Vaccine-preventable Diseases (VPDs) and Outbreaks in Nebraska

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Overview

1. Influenza season recap
2. Other VPD cases and outbreaks in Nebraska
   • Disease surveillance methods
   • Disease incidence (Measles, Pertussis, etc.)
   • Acute Flaccid Myelitis (AFM)
3. Estimating Nebraska’s vaccine coverage rates
Influenza (2018-2019)

Schools Are Closing Amid Flu Outbreaks

So many students and teachers are sick that entire districts in several states are forced to cancel classes.

Douglas County reports first pediatric flu death, the third in Nebraska this season

Parents of Beatrice boy who died from flu complications urge others to get flu shot

LATEST NUMBERS: Flu has killed 6 in Lancaster County, 43 statewide

Influenza monitoring at DHHS

• Pediatric deaths
• Outbreaks at LTCF, schools, and other public settings
• Weekly absentee rates from schools
• Monitoring ILI using emergency department data
• ILI reporting from select hospitals and clinics
• Total influenza tests and % positive
Influenza activity (2018-2019)

Of the specimens that were able to be typed for influenza type A, there has been:

- 642 flu A H3N2
- 227 flu A 2009 H1N1

2 influenza B specimens were tested to determine lineage (56 PCR confirmed):
- 1 B/Yamagata
- 1 B/Victoria
VACCINES WORK

These bubbles are sized according to the annual number of disease cases in the US during the 1960s versus 2010. As everyone knows, these diseases are how most diseases haven’t disappeared. This is why we continue to vaccinate.

<table>
<thead>
<tr>
<th>Disease</th>
<th>THEN</th>
<th>NOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smallpox</td>
<td>20,000</td>
<td>0</td>
</tr>
<tr>
<td>Diphtheria</td>
<td>71,000</td>
<td>0</td>
</tr>
<tr>
<td>Pertussis</td>
<td>200,752</td>
<td>21,291</td>
</tr>
<tr>
<td>Tetanus</td>
<td>580</td>
<td>0</td>
</tr>
<tr>
<td>PPDQ</td>
<td>16,316</td>
<td>0</td>
</tr>
<tr>
<td>Measles</td>
<td>530,217</td>
<td>61</td>
</tr>
<tr>
<td>Mumps</td>
<td>152,344</td>
<td>3,578</td>
</tr>
<tr>
<td>Rubella</td>
<td>47,745</td>
<td>6</td>
</tr>
<tr>
<td>CRS</td>
<td>150</td>
<td>0</td>
</tr>
<tr>
<td>Haemophilus Influenza</td>
<td>20,000</td>
<td>270</td>
</tr>
</tbody>
</table>


INFECTION DISEASE SURVEILLANCE

NEBRASKA Good Life, Great Mission

State and local health departments

CDC

Notifications

Electronic lab reports

Faxes

Healthcare providers

Laboratories

Helping People Live better Lives.
Local health departments in Nebraska

Measles in 2019

Measles outbreaks in Washington and New York challenge public health systems

Measles epidemic in Madagascar kills more than 900, says WHO

More than eight thousand sick, 136 dead after measles outbreak in Philippines

Nebraska's 'intelligent appreciation' for vaccine boosts protection as measles makes a comeback
Measles, Mumps, Rubella incidence in NE (2013-present)
Hepatitis A incidence in Nebraska by month (2013-present)

Hepatitis B in Nebraska by first reported test result (2010-present)
Varicella incidence in Nebraska by month (2013-present)

Pertussis incidence in Nebraska by month (2007-present)
Invasive bacterial VPDs in Nebraska (2013-present)

AFM in Nebraska

- 6 confirmed cases from eastern Nebraska
  - All had symptom onset in past 9 months corresponding to national outbreak
  - All children treated in Omaha, tested at CDC, and later released from hospital
- No definitive cause identified but likely involves enterovirus (EV D68) and immune-mediated response
Calculating vaccination rates in Nebraska

• CDC
  • National Immunization Survey (NIS)
• Nebraska DHHS
  • Annual School Survey
  • NESIIS

National Immunization Survey (NIS)

• National telephone surveys to estimate vaccine coverage by states, territories, and select cities
• Random participants asked about their vaccine coverage, then verified by their clinician
• Includes childhood, adolescent, school, and influenza vaccine coverage estimates
• ChildVaxView, TeenVaxView, SchoolVaxView, FluVaxView Interactive!
  • [https://www.cdc.gov/vaccines/imz-managers/coverage/childvaxview/index.html](https://www.cdc.gov/vaccines/imz-managers/coverage/childvaxview/index.html)
National Immunization Survey (NIS)

Estimated vaccination coverage among children aged 19-35 months in Nebraska

• Nebraska Title 173 (chapter 3) – Control of Communicable Diseases
  • Requires vaccines or exemptions at kindergarten, 7th grade, OST students
  • Each school required to submit data to DHHS each fall
  • Used to identify pockets of lower coverage
  • Need to identify ways to better disseminate data for action!
Nebraska State Immunization Information System (NESIIS)

- **Statewide vaccine registry** – patient history and vaccine ordering/management system
- All states have a registry but not all require reporting (including Nebraska)
- NE DHHS beginning to use NESIIS for population estimates despite underreporting
- Hopefully allows for assessing all ages and local areas in the future

Vaccine coverage among 19-35 month olds

<table>
<thead>
<tr>
<th>Vaccines</th>
<th>Nebraska IIS estimate</th>
<th>Nebraska (NIS-Child) estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>3+DTaP</td>
<td>90</td>
<td>96.4 (±2.3)</td>
</tr>
<tr>
<td>4+DtaP</td>
<td>71</td>
<td>82.2 (±6.4)</td>
</tr>
<tr>
<td>3+ Polio</td>
<td>86</td>
<td>95.1 (±2.9)</td>
</tr>
<tr>
<td>Hib – UTD</td>
<td>68</td>
<td>83.3 (±5.9)</td>
</tr>
<tr>
<td>3+ HepB</td>
<td>86</td>
<td>92.4 (±3.9)</td>
</tr>
<tr>
<td>1+ HepB on Day 0</td>
<td>70</td>
<td>N/A****</td>
</tr>
<tr>
<td>1+ HepB on Day 1</td>
<td>15</td>
<td>N/A****</td>
</tr>
<tr>
<td>1+ HepB on Day 2</td>
<td>5</td>
<td>N/A****</td>
</tr>
<tr>
<td>3+ Pnuemo</td>
<td>89</td>
<td>96.7 (±2.2)</td>
</tr>
<tr>
<td>4+ Pneuomo</td>
<td>73</td>
<td>85.7 (±5.5)</td>
</tr>
<tr>
<td>1+ MMR</td>
<td>87</td>
<td>95.2 (±3.5)</td>
</tr>
<tr>
<td>1+ VAR</td>
<td>87</td>
<td>92.9 (±4.2)</td>
</tr>
<tr>
<td>2+ HepA</td>
<td>51</td>
<td>57.6 (±7.6)</td>
</tr>
<tr>
<td>4313314 Series</td>
<td>58</td>
<td>70.6 (±7.1)</td>
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QUESTIONS?

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REFERENCES


