Healthy Kansans living in safe and sustainable environments.
Vaccine-Preventable Disease (VPD) Investigations in Kansas

Chelsea Raybern, Advanced Epidemiologist
Mychal Davis, Epidemiologist
Amie Worthington, Medical Investigator

Bureau of Epidemiology and Public Health Informatics
Kansas Department of Health & Environment
Outline

• Pertussis
• Varicella
• Measles
• Mumps
• Influenza
Pertussis

Chelsea Raybern
Advanced Epidemiologist
Pertussis

• Commonly known as “whooping cough”

• Highly contagious respiratory disease caused by bacterium *Bordetella pertussis*

• Harbors in noses, mouths, and throats of infected persons

• Transmitted person to person through contact with respiratory secretions of an infected person
Reporting

• K.A.R. 28-1-2
  – Suspect or confirmed pertussis case required to be reported within 4 hours by telephone to KDHE (877-427-7317)
  – Outbreaks of any infectious disease (including pertussis) required to be reported to KDHE within 4 hours by telephone to KDHE
Epidemiology

- Occurs worldwide

- Secondary attack rates up to 80% among susceptible (unimmunized) household contacts

- Incidence highest in infants <6-months-old

- Adults and adolescents serve as a source of infection for infants and under-immunized children
Clinical Features

- Cough lasting >2 weeks
- Paroxysms (coughing fits)
- Post-tussive vomiting
- Inspiratory whoop
- Apnea

- Infectious from onset of cough up to 3 weeks after

- Incubation period ranges 4-21 days (commonly 7-10 days)
Clinical Progression

Disease Progression: Pertussis

Weeks

0  1  2  3  4  5  6  7  8  9  10  11  12

Stage 1 - Catarrhal Stage
May last 1 to 2 weeks
- Symptoms: runny nose, low-grade fever, mild, occasional cough – Highly contagious

Stage 2 - Paroxysmal Stage
Lasts from 1-6 weeks; may extend to 10 weeks
Symptoms: fits of numerous, rapid coughs followed by "whoop" sound; vomiting and exhaustion after coughing fits (called paroxysms)

Stage 3 - Convalescent Stage
Lasts about 2-3 weeks; susceptible to other respiratory infections for many
Recovery is gradual. Coughing lessens but fits of coughing may return.
Testing Recommendations

- **PCR** – gold standard test
  - Detects DNA of bacteria from NP swab
  - Useful for specimens collected within 21 days of cough onset
  - Increase risk of false negative results if specimens collected >21 days after cough onset

- **Serology (IgM, IgG, IgA)** – *meaningless!*
  - Several different assays used with unproven or unknown clinical accuracy
  - Not able to differentiate between current infection, past infection, or vaccination

- Results should be interpreted with clinical symptoms
Treatment Recommendations

• Patients with pertussis should be given antibiotic treatment
  – Lessens period of communicability and can reduce duration and severity of symptoms

• Chemoprophylaxis should **ONLY** be given to household **AND** high-risk contacts including:
  – Infants <1 years old
  – Pregnant women in 3\textsuperscript{rd} trimester
  – Individuals with pre-existing health conditions
  – Individuals who have close contact with high-risk persons

• Initiating treatment >3 weeks after cough onset has limited benefit to cases and contacts
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• Initiating treatment >3 weeks after cough onset has limited benefit to cases and contacts
Vaccination Recommendations

• DTaP
  – 1\textsuperscript{st} dose at 2 months
  – 2\textsuperscript{nd} dose at 4 months
  – 3\textsuperscript{rd} dose at 6 months
  – 4\textsuperscript{th} dose between 15-18 months
  – 5\textsuperscript{th} dose between 4-6 years*

• Tdap
  – 1 dose at 11-12 years
  – Additional dose for pregnant woman for every pregnancy between 27-36 weeks

*5\textsuperscript{th} dose not needed if 4\textsuperscript{th} dose given at 4 years or older
Case Investigation

• Contact medical provider:
  – Notification of diagnosis to patient
  – Patient’s demographic, contact, and clinical information
  – Appropriate testing and treatment of patient
  – Chemoprophylaxis of household contacts

• Contact patient:
  – Verify information from provider and collect any missing information (e.g. vaccination history)
  – Examine exposure to others with cough and transmission settings to determine source (likely unknown)
Case Management

• Determine if antibiotics have been started

• Initiate isolation measure (5 days following start of treatment or 21 days following cough if not treated)

• Schedule follow-up interview to get cough duration and number of days antibiotic was taken
  – No sooner than 14 days after cough onset (need to know for case classification)
Contact Investigation

• Identify persons patient had contact with from onset of cough until 21 days after or if treated, up to 5 days after treatment

• Exposure (close contacts)
  – Direct face-to-face contact
  – Direct contact with secretions (e.g. sharing utensils, mouth-to-mouth resuscitation, etc.)
  – Confined space (within 3 feet) for ≥1 hour
Contact Scenarios

• Rely on patterns of interactions between persons when determining close contact status

• Who would be considered close contacts in the following scenarios:
  – Pertussis case in daycare toddler room
Contact Scenarios

• Who would be considered close contacts in the following scenarios:
  – Pertussis case in elementary class that sits in same seat all day
  – Pertussis case in elementary class that is moving and mingling in one class all day
  – Pertussis case in middle school where case is in 8 different classes for <1 hour each
Contact Investigation

• Record contact listing for each possible transmission setting
  – Collect information on immunization status
  – Collect information on symptoms (if any)
  – Note any school or daycare attendance
  – Note any contact with high risk persons

• Develop a plan to monitor all close contacts for 21 days after last exposure
  – Susceptible close contacts should be monitored more closely
Contact Investigation

• If close contacts become symptomatic, should be excluded from school or daycare setting until pertussis is no longer suspected

• Pertussis should be suspected when:
  – Symptoms are compatible with pertussis, for example:
    • Acute cough illness of any duration
    • Paroxysmal cough of any duration
    • Cough with whoop
    • Cough associated with apnea in an infant AND
  – Development of symptoms occurs within incubation period for pertussis AND
  – There is no other apparent cause for symptoms

• Contacts that develop pertussis should be treated as their own case and a case investigation should be initiated
Contact Investigation

• If close contacts become symptomatic, should be excluded from school or daycare setting until pertussis is no longer suspected

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    • Paroxysmal cough of any duration
    • Cough with whoop
    • Cough associated with apnea in an infant **AND**
  – Development of symptoms occurs within incubation period for pertussis **AND**
  – There is no other apparent cause for symptoms

• Contacts that develop pertussis should be treated as their own case and a case investigation should be initiated.
Contact Management

• Follow up as needed to ensure symptomatic close contacts are excluded appropriately

• Allow asymptomatic close contacts to remain in school or daycare

• Recommend ONLY household and high-risk contacts receive chemoprophylaxis

• Recommend vaccination to all un- and under-immunized contacts
Pertussis Cases in Kansas – 2015

- 439 cases
  - 278 (63%) confirmed
  - 161 (37%) probable
  - 266 (61%) female
  - 173 (39%) male
  - 182 (41%) outbreak-related
Incidence of Pertussis by Age Group, 2015

Incidence (per 100,000) vs. Age Group (Years)

- <1
- 1 to 4
- 5 to 9
- 10 to 14
- 15 to 19
- 20 to 39
- 40 to 64
- 65+
Incidence (per 100,000 residents) of Pertussis Cases by County, 2015

★ = experienced outbreak(s)
Pertussis Cases – Vaccination Status, 2015

- Vaccinated: 320 (73%)
- Not Vaccinated: 75 (17%)
- Unknown: 44 (10%)
### Pertussis – Unvaccinated Cases, 2015

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percent of Unvaccinated Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 months</td>
<td>7%</td>
</tr>
<tr>
<td>2 months</td>
<td>8%</td>
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<tr>
<td>4 months</td>
<td>1%</td>
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<tr>
<td>6 months - &lt;1 year</td>
<td>4%</td>
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<tr>
<td>1 to 4 years</td>
<td>19%</td>
</tr>
<tr>
<td>5 to 9 years</td>
<td>13%</td>
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<tr>
<td>10 to 14 years</td>
<td>17%</td>
</tr>
<tr>
<td>15 to 19 years</td>
<td>5%</td>
</tr>
<tr>
<td>20 to 39 years</td>
<td>9%</td>
</tr>
<tr>
<td>40 to 64 years</td>
<td>13%</td>
</tr>
<tr>
<td>65+ years</td>
<td>3%</td>
</tr>
</tbody>
</table>
Outbreak Definition

• >2 cases clustered in time and space where transmission is suspected to have occurred in same setting

• If all cases in same household, NOT considered an outbreak
Pertussis Outbreaks in Kansas – 2015

- 9 outbreaks in 6 counties
  - 147 cases
    - Average = 16 cases/outbreak (range 2 – 95)
  - 1,145 contact investigations
    - Average = 127 contacts/outbreak (range 7 – 440)
  - Outbreak length
    - Range = 8 days – 7 months
- 14 (10%) unvaccinated cases
  - Average = 1 case/outbreak (range 0 – 5)
Barton Co Outbreak – January 2015

- 27 cases
  - 16 (59%) female
  - Median age: 11 years (range 7 months – 55 years)
  - 1 hospitalization
  - 7 (26%) unvaccinated

- 440 contacts
  - 210 (48%) school/daycare, 94 (21%) household
  - 185 recommended chemoprophylaxis

- 5 vaccination clinics
  - 804 doses given
Number of Cases by Age Group, Barton Co Outbreak – January 2015

<table>
<thead>
<tr>
<th>Age Group (Years)</th>
<th>Number of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1</td>
<td>1</td>
</tr>
<tr>
<td>1 to 4</td>
<td>4</td>
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<tr>
<td>5 to 9</td>
<td>7</td>
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<td>10 to 14</td>
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<td>15 to 19</td>
<td>4</td>
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<tr>
<td>20 to 39</td>
<td>4</td>
</tr>
<tr>
<td>40 to 64</td>
<td>4</td>
</tr>
<tr>
<td>65+</td>
<td>4</td>
</tr>
</tbody>
</table>
Number of Cases by Week of Cough Onset, Barton Co Outbreak – January 2015
Reno Co Outbreak – May 2015

• 95 cases
  – 60 (63%) female
  – Median age: 8 years (range 4 months – 60 years)
  – 1 hospitalization
  – 4 (4%) unvaccinated

• 400 contacts
  – 297 (74%) household, 55 (14%) non-household family
  – 354 recommended chemoprophylaxis

• 2,550 doses given*
  – Compared to 1,698 doses in 2014
  – Pertussis vaccination clinics held with flu clinics

*Number of pertussis vaccines given between May-December 2015, not able to differentiate between those due to outbreak or normal routine vaccinations
Number of Cases by Age Group, Reno Co Outbreak – May 2015
Number of Cases by Month of Cough Onset, Reno Co Outbreak – May 2015

Number of Cases

Month

February  March  April  May  June  July  August  September  October  November  December
Outbreak Challenges

• Reporting of cases
  – Under- and over-reporting

• Chemoprophylaxis
  – Treating cases and contacts

• Appropriate and timely testing
  – PCR outside of 21 days since cough onset and following antibiotic therapy
  – Serology testing
  – Unnecessary testing
Outbreak Challenges

• Reporting of cases
  – Under- and over-reporting
• Chemoprophylaxis
  – Treating cases and contacts
• Appropriate and timely testing
  – PCR outside of 21 days since cough onset and following antibiotic therapy
  – Serology testing
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Outbreak Challenges

• Reporting of cases
  – Under- and over-reporting

• Chemoprophylaxis
  – Treating cases and contacts

• Appropriate and timely testing
  – PCR outside of 21 days since cough onset and following antibiotic therapy
  – Serology testing
  – Unnecessary testing
Outbreak Challenges

• Relationship with professional partners
  – Medical community
  – School district

• Local health department resources
  – Labor-intensive
  – Maintain daily duties and manage outbreak
Outbreak Challenges

• Relationship with professional partners
  – Medical community
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• Local health department resources
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  – Maintain daily duties and manage outbreak
Outbreak Successes

• Vaccination efforts
  – School and health department clinics
  – Maintain highly vaccinated population before outbreaks occur

• Communication efforts
  – Press releases
  – News articles
  – Letters
Outbreak Successes

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Outbreak Successes

• Foster good working relationship with external partners

• Develop surge capacity
  – Identify plan to effectively manage outbreak
    • Bring in additional staff to conduct investigations
    • Assign current staff to strictly manage outbreak

• Pertussis Epitrax webinar training
Outbreak Successes

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• Pertussis Epitrax webinar training
  – http://www.kdheks.gov/epi/disease_training.htm
Outbreak Successes

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Questions
Varicella

Mychal Davis
Epidemiologist
Background

• What is varicella?
  – Acute infectious disease caused by the varicella-zoster virus; it is a member of the herpesvirus family

• Why is it called “chickenpox”? 
Background

• What is shingles?
  – Painful skin rash caused by the varicella-zoster virus
  – Reemergence of dormant varicella-zoster virus
  – Immunocompromised and elderly most at risk
Epidemiology

- Distributed worldwide
- Higher prevalence in temperate climates; lower in tropical
- Most cases in persons <12 years of ages
Clinical Features

• Incubation period is 14-16 days (range 10-21)
• Prodrome 1-2 days before rash:
  – Lethargy, high fever, inappetance, headache
• Rash usually appears first on the head and is most concentrated on the trunk
  – Rash = itchy, fluid-filled blisters that eventually form scabs
• Successive crops develop over several days
  – Lesions are present in various stages of development
• Illness generally lasts 5-10 days
Transmission

• Airborne droplets and direct contact with lesions
  – Spread by coughing, sneezing, breathing in viral particles, and contact with lesions
  – Contagious 2 days before until 6 days after rash or lesions have crusted over
  – Short survival time in environment

• 90% of susceptible household contacts infected
• 35%-65% of susceptible community contacts infected
Complications

• Secondary bacterial infections (pneumonia and skin)

• Central Nervous System manifestations (meningitis and transverse myelitis)

• Congenital varicella can cause low birth weight, skin scarring, eye and neurologic abnormalities
Varicella Vaccination Recommendations

• 1st dose of vaccine given at 12 months of age
• > 4 years of age 2nd dose of varicella containing vaccine
• 2 doses of varicella containing are needed for school entry in Kansas
• Varicella Containing Vaccines
  – Varivax
  – Proquad/MMRV (Measles Mumps Rubella Varicella)
Shingles Vaccination Recommendations

• Advisory Committee on Immunization Practices recommends ≥60 years of age receive one dose of shingles vaccine (Zostavax)
• Shingles vaccine is recommended for those with previous disease, it has been shown to prevent future outbreaks
Isolation and Exclusion Regulations

• **7 Day reportable**

• Cases
  – 6 day isolation for infected persons from onset of rash OR until lesions have crusted over (whichever comes first)

• Contacts
  – Direct contact with respiratory droplets OR lesions OR inhalation of aerosols from vesicular fluid
    • School: classroom, lunch table, teammates, playmates, bus mates

• Exclusions from school and childcare (K.A.R. 28-1-6)
  – Unvaccinated contacts that do not receive vaccination within 24 hours of case notification should be excluded for 21 days from onset of last reported case
Parental Diagnosis vs Healthcare Professional Diagnosis

• Healthcare professional diagnosis can be used for case investigation and for documented history of disease (documentation is needed)

• Parental diagnosis can be used for case investigation, but can not be used for documented history of disease
Contact Investigation Scenarios
Varicella Cases in Kansas 2015

• 243 cases
  – 70 confirmed (29%); 173 probable (71%)
  – 210 (87.0%) younger than 18 years of age
  – 4 (2.0%) hospitalizations
    • 2/4 hospitalized cases younger than 18 years of age
  – No deaths in varicella cases
Incidence of Varicella by Age Group, 2015

*1 case missing date of birth
County Incidence of Varicella per 100,000 population, 2015

[Map showing county incidence of varicella per 100,000 population, with varying shades indicating different incidence rates.]
Varicella Cases – Vaccination Status, 2015

- **Vaccinated**: 128 (53%)
- **Not Vaccinated**: 88 (36%)
- **Under Vaccinated**: 15 (6%)
- **Unknown**: 12 (5%)
Enhanced Varicella Surveillance

• Objectives:
  – More timely and efficient identification of varicella outbreaks in schools and daycare settings
  – Determine 1 and 2 dose varicella vaccination coverage in schools where outbreaks occur
• Conducted for 2014-2015 and 2015-2016 school years
Enhanced Varicella Surveillance

• Review cases for completeness of indicators to assist in tracking outbreaks and clusters
  – Transmission settings
  – Susceptible contacts

• 48 States participate in program

• Quarterly reports sent to CDC
Varicella Outbreak Definition

• Outbreak
  – ≥5 cases epidemiologically linked that are not in the same house hold

• Cluster
  – 3-4 cases epidemiologically linked that are not in the same house hold
Enhanced Varicella Surveillance

- 2015 Results
  - 2 varicella outbreaks detected in schools
    - Outbreaks had 5 and 6 cases
  - 2 varicella clusters detected in schools
# Key Variables for Varicella 2015

<table>
<thead>
<tr>
<th>Variable</th>
<th>Completed</th>
<th>Target 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>99%</td>
<td>100%</td>
</tr>
<tr>
<td>Disease Severity (Lesions)</td>
<td>95%</td>
<td>100%</td>
</tr>
<tr>
<td>Hospitalized</td>
<td>99%</td>
<td>100%</td>
</tr>
<tr>
<td>Case status</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Outbreak Associated</td>
<td>55%</td>
<td>60%</td>
</tr>
<tr>
<td>Vaccinated</td>
<td>95%</td>
<td>100%</td>
</tr>
<tr>
<td>Number of vaccine doses</td>
<td>98%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Varicella Vaccine Study 2012-2015

• Objective: To compare severity of disease among children vaccinated with one or two doses of varicella containing vaccine with those who have no history of vaccination or disease
Methods

• Rash severity, presence of fever, and vaccination history for persons with varicella aged 0 months to 18 years with disease onset in 2012–2015 was obtained from the Kansas Electronic Disease Surveillance System.

• Severity of disease was defined by the number of skin lesions and the presence of fever; those cases with unknown number of lesions and unknown fever were omitted in this analysis.
Results

• 1,022 persons with varicella reported in 2012-2015
• 1,010 persons with documentation of rash severity and fever
• 335(35%) unvaccinated 675(67%) vaccinated
• Unvaccinated more likely to have severe disease (>50 lesions) and fever compared to those with one dose or two doses of vaccine
• No significant differences in disease severity between those with one dose or two doses of vaccine
• No significant differences in disease severity between the different vaccine strains
Conclusions

• This study indicates children vaccinated with one or two doses have milder disease than those unvaccinated children
Questions
Measles, Mumps, and Influenza

Amie Worthington
Medical Investigator
MEASLES
Measles Symptoms

• Prodrome (2-4 days)
  – Fever, cough, corzya, conjunctivitis, malaise

• Within 2-4 days after prodrome
  – Maculopapular rash
    • Begins on face (typically hairline)
    • Spreads downwards and outwards over 3 days
Measles (Rubeola)

• Transmission: airborne and droplet
  – Spread by coughing and sneezing
  – Survives up to 2 hours on environmental surfaces
  – Contagious 4 days before until 4 days after rash
• 90% of susceptible contacts infected
Measles Complications

• Common Complications (~10%)
  – Ear infections
  – Diarrhea

• Severe Complications
  – Pneumonia (~5%)
  – Encephalitis (1 out of 1,000)
  – Death (1 out of 1,000)
Measles Investigation

• FOUR HOUR REPORTABLE

• Cases
  – Four day isolation for infected persons from onset of rash

• Contacts
  – Direct contact OR share same confined airspace with case OR in a room up to 2 hours after case leaves (contact with infectious airspace)
    • School: classroom, lunchroom, teammates, playmates, bus mates

• Exclusion Regulation (K.A.R. 28-1-6)
  – Each susceptible person in a school, a child care facility, or a family day care home shall be either vaccinated within 24 hours of notification to the secretary or excluded from the school, child care facility, or family day care home until 21 days after the onset of the last reported illness in that location.
Measles in Kansas

- January 2015 – December 2015
  - No cases were identified in Kansas
Recent Measles Outbreaks

- 2011 Johnson County (7 cases)
  - Misdiagnosis of index case
- 2012 Finney County (6 cases)
  - Cost of outbreak investigation
- 2014 Sedgwick/Johnson County (14 cases)
  - Non-compliant with isolation regulation
Measles Scenarios
MUMPS
Mumps Symptoms

• Signs/symptoms (non-specific)
  – Fever
  – Headache
  – Muscle aches
  – Tiredness
  – Loss of appetite
  – Swelling of salivary glands (parotitis)

• Symptomatic meningitis occurs in up to 10% of cases
Mumps

• Transmission: droplet, direct and indirect contact with respiratory secretions
  – Spread by coughing, sneezing, talking, sharing utensils
  – Contagious 2 days before until 5 days after parotitis
Mumps Investigation

• FOUR HOUR REPORTABLE

• Cases
  – Five day isolation for infected persons from onset of illness

• Contacts
  – Direct contact with respiratory droplets and/or body fluids OR in close proximity (<3 feet) for extended period of time (>1 hour)
    • School: educators, classmates, teammates

• Exclusion Regulation (K.A.R. 28-1-6)
  – Each susceptible person in a school, child care facility, or family day care home shall be vaccinated within 24 hours of notification to the secretary or excluded from the school, child care facility, or family day care home until 26 days after the onset of the last report illness in the school, child care facility, or family day care home.
Mumps in Kansas

• January 2015 – December 2015
  – No cases were identified in Kansas

• January 2016 – April 2016
  – 3 cases associated with 1 outbreak at Kansas State University
    • Cases included 2 roommates and a significant other
    • Vaccination clinics were held at Lafene Health Center
Mumps Scenarios
INFLUENZA
Reporting Influenza

FOUR HOUR REPORTABLE:

• Novel influenza cases
• Outbreaks of any disease

Seven day reportable:

• Influenza-associated pediatric deaths

EpiHotline: 877-427-7317
Influenza-associated Pediatric Deaths

- October 2014 – May 2015
  - 2 cases were identified

- October 2015 – May 2016
  - No influenza-associated pediatric deaths
Influenza Outbreak Definition

• Two or more persons who are epidemiologically-linked who develop symptoms of influenza-like illness (ILI) within 72 hours

OR

• One laboratory confirmed influenza case and other persons with ILI in close proximity to each other
Influenza-like Illness

- Fever (>100°F) AND
- Cough and/or Sore Throat AND
- Absence of another known cause other than influenza
Influenza Laboratory Testing

- Nasopharyngeal specimens can be tested by RT-PCR at KHEL (3-5 specimens/outbreak)
- If negative, specimens will be run on Biofire® Respiratory Viral Panel Assay

- Adenovirus
- Coronavirus HKU1
- Coronavirus NL63
- Coronavirus 229E
- Coronavirus OC43
- Human Metapneumovirus
- Human Rhino/Enterovirus
- Influenza A
- Influenza A/H1
- Influenza A/H3
- Influenza A/H1-2009
- Influenza B
- Parainfluenza Virus 1
- Parainfluenza Virus 2
- Parainfluenza Virus 3
- Parainfluenza Virus 4
- Respiratory Syncytial Virus
2014-2015 Influenza Outbreaks

Number of Outbreaks

November: 6
December: 6
January: 9
February: 5
March: 0

Month of Outbreak
2014-2015 Influenza Outbreaks

- Average number of cases: 9 (range 4-35)
- Average number of hospitalizations: 2 (range 0-10)
- Total number of deaths: 7
Influenza Outbreaks, 2014-2016

Number of outbrake

Month of Outbreak

2014-15

2015-16

November  6
December  9
January  5
February  1
March
April  3
May
2015-2016 Influenza Outbreaks

- One outbreak is currently under investigation
- Average number of cases: 34 (range 10-40)
- Average number of hospitalizations: 3 (range 1-6)
- Total number of deaths: 1
- All occurred in long-term care facilities
Influenza Outbreak Report Form

- Created during the 2014-2015 season
- One page form
- Line list generally not needed
# Influenza Outbreak Report Form

## Facility Information

<table>
<thead>
<tr>
<th>Facility Name:</th>
<th>Prevention Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Have symptomatic residents stay in their own rooms as much as possible, including restricting them from common activities, and have their meals served in their rooms when possible.</td>
</tr>
<tr>
<td>Address:</td>
<td>Limit the number of large group activities in the facility and consider serving all meals in resident rooms if possible when the outbreak is widespread (involving multiple units of the facility).</td>
</tr>
<tr>
<td>City:</td>
<td>Avoid new admissions or transfers to wards with symptomatic residents.</td>
</tr>
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<td>Limit visitation and exclude ill persons from visiting the facility via posted notices. Consider restricting visitation by children during community outbreaks of influenza.</td>
</tr>
<tr>
<td>Name of Person Reporting:</td>
<td>Monitor personnel absenteeism due to respiratory symptoms and exclude those with influenza-like symptoms from work until at least 24 hours after they no longer have a fever.</td>
</tr>
<tr>
<td>Title:</td>
<td>Restrict personnel movement from areas of the facility having illness to areas not affected by the outbreak.</td>
</tr>
<tr>
<td>Phone: ( )</td>
<td>Administer the current season’s influenza vaccine to unvaccinated residents and health care personnel as per current vaccination recommendations.</td>
</tr>
</tbody>
</table>

## Initial Illness Information – Complete at Beginning

<table>
<thead>
<tr>
<th>Date Reported:</th>
<th>Residents</th>
<th>Prevention Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total (Ill + Not Ill)</th>
<th>Prevention Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ill, with positive lab test</th>
<th>Prevention Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<table>
<thead>
<tr>
<th>Hospitalizations</th>
<th>Prevention Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Deaths</th>
<th>Prevention Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Final Illness Information – Complete at End of Outbreak

<table>
<thead>
<tr>
<th>Date Outbreak Ended*:</th>
<th>Residents</th>
<th>Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
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## Illness Dates

<table>
<thead>
<tr>
<th>Illness onset date of first ill resident or staff:</th>
<th>Prevention Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<table>
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<tr>
<th>Illness onset date of final ill resident or staff:</th>
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<td></td>
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</tr>
</tbody>
</table>

---

*Outbreak is over 10 days after the last onset of illness at the facility*
## Influenza Report Form

<table>
<thead>
<tr>
<th>FACILITY INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility Name:</td>
</tr>
<tr>
<td>Address:</td>
</tr>
<tr>
<td>City:</td>
</tr>
<tr>
<td>County:</td>
</tr>
<tr>
<td>Name of Person Reporting:</td>
</tr>
<tr>
<td>Title:</td>
</tr>
<tr>
<td>Phone:</td>
</tr>
</tbody>
</table>

*Department of Health and Environment, Kansas*
Influenza Report Form

Information from notification of outbreak

<table>
<thead>
<tr>
<th>INITIAL ILLNESS INFORMATION – COMPLETE AT BEGINNING OF OUTBREAK</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Date Reported:</strong></td>
</tr>
<tr>
<td><strong>Residents</strong></td>
</tr>
<tr>
<td><strong>Staff</strong></td>
</tr>
<tr>
<td>Total (Ill + Not Ill)</td>
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# Influenza Report Form

## Final Illness Information – Complete at End of Outbreak

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**Illness Dates**

- Illness onset date of first ill resident or staff:
- Illness onset date of final ill resident or staff:

*Outbreak is over 10 days after the last onset of illness at the facility*
## Influenza Report Form

<table>
<thead>
<tr>
<th>Date instituted or ND (not done)</th>
<th>Prevention Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Have symptomatic residents stay in their own rooms as much as possible, including restricting them from common activities, and have their meals served in their rooms when possible.</td>
</tr>
<tr>
<td></td>
<td>Limit the number of large group activities in the facility and consider serving all meals in resident rooms if possible when the outbreak is widespread (involving multiple units of the facility).</td>
</tr>
<tr>
<td></td>
<td>Avoid new admissions or transfers to wards with symptomatic residents.</td>
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<td>Administer the current season’s influenza vaccine to unvaccinated residents and health care personnel as per current vaccination recommendations.</td>
</tr>
<tr>
<td></td>
<td>Prescribe antiviral medication to residents who test positive and/or are ill. Add date started.</td>
</tr>
<tr>
<td></td>
<td>Prescribe antiviral medication to all residents/residents in same area as cases. Add date started.</td>
</tr>
<tr>
<td></td>
<td>Prescribe antiviral medication to staff. Add date started.</td>
</tr>
</tbody>
</table>

[http://www.cdc.gov/flu/professionals/infectioncontrol/ltc-facility-guidance.htm](http://www.cdc.gov/flu/professionals/infectioncontrol/ltc-facility-guidance.htm)
Investigation Complete

• When the form is complete, send to one of the following:
  – EpiHotline Fax: (877) 427-7318
  – EpiHotline Email: epihotline@kdheks.gov
Questions
Resources

• Kansas Department of Infectious Disease Epidemiology and Response

• Red Book – American Academy of Pediatrics
  – http://aapredbook.aappublications.org/

• Centers for Disease Control and Prevention
  – http://www.cdc.gov/
Resources

- Disease Investigation Guidelines

- Epidemiology Hotline: 24-hour hotline for disease reporting and technical assistance
  - 877-427-7317
Open Forum
Healthy Kansans living in safe and sustainable environments.