Measles: A Provider’s Guide

From January 1 to May 10, 2019, 839 confirmed cases of measles have been reported in 23 states. This is the greatest number of cases reported in the United States since 1994. None of the confirmed cases reported were from Kansas. Although endemic measles has been eliminated from the U.S. in 2000, confirmed cases of measles are still reported in the U.S. each year. According to the Centers for Disease Control and Prevention (CDC), ongoing outbreaks in the U.S. are linked to travelers who brought measles back from other countries such as Israel, Ukraine, and the Philippines where large measles outbreaks are currently occurring.

THINK MEASLES

Measles is an acute viral disease that is transmitted by direct contact with infectious droplets. The disease is characterized by a fever, cough, coryza, and conjunctivitis, followed by a maculopapular rash (beginning on the face and spreading to lower trunk and extremities); complications include encephalitis, pneumonia, and death, especially in young children, pregnant, and immunocompromised individuals. Maculopapular rash usually appears 14 days after exposure; however, the incubation period ranges from 7-21 days.

Clinical Presentation:

- A general rash lasting for ≥ 3 days; and
- A temperature ≥ 101°F or 38.3°C; and
- Cough, coryza, or conjunctivitis
- Photophobia may be seen in older children
- Koplik’s spots may be present during prodromal period

NOT MEASLES

Other rash and fever illnesses:

- Rubella (German Measles)
- Varicella (Chickenpox)
- Roseola Infantum
- Scarlet Fever
- Fifth Disease
- Kawasaki Syndrome
- Enteroviruses
- Drug Reactions

IF YOU SUSPECT MEASLES

⇒ Avoid leaving suspected cases in waiting rooms to minimize transmission
⇒ Notify the KDHE IMMEDIATELY (877-427-7317)
⇒ Perform laboratory confirmation if case you suspect measles
  ⇒ Take a blood sample for serological confirmation
  ⇒ Take nose and throat swab for viral identification
  ⇒ Refer to CDC for collection guidance
⇒ Send specimen to the Kansas Health and Environment Laboratory (KHEL) for testing

EVIDENCE OF IMMUNITY

- Written documentation of vaccination with 2 doses of live measles or MMR vaccine, or
- Laboratory evidence of immunity, or
- Laboratory confirmation or disease, or
- Born before 1957

CDC RECOMMENDATIONS FOR TRAVEL

- Infants aged 6-11 months should receive 1 dose of MMR vaccine, this dose would not count towards the recommended immunization schedule of two doses of MMR vaccine
- Children 12 months of age and older should receive 2 doses of MMR vaccine separated by at least 28 days
- Teenagers and adults who do not have evidence of immunity against measles should get 2 doses of MMR vaccine separated by at least 28 days

NEED TO REPORT A COMMUNICABLE DISEASE?

Call the Kansas Department of Health and Environment
Epidemiology Hotline 24/7
877.427.7317
Call the Health Department 24/7
785.806.6297

Disease Reporting Information:
- List of Reportable Diseases
- Disease Reporting Information
- Kansas Reportable Disease Form
- Disease Investigation Guidelines
Public Health Burden of Measles

Measles is one of the most highly contagious infectious diseases with an attack rate of 90% in susceptible individuals exposed to measles. Although vaccine efforts around the world have decreased the number of measles cases, it is still estimated 7 million cases of measles and 100,000 measles deaths occur worldwide each year.

Due to measles being highly infectious, significant investment is required to respond to a measles outbreak. The economic burden on local and state public health institutions to address the sixteen measles outbreaks in the United States in 2011 was estimated to be between $2.7 million to $5.3 million US dollars. The last measles outbreak in Kansas was early March of 2018. The outbreak was estimated to cost Kansas taxpayers at least $145,000. The estimate only includes staff time, laboratory testing and vaccines and does not include cost of medical management, income loss due to exclusion, missed school days or cost of police enforcement of quarantines.

In a Centers for Disease Control and Prevention recent report, outbreaks in the US are driven by misinformation about the measles and the MMR vaccine leading to undervaccination. Of the 704 recently confirmed cases of measles, 71% were in unvaccinated persons. The measles, mumps, and rubella (MMR) vaccine is the most effective way to protect against these highly contagious diseases.

For more information:

CDC Measles
KDHE Measles

NOT MEASLES

RUBELLA:
- Generally mild illness with prodrome with low-grade fever, malaise, lymphadenopathy.
- Resembles measles but rash is fainter and does not coalesce. Rash starts on the face and spreads to the body.
- Missing: Koplik’s spots, coryza, photophobia, or cough.

SCARLET FEVER:
- Symptoms: Fever, pharyngitis, malaise, chills, headache and cervical lymphadenopathy. Appearance of strawberry tongue.
- Rash first noticed on trunk and spreads to cover entire body. Rash blanches with pressure, sandpaper appearance of skin.
- Missing: Koplik’s spots, coryza, conjunctivitis, photophobia, or cough.

FIFTH DISEASE:
Parvovirus B19
- Usually nonspecific illness. Symptoms my include fever, runny nose, and headache.
- Rash begins as bright red area on the cheek “slapped cheek” appearance. May include rash on trunk and limbs.
- Missing: Koplik’s spots, coryza, photophobia, or cough.

VARICELLA:
- Mild prodrome of fever and malaise, 1-2 days before rash.
- Itchy vesicular rash and scabs appear in crops at several stages over time.
- Missing: Koplik’s spots, coryza, photophobia, or cough.

KAWASAKI:
- Illness begins with high and spiking fever for 1-2 weeks. Often with conjunctivitis, dry cracked lips, strawberry tongue, erythema or oropharynx and cervical lymphadenopathy.
- Rash is maculopapular with multiformal-like lesions, may resemble scarlet fever. Rash often accompanied by painful edema hands and feet.
- Missing: Koplik’s spots, coryza, photophobia, or cough.

ROSEOLA INFANTUM:
- Sudden onset of high fever lasting 3-7 days. Rash develops and may include malaise, palpebral conjunctivitis, runny nose, vomiting, diarrhea and lymphadenopathy.
- Rash appears once fever resolves. Rash begins on neck and trunk and spreads to extremities.
- Missing: Koplik’s spots

* Information was adapted from NYC Health Common Rashes/Illness in Children Poster

Image Source: CDC
Image Source: Mosby Medical Dictionary 9th Edition
Image Source: Kawasaki Research Foundation
Image Source: Fitzpatrick’s Dermatology 6th Ed
Image Source: CDC
Last month, there were 45 new reports of notifiable diseases and conditions in Shawnee County. Thirty-three reports have been classified as Confirmed or Probable Cases of Reportable Diseases by the Shawnee County Health Department and/or the Kansas Department of Health and Environment based on standardized case definitions. The chart below shows the number of disease reports which met the criteria of Confirmed or Probable. These are preliminary numbers and might change as case status changes with new information or further investigation. Below is a summary of select reports investigated in the month of April 2019.

### SUMMARY OF NEWLY CONFIRMED CASES OF REPORTABLE DISEASES

**SHAWNEE COUNTY, APRIL**

<table>
<thead>
<tr>
<th>Diseases</th>
<th>2019 Apr</th>
<th>2018 Apr</th>
<th>2016-2018 3-Year April Average</th>
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<tbody>
<tr>
<td><strong>Bloodborne</strong></td>
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<tr>
<td>Hepatitis C, Chronic</td>
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<tr>
<td><strong>Foodborne and Waterborne</strong></td>
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<tr>
<td>Campylobacteriosis</td>
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<td>Giardiasis</td>
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<td>Salmonellosis</td>
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<tr>
<td>Shiga toxin-producing <em>Escherichia coli</em> (STEC)</td>
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<tr>
<td><strong>Respiratory</strong></td>
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<tr>
<td>Carbapenem-resistant <em>Acinetobacter baumannii</em> (CRAB)</td>
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<tr>
<td>Streptococcus pneumoniae, invasive disease</td>
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<tr>
<td>Tuberculosis Latent Infection (LTBI)</td>
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<tr>
<td><strong>Vaccine Preventable</strong></td>
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<tr>
<td>Varicella (Chickenpox)</td>
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<td><strong>Sexually Transmitted Infections</strong></td>
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<tr>
<td>Chlamydia</td>
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<td>Gonorrhea</td>
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<td>Syphilis</td>
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<tr>
<td><strong>Other</strong></td>
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<tr>
<td>Blood lead poisoning (All ages)</td>
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<tr>
<td><strong>Grand Total</strong></td>
<td>205</td>
<td>184</td>
<td>166</td>
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* Case report counts are provisional numbers. Case statuses might change with new information or further investigation.

**Respiratory:** Last month, there were thirteen respiratory reports; four Carbapenem-resistant *Acinetobacter baumannii* (CRAB), two Carbapenem-resistant *Enterobacteriaceae* (CRE), three Carbapenem-resistant *Pseudomonas aeuginosa* (CRPA), two Streptococcus pneumoniae, invasive disease and two Tuberculosis Latent Infection (LTBI). Of the thirteen respiratory reports, only three Carbapenem-resistant *Acinetobacter baumannii* (CRAB), two Streptococcus pneumoniae, invasive disease and one Tuberculosis Latent Infection (LTBI) reports were confirmed cases.

**Bloodborne:** All seventeen Hepatitis C reports received were confirmed cases.

**Food or Waterborne:** There were eight food borne illness reports last month; five Campylobacteriosis, one Giardiasis, one Salmonellosis, and one Shiga toxin-producing *Escherichia coli* (STEC). All eight food borne illness reports were confirmed cases.

**Other:** The Health Department received one pediatric elevated blood lead level report last month. The elevated blood lead level report was a confirmed case. One opossum and two dogs were submitted for rabies testing. All three animals were negative for the rabies virus. There were two vaccine preventable reports received; one Varicella and one Mumps. Only the Varicella report was a confirmed case. One Toxic-shock syndrome (streptococcal) report received is currently under investigation.