Mumps and Mumps Vaccine

Epidemiology and Prevention of Vaccine-Preventable Diseases
National Immunization Program
Centers for Disease Control and Prevention
Revised January 2006

Note to presenters:
Images of vaccine-preventable diseases are available from the Immunization Action Coalition website at http://www.vaccineinformation.org/photos/index.asp

Mumps

• Acute viral illness
• Parotitis and orchitis described by Hippocrates in 5th century BCE
• Viral etiology described by Johnson and Goodpasture in 1934
• Frequent cause of outbreaks among military personnel in prevaccine era

Mumps Virus

• Paramyxovirus
• RNA virus
• One antigenic type
• Rapidly inactivated by chemical agents, heat, and ultraviolet light

Mumps Pathogenesis

• Respiratory transmission of virus
• Replication in nasopharynx and regional lymph nodes
• Viremia 12-25 days after exposure with spread to tissues
• Multiple tissues infected during viremia

Mumps Clinical Features

• Incubation period 14-18 days
• Nonspecific prodrome of myalgia, malaise, headache, low-grade fever
• Parotitis in 30%-40%
• Up to 20% of infections asymptomatic
### Mumps Complications
- CNS involvement: 15% of clinical cases
- Orchitis: 20%-50% in post-pubertal males
- Pancreatitis: 2%-5%
- Deafness: 1/20,000
- Death: Average 1 per year (1980 – 1999)

### Mumps Laboratory Diagnosis
- Isolation of mumps virus
- Detection of mumps antigen by PCR
- Serologic testing
  - Positive IgM antibody
  - Significant increase in IgG antibody between acute and convalescent specimens

### Mumps Epidemiology
- Reservoir: Human
  - Asymptomatic infections may transmit
- Transmission: Respiratory drop nuclei
- 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*

<table>
<thead>
<tr>
<th>Year</th>
<th>Cases (thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td></td>
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<tr>
<td>1975</td>
<td></td>
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<td>1980</td>
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<td>1995</td>
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<tr>
<td>2000</td>
<td></td>
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<tr>
<td>2005</td>
<td></td>
</tr>
</tbody>
</table>

*2005 provisional total

### Mumps—United States, 1980-2003

**Age Distribution of Reported Cases**
- 5-14 yrs
- 15-39 yrs
- <5 yrs
- ≥40 yrs

### Mumps—United States, 1980-2005*

<table>
<thead>
<tr>
<th>Year</th>
<th>Cases</th>
</tr>
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<tbody>
<tr>
<td>1980</td>
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<td>1985</td>
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<td>2000</td>
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<td>2005</td>
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</tbody>
</table>

*2005 provisional total

Year
### Mumps Clinical Case Definition

- Acute onset of unilateral or bilateral tender, self-limited swelling of the parotid or other salivary gland lasting >2 days without other apparent cause

### Mumps Vaccine

- **Composition**: Live virus (Jeryl Lynn strain)
- **Efficacy**: 95% (Range, 90%-97%)
- **Duration of Immunity**: Lifelong
- **Schedule**: >1 Dose
- Should be administered with measles and rubella (MMR) or with measles, rubella and varicella (MMRV)

### Mumps (MMR) Vaccine Indications

- All infants >12 months of age
- Susceptible adolescents and adults without documented evidence of immunity

### Mumps Immunity

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

### MMR Adverse Reactions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>5%-15%</td>
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<tr>
<td>Rash</td>
<td>5%</td>
</tr>
<tr>
<td>Joint symptoms</td>
<td>25%</td>
</tr>
<tr>
<td>Thrombocytopenia</td>
<td>&lt;1/30,000 doses</td>
</tr>
<tr>
<td>Parotitis</td>
<td>rare</td>
</tr>
<tr>
<td>Deafness</td>
<td>rare</td>
</tr>
<tr>
<td>Encephalopathy</td>
<td>&lt;1/1,000,000 doses</td>
</tr>
</tbody>
</table>

### MMR Vaccine Contraindications and Precautions

- Severe allergic reaction to vaccine component or following a prior dose
- Pregnancy
- Immunosuppression
- Moderate or severe acute illness
- Recent blood product
Measles and Mumps Vaccines and Egg Allergy

- Measles and mumps viruses grown in chick embryo fibroblast culture
- Studies have demonstrated safety of MMR in egg allergic children
- Vaccinate without testing

National Immunization Program Contact Information

- Telephone 800.CDC.INFO
- Email nipinfo@cdc.gov
- Website www.cdc.gov/nip