31%

- Not an environmental risk like flu or a common cold
  - Rapidly dries out and becomes inactive
Mumps Epidemiology

- **Reservoir**: Only humans
- **Temporal pattern**: Peak in late Winter and Spring
- **Communicability**: Three days before to four days after onset of active disease
Mumps – United States, 1968-2005

Vaccination first offered in 1967
Mumps – United States, 1980-2011

Source: National Notifiable Disease Surveillance System, CDC
Mumps - United States, 1980-2003
Age Distribution of Reported Cases
Mumps Immunity

- Born before 1957
- Documentation of physician-diagnosed mumps
- Serologic evidence of mumps immunity
- Documentation of adequate vaccination
Mumps Vaccine

- Effectiveness: 88% after two doses
- Duration of Immunity: Generally lifelong
- Schedule: 1st dose for preschool children, 2nd dose for school age children and adults at higher risk
- Administered with measles and rubella (MMR)
- Indicated for all infants >= 12 months and susceptible adolescents and adults
Vaccine Side Effects

• Brief achy joints (up to 25% of adults)
  – Uncommon in children
• Uncommon symptoms (less than 1%)
  – Fever
  – Rash
  – Itching
• Extremely rare events (less than 1/100,000)
  – Brief orchitis
  – Mild parotitis
• Encephalitis (~1 in 800,000 doses)
Epidemiological Characteristics

• High risk groups:
  – Post pubertal males – orchitis, atrophy, cancer?
  – Persons with diabetes

• Epidemic Potential:
  – High – epidemic parotitis

• Challenges
  – Imported cases
  – Occasional outbreaks despite high vaccination coverage
Current Status of Outbreak

Onset of Disease by Week

* provisional numbers as of 9/14/16
Vaccination Status Among Those Who Have Been Investigated

<table>
<thead>
<tr>
<th>Vaccination Status of Cases</th>
<th>1 - 4</th>
<th>5 - 17</th>
<th>18+</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 MMR</td>
<td>5</td>
<td>3</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>1 MMR</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2+ MMR</td>
<td>1</td>
<td>59</td>
<td>7</td>
<td>57</td>
</tr>
<tr>
<td>Unknown MMR</td>
<td>1</td>
<td>2</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>64</td>
<td>28</td>
<td>100</td>
</tr>
<tr>
<td>Total UTD</td>
<td>3</td>
<td>59</td>
<td>7</td>
<td>69</td>
</tr>
<tr>
<td>% UTD</td>
<td>30.0%</td>
<td>92.2%</td>
<td>25.0%</td>
<td>68.3%</td>
</tr>
</tbody>
</table>
What is ADH Doing?

- Using the best evidence to control the outbreak
- Excluding undervaccinated kids from school
- Performing vaccination clinics (7 complete, mass clinic scheduled for 9/21)
  - Others being considered
- Interviewing all suspect cases and contacts
- Providing advice to doctors and schools
- Communicating to many audiences
Benefits of 2\textsuperscript{nd} (or 3\textsuperscript{rd}) MMR shot

• 9 fold lower risk of illness

• Milder disease if you do get mumps

• Much less likely to transmit to others
Questions / Comments