What’s New in Epidemiology
Iowa - 2017

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Iowa Department of Public Health
Summary of Iowa, 2016
Infectious Diseases of PH significance

In 2016, 26,586 reportable disease reports and 32,794 positive lab results were received by public health. This included 16,325 STD reports, 2,302 hepatitis C reports, and 867 mumps.

On Iowa’s “Sic” line, 205 call reported possible foodborne diseases.

Also in 2016, IDPH, DIA and local public health partners received and responded to 149 illness complaints and investigated 118 outbreaks.
2016 Outbreaks

103 outbreaks reported and investigated

Categories:
• Animal- 1 (1%)
• Environment- 1 (1%)
• Foodborne- 10 (10%)
• Mosquito- 1 (1%)
• Person-to-person- 67 (65%)
• Unknown- 22 (21%)
• Water- 1 (1%)

Causes
• Clostridium perfringens- 2
• Cryptosporidium- 3
• E. coli- 2
• Histoplasmosis- 1
• Influenza- 13
• Mumps- 1
• Norovirus- 43
• Rhinovirus- 1
• Salmonella species- 8
• Shigella sonnei- 1
• Probable Impetigo- 2
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• Varicella Zoster- 1
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Using a Third Dose for Outbreak Control: Mumps in Iowa, 2015-16

Johnson County Health Department
University of Iowa (Student Health Services)
Centers for Disease Control and Prevention
Iowa Department of Public Health
Mumps Cases and Cumulative MMR Vaccines, U Iowa Students, Fall-Spring 2015-16

- Targeted 3rd MMR
- DCC early doses
- Decided - Need Mass Vaccination
- Mass Vaccine Clinics (6)

Student Information Campaign Started 8/4/2015 (social media, e-mails to students and parents, student health advisories)
Iowa Mumps Outbreak Summary

1) Strict 2-dose requirement for students = highly vaccinated student population

2) Lots of community spread

3) Highest affected age group = 21-22 year old, undergraduate seniors

4) Age distribution shift after vaccination campaign

5) Shared housing (especially apartments) common

6) Illness duration > 8 days

7) Complications do occur (although rarely)

8) Isolation commonly practiced, with relatively consistent recommendations
Complications in UI Students with Mumps

• Probable meningitis (LP done) – 1
• Meningitis symptoms, but did not seek care - 1
• Hearing loss – 1
• Orchitis – 11
• Mastitis – 2

Article published in MMWR: www.cdc.gov/mmwr/volumes/66/wr/mm6614a4.htm?s_cid=mm6614a4_e.
Recombinant Flu (swine, avian)
November 2, 2016 a case of variant influenza was identified:

- 52 year old male from Hardin County, Iowa
- Went to emergency room on November 4. Was not admitted. Discharged same day with a diagnosis of influenza.
- Was prescribed Tamiflu
- Had not receive seasonal influenza vaccine in 2016
- Specimen tested at SHL as influenza A but not subtypable
- Sent to CDC where genetic sequence confirmed as influenza A (H1N2)v (similar to virus circulating in swine)
- No one else in his household became ill with respiratory/ILI symptoms.
- Possible swine exposure - truck driver transporting pig manure
- Was fourth H1N2v case identified in 2016 in US
Hantavirus – Seoul Virus
Hantavirus

• Carried by persistently infected asymptomatic rodents - Excreted in urine, feces, and saliva

• 25 antigenically distinguishable viral species - Each associated primarily with a single rodent species

2 Similar Syndromes

1) Hemorrhagic fever with renal syndrome (HFRS): fever, lower back pain, hemorrhagic manifestations, and renal involvement (Hantaan, Dobrava, Puumala, Saaremaa, Seoul, Case fatality 5%-15%)

2) Hantavirus pulmonary syndrome (HPS): fever, myalgia, GI, respiratory distress (Andes, Laguna Negra, Juquitiba, Choclo, Black Creek Canal & Bayou, New York-1, Monongahela, Sin Nombre, Case fatality 35%-50%)
HPS - Cumulative Cases, 1/8/2016

- Cases of HPS have been reported in 35 states
- More than 96% of cases occurred in states west of the Mississippi River
- Currently, Caucasians account for 78% of all cases.
- American Indians – 18%
- African Americans – 1%
- Asians – 1%
- Of cases with known ethnicity, 19% of HPS cases reported among Hispanics
Seoul Virus – HFRS

Natural host is the Norway rat (*Rattus norvegicus*) and the black rat (*Rattus rattus*)

- Virus has been found in both pet rats and wild rat populations around the world
- Asymptomatic, persistently infected (shed for life)
- Rats spread to other rats through wounding or biting and by contact with the urine and feces of infected rats
Human Illness - Seoul Virus

• Often mild or no symptoms
• Some HFRS, 1-2% mortality rate (1-2 of every 100 people infected)
• Incubation period: 1-2 weeks, rarely up to 8 weeks
• Recovery can take weeks / months
• Common symptoms: Fever, headache, back and abdominal pain, chills, nausea, blurred vision, flushed face, red or inflamed eyes, rash
Multi-state Outbreak of Seoul Virus -2017

• Number of laboratory-confirmed recent human cases of Seoul virus = 17 people in 7 states

• Infected rats in several rat-breeding facilities

• CDC – Trace-out investigations to identify clients who purchased rats/exposed to home rat-breeding facilities

• Potentially infected rodents distributed: Colorado, Delaware, Georgia, Illinois, Idaho, Iowa, Minnesota, Missouri, new Jersey, Pennsylvania, South Carolina, Tennessee, Utah, and Wisconsin

• Canadian health authorities also investigating Seoul-infected facilities with links to U.S. rat facilities

• As of March, 2017, investigation is ongoing
Abx Resistant Organisms

**CRE**

- 59 cases of CRE has been reported thus far (for reporting purposes = *Enterobacter*, *E. coli*, *Klebsiella*, and *citrobacter* with increased MIC to carbapenems)
- two cases of CRE tested positive for Oxa-48: 1) *Klebsiella pneumonia* from abdominal abscess, 2) *E. coli* from a urine specimen (neither had recent inpatient visits, no recent travel)

**In April, 2017**

- *Proteus mirabilis* in urine
- send to SHL for confirmation of increased resistance to multiple antibiotics. Sent on to CDC due to high MIC's = bla-IMP found
- patient resident of a long term care, history of ABX use but no travel
- Investigation with CDC ongoing and facility testing being conducted
Hansen’s Disease (Leprosy)

2017 Case in Iowa

- Patient born in Micronesia, immigrated to U.S. in 2004
- Presented to healthcare and admitted for fevers
- Stated that had skin lesions for years

Testing

- Skin biopsy performed on left and right forearms
- AFB stain consistent with lepromatous leprosy

Treatment

- Treated with dapsone, rifampicin, and minocycline
- Continuing treatment - National Hansen's Disease Clinical Center in Louisiana?
Measles
2015 Measles Cases in the U.S.
January 1, 2015 to January 2, 2016

Cases*: 0, 1-4, 5-9, 10-19, 20+

*Provisional data reported to CDC's National Center for Immunization and Respiratory Diseases
Immunization coverage with 1st dose of measles containing vaccines in infants, 2014
Thousands of vaccinated people did not get the measles here!
Update on Measles in the Midwest

Measles currently in Nebraska (Omaha area), and Minnesota (Minneapolis area – Somalia immigrants)

There are currently NO confirmed cases in Iowa; however, health care providers in Iowa need to be vigilant about measles.

• Ensure that measles vaccination of all patients and staff are up-to-date.

• Consider measles in anyone presenting with fever and the ‘Three Cs’ – cough, coryza, and conjunctivitis followed by rash three to five days later and CALL US
Recent Immunization Updates

Meningococcal Vaccination

Requires a one-time dose of meningococcal (A, C, W, Y) vaccine received on or after 10 years of age for applicants in grades 7 and above, if born after September 15, 2004; and 2 doses of meningococcal (A, C, W, Y) vaccines for applicants in grade 12, if born after September 15, 1999; or 1 dose if received when applicants are 16 years of age or older.

Bethany Kintigh RN, BSN
Immunization Program Manager
1-800-831-6293

Iowa Immunizations Summit – June 14-15
HY-VEE Hall, Des Moines
Enteric Diseases
Reported campylobacteriosis cases (confirmed and probable) and incidence rates per 100,000 population by county of residence, Iowa, 2016 (N = 1053)

1053 Cases in 2016 (confirmed and probable)
Reported E. coli (STEC) cases (confirmed and probable) and incidence rates per 100,000 population by county of residence, Iowa, 2016 (N = 298)

298
Cases in 2016 (confirmed and probable)

E. coli (STEC) cases by age 2016

E. coli (STEC) cases by gender 2016

Reported E. coli (STEC) cases by date of onset or first lab result
Reported salmonellosis cases (confirmed and probable) and incidence rates per 100,000 population by county of residence, Iowa, 2016 (N = 776)

776 Cases in 2016 (confirmed and probable)

Salmonellosis cases by age 2016

Salmonellosis cases by gender 2016

Reported salmonellosis cases by date of onset or first lab report
Reported shigellosis cases (confirmed and probable) and incidence rates per 100,000 population by county of residence, Iowa, 2016 (N = 425)

425 Cases in 2016 (confirmed and probable)

Shigella
753
Cases in 2016 (confirmed and probable)
Exclusion Criteria for Enteric Diseases

Patients are excluded if

• They have:
  1. *Salmonella typhi* (typhoid fever),
  2. *E. coli* - shiga-toxin producing
  3. *Shigella* (all four types)

AND

• They are in a high risk setting:
  1. Child care (workers and attendees)
  2. Medical care
  3. Food handling

**Must** have negative stool tests before allowed to return to high risk setting
Feeling Queasy?
Call, it’s Easy!
844-IowaSic
(or your local health department)
to report food poisoning
Influenza
Zika
Potential Zika Mosquitoes, US, 2016

*Aedes aegypti* mosquitoes are more likely to spread viruses like Zika, dengue, chikungunya and other viruses than other types of mosquitoes such as *Aedes albopictus* mosquitoes.

These maps DO NOT show:
- Exact locations or numbers of mosquitoes living in an area
- Risk or likelihood that these mosquitoes will spread viruses

These maps show:
- CDC’s best estimate of the potential range of *Aedes aegypti* and *Aedes albopictus* in the United States
- Areas where mosquitoes are or have been previously found
Aedes Mosquito Surveillance
Southern Iowa 2016

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<td>1256</td>
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<td><strong>TOTAL</strong></td>
<td>503</td>
<td>1837</td>
<td>417</td>
<td>618</td>
<td>932</td>
<td>207</td>
<td>344</td>
<td>2356</td>
<td>380</td>
<td>7594</td>
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</tbody>
</table>
Travel Advisories for Pregnant Women

• CDC recommends that all pregnant women consider postponing travel to areas where Zika virus transmission is ongoing.

• If do travel, strictly follow steps to avoid mosquito bites.
Zika Virus and Sexual Transmission

Sexual Partner Traveled to a Zika-infected Area:

- Couples in which a woman is pregnant
  - Abstain or use barrier methods against infection for duration of pregnancy
- Couples who are not pregnant
  - Male symptomatic or asymptomatic-use barrier methods against infection or abstain for at least 6 months after symptoms begin or after return
  - Female symptomatic-use barrier methods against infection or abstain for at least 8 weeks after symptoms being
  - Female asymptomatic-use barrier methods against infection or abstain for at least 8 weeks after return
Zika Testing in Iowa

• ~600 approved for testing
  • 26 Zika disease cases

• Of those tested
  • ~86% female
  • ~79% of females are pregnant
Zika Virus Update

April 14, 2017

All data presented in this report are provisional and may change as additional reports are received.

Zika virus disease cases*, 2017

<table>
<thead>
<tr>
<th>Case</th>
<th>Gender</th>
<th>Age Range**</th>
<th>Pregnancy Status</th>
<th>Area of Travel</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Female</td>
<td>Middle Age</td>
<td>No</td>
<td>Caribbean</td>
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</tbody>
</table>

* Includes confirmed and probable Zika virus disease cases per the most recent CSTE case definitions.

**Age range: Child=0-17 years; Adult=18-40 years; Middle Age=41-60 years; Older Adult=61-80 years; Elderly=81+ years

Zika virus disease cases*, January 1, 2016-December 31, 2016

<table>
<thead>
<tr>
<th>Gender Total</th>
<th>Age Range** Total</th>
<th>Pregnancy Status Total</th>
<th>Area of Travel Total</th>
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</thead>
<tbody>
<tr>
<td>Female</td>
<td>17</td>
<td>No</td>
<td>Caribbean 13</td>
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<tr>
<td>Male</td>
<td>9</td>
<td>Yes</td>
<td>Central America 6</td>
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</table>

** Age range: Child=0-17 years; Adult=18-40 years; Middle Age=41-60 years; Older Adult=61-80 years; Elderly=81+ years

Zika virus viremic blood donors***, January 1, 2016-December 31, 2016

<table>
<thead>
<tr>
<th>Gender Total</th>
<th>Age Range** Total</th>
<th>Pregnancy Status Total</th>
<th>Area of Travel Total</th>
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</thead>
<tbody>
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<td>Female</td>
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<td>No</td>
<td>Asia 1</td>
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<tr>
<td>Male</td>
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<td>Yes</td>
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</tbody>
</table>

*** Viremic blood donors are people who reported no symptoms at the time of donating blood, but whose blood tested positive when screened for the presence of Zika virus RNA by the blood collection agency. Some viremic blood donors develop symptoms after their donation or may have had symptoms in the past.
Arbovirus
Dengue

• 1/3 world’s population live in areas of risk
• Dengue is a leading cause of illness and death in the tropics and subtropics
• 400 million people are infected yearly
• 4 related viruses transmitted by mosquitoes.
• No vaccines; avoid mosquito bites.
• Rare in the continental US; endemic in Puerto Rico and in many popular tourist destinations in Latin America, Southeast Asia and the Pacific islands
Dengue Outbreak

Index Case:
Presented to ER with anorexia, fatigue, fever, headache, joint paint, muscle pain, nausea, and vomiting
Treated for dehydration, given antibiotics, and sent home
Presented to clinic 3 days later, referred to ID specialist because of recent travel to Jamaica
Diagnosed with possible dengue and reported
Public health investigation: 29 person mission trip to Jamaica and others are ill

Outbreak Investigation:
-9 of 29 agreed to be tested: majority had fever, fatigue, headache, nausea, and rash (also had reports of loss of appetite, eye pain, diarrhea, muscle pain, joint pain, vomiting, and chills)
-6 people positive for Dengue
-Educated all trip attendees on Dengue and Zika since both viruses in Jamaica
Chikungunya

- Mosquito borne
  - illness starts 3-7 days after mosquito bite
- 72%–97% have symptoms when infected
  - Fever, joint pain (often multiple joints in hands and feet), headache, muscle pain, rash, conjunctivitis, nausea and vomiting
- Fatality rare, but can occur in older adults.
- No specific treatment, supportive care.
All locally-transmitted cases were from Puerto Rico and the US Virgin Islands.
Patricia Quinlisk, 515-281-4941
patricia.quinlisk@idph.iowa.gov
(For Friday updates - send your address to me)

Lucas State Office Building
Des Moines, Iowa