Measles Symptoms

• “Incubation” period: ~14 days
• Prodrome: fever, cough, coryza, conjunctivitis
• Rash starts on face or at hairline, spreads to trunk, arms, legs
• “Contagious” period: 4 days before to 4 days after rash onset
Virtually everyone got measles before a vaccine was developed.

- Nearly universal disease of childhood: 3–4 million cases
- ~500,000 reports to CDC
- 48,000 hospitalizations
- 4,000 cases encephalitis
- 450–500 deaths
Not all cases of measles are benign.*

- Hospitalization: 1 out of 4
- Ear infection: 1 out of 10
- Pneumonia: 1 out of 20
- Encephalitis: 1 per 1,000
- Death: 1–2 per 1,000

*Complications more common in children <5 and adults >20 years old.

www.cdc.gov/measles/about/complications.html
Control of measles has been a public health victory.

*data as of 1 Feb 2019*
Oregon has had an average of <3 measles cases per year since 1993.

*data as of 7 Feb 2019
Vaccination is the key to controlling measles.

1. Maintain high population vaccination rates
2. Maintain high population vaccination rates
3. Maintain high population vaccination rates
4. Identify, test, isolate cases
5. Investigate to identify exposed, susceptible contacts
   a. Immunize
   b. Exclude school children, healthcare workers
Measles: 2019 Time line

• 4 Jan: Clark County announces confirmed case
• 15 Jan: Clark County announces 2 more confirmed, 11 suspect cases
• 18 Jan: Clark County declares local public health emergency
• 25 Jan: Governor Inslee declares state of emergency; OHA announces 1 confirmed case
• 30 Jan: OSPHL confirms Multnomah County case; OHA activates incident management team
55 cases in the current outbreak.

<table>
<thead>
<tr>
<th></th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clark</td>
<td>50</td>
</tr>
<tr>
<td>King</td>
<td>1</td>
</tr>
<tr>
<td>Multnomah</td>
<td>4</td>
</tr>
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</table>

All but 1 case unvaccinated or no documentation of vaccination
“Herd immunity” depends upon how contagious the disease is.

<table>
<thead>
<tr>
<th>Infection</th>
<th>$R_0$</th>
<th>Crude Herd Immunity Threshold</th>
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<tbody>
<tr>
<td>Diphtheria</td>
<td>6–7</td>
<td>83%–85%</td>
</tr>
<tr>
<td>Influenza</td>
<td>1.4–4</td>
<td>30%–75%</td>
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<tr>
<td>Measles</td>
<td>12–18</td>
<td>92%–94%</td>
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<tr>
<td>Mumps</td>
<td>4–7</td>
<td>75%–86%</td>
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<tr>
<td>Pertussis</td>
<td>5–17</td>
<td>80%–94%</td>
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<tr>
<td>Polio</td>
<td>2–20</td>
<td>50%–95%</td>
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<tr>
<td>Rubella</td>
<td>6–7</td>
<td>83%–85%</td>
</tr>
<tr>
<td>Smallpox</td>
<td>5–7</td>
<td>80%–85%</td>
</tr>
<tr>
<td>Varicella</td>
<td>8–10?</td>
<td>?</td>
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</table>

Exemptions to vaccination requirements hit 7.5% among kindergartners in 2018.
Overall, 96% of K – 12 students are vaccinated against measles.

- First dose coverage >95% for children attending preschool or certified daycare
- 2\textsuperscript{nd} dose coverage >95% for kindergarteners
- 2\textsuperscript{nd} dose coverage >97% for 7th graders
Questions
?

VACCINATED!

Disneyland
Oregon public health response to measles

• Activated Incident Management Team
• Coordinate with out-of-state colleagues and Oregon local public health authorities
• Guidance re: case investigation, contact follow-up, testing, isolation.
• Recommendations to providers
• Communication materials for public, including translations
• Testing at Oregon State Public Health Lab
Measles Immunizations

Source: ALERT Immunization Information System
Exclusion Summary, 2018

Children covered by law: 692,004

Exclusion orders: 24,725 (3.6%)

Children excluded: 4,349 (0.6%)
## (Reportable) Vaccine-preventable diseases
### Oregon, 2012–2018*

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
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<td>Hepatitis A</td>
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<td>Hep B, acute</td>
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<td>Hep B, chronic</td>
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<td>537</td>
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<td>Mumps</td>
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<td>0</td>
<td>2</td>
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*data as of 31 Jan 2019