Kansas Department of Health and Environment
Division of Health

Influenza, Pediatric Mortality and Novel Influenza A Virus Investigation Guideline

During an outbreak or emergence of novel influenza A – additional information will become available. The investigator is urged to review the most up-to-date information

Contents

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Date	Replaced	Comments
05/2018	01/2013	Updated Notification sections and Isolation, Work and Daycare Restrictions sections with updated regulations. Updated state laboratory physical address and removed mention of viral culture at the state.
01/2013	07/2012	Updated Novel Influenza A case definition and the notification section. Inserted updated Novel Influenza A and CDC Influenza-Associated Pediatric Death Report Forms and Specimen Collection Guidelines.

Influenza, Pediatric Mortality and Novel Influenza A Virus Disease Management and Investigative Guidelines

INFLUENZA-ASSOCIATED PEDIATRIC MORTALITY CASE DEFINITION (CDC 2004)

Case Definition for Public Health Surveillance

An influenza-associated death is defined for surveillance purposes as a death resulting from a clinically compatible illness that was confirmed to be influenza by an appropriate laboratory or rapid diagnostic test. There should be no period of complete recovery between the illness and death. Influenza-associated deaths in all persons aged <18 years should be reported.

A death should not be reported if:

- There is no pre- or post-mortem laboratory confirmation of influenza virus infection.
- The influenza illness is followed by full recovery to baseline health status prior to death.
- The death occurs in a person 18 years or older.
- After review and consultation there is an alternative agreed upon cause of death.

Laboratory Criteria for Diagnosis

Laboratory testing for influenza virus infection may be done on pre- or post-mortem clinical specimens, and include identification of influenza A or B virus infections by a positive result by at least one of the following: Influenza virus isolation in tissue cell culture from respiratory specimens; Reverse-transcriptase polymerase chain reaction (RT-PCR) testing of respiratory specimens; Immunofluorescent antibody staining (direct or indirect) of respiratory specimens; Rapid influenza diagnostic testing of respiratory specimens; Immunohistochemical (IHC) staining for influenza viral antigens in respiratory tract tissue from autopsy specimens; Four-fold rise in influenza hemagglutination inhibition (HI) antibody titer in paired acute and convalescent sera*.

* Serologic testing for influenza is available in a limited number of laboratories and should only be considered as evidence of recent infection if a four-fold rise in influenza (HI) antibody titer is demonstrated in paired sera. Single serum samples are not interpretable.

Case Classification

Confirmed: A death meeting the clinical case definition that is laboratory confirmed.

Laboratory or rapid diagnostic test confirmation is required as part of the case definition; therefore, all reported deaths will be classified as confirmed.

The 2004 case definition appearing on this page was re-published in the 2009 CSTE position statement 09-ID-44. Thus, the 2004 and 2010 versions of the case definition are identical.

NOVEL INFLUENZA A, CASE DEFINITION (CDC 2013)

Clinical Description for Public Health Surveillance:

An illness compatible with influenza virus infection (fever >100 degrees Fahrenheit with cough and/or sore throat).

Laboratory Criteria:

A human case of infection with an influenza A virus subtype that is different from currently circulating human influenza H1 and H3 viruses. Novel subtypes include, but are not limited to, H2, H5, H7, and H9 subtypes. Influenza H1 and H3 subtypes originating from a non-human species or from genetic reassortment between animal and human viruses are also novel subtypes. Novel subtypes will be detected with methods available for detection of currently circulating human influenza viruses at state public health laboratories (e.g., real-time reverse transcriptase polymerase chain reaction [RT-PCR]). Confirmation that an influenza A virus represents a novel virus will be performed by CDC's influenza laboratory. Once a novel virus has been identified by CDC, confirmation may be made by public health laboratories following CDC-approved protocols for that specific virus, or by laboratories using an FDA-authorized test specific for detection of that novel influenza virus.

Exposure:

Criteria for epidemiologic linkage:

- The patient has had contact with one or more persons who either have or had the disease,
  - AND-
- Transmission of the agent by the usual modes of transmission is plausible
  -OR-
- A case may be considered epidemiologically linked to a laboratory confirmed case if at least one case in the chain of transmission is laboratory confirmed.

Laboratory testing for the purposes of case classification should use methods mutually agreed upon by CDC and CSTE. Currently, only viral isolation, RT-PCR, gene sequencing, or a 4-fold rise in strain-specific serum antibody titers are considered confirmatory.

Case Classification:

Suspected: A case meeting the clinical criteria, pending laboratory confirmation. Any case of human infection with an influenza A virus that is different from currently circulating human influenza H1 and H3 viruses is classified as a suspect case until the confirmation process is complete.

Probable: A case meeting the clinical criteria and epidemiologically linked to a confirmed case, but for which no confirmatory laboratory testing for influenza virus infection has been performed or test results are inconclusive for a novel influenza A virus infection.

Confirmed: A case of human infection with a novel influenza A virus confirmed by CDC's influenza laboratory or using methods agreed upon by CDC and CSTE as noted in Laboratory Evidence, above.

Comments on Novel Influenza Virus:

Once a novel virus is identified by CDC, it will be nationally notifiable until CSTE in consultation with CDC determines that it is no longer necessary to report each case.

On December 13, 2006, the United States formally accepted the revision of the International Health Regulations, referred to as IHR (2005) (http://archive.hhs.gov/news/press/2006pres/20061213.html). The IHR (2005) are an international legal instrument that governs the roles of the WHO and its member countries in identifying and responding to and sharing information about public health emergencies of international concern (www.who.int/csr/ihr/IHRWHA58_3-en.pdf). The updated rules are designed to prevent and protect against the international spread of diseases, while minimizing interference with world travel and trade. The revised regulations add human infections with new influenza strains to the list of conditions that Member States must immediately report to WHO. An outbreak of infections with a new influenza A virus that demonstrates human-to-human transmission could signal the beginning of the next pandemic. Robust epidemiologic and laboratory surveillance systems are required for a coordinated public health response to infections with a novel influenza virus subtype. Early detection of an influenza virus with pandemic potential will permit identification of viral characteristics (e.g., genetic sequence, antiviral susceptibility, and virulence) that will affect clinical management and public health response measures. It should also facilitate development of a virus-specific vaccine and testing strategies.

All state public health laboratories have the capacity to test respiratory specimens for influenza viruses with sensitive and specific assays that can detect human and non-human influenza A viruses. They also have the capacity to subtype currently circulating human influenza A H1, H3, and avian H5 (Asian lineage) viruses. The detection or confirmation by a state public health laboratory of an influenza A virus that is unsubtypable with standard methods (e.g., real-time RT-PCR assays for human influenza A(H3) or (H1) viruses), or a non-human influenza virus (e.g., H5) from a human specimen, could be the initial identification of a virus with pandemic potential. Prompt notification of CDC by a state epidemiologist in conjunction with the public health laboratory will permit rapid confirmation of results and reporting to WHO. In addition, it will aid prompt viral characterization, and the development of virus-specific diagnostic tests.

LABORATORY ANALYSIS

A. Testing Methods (Novel):

- Diagnostic testing: Some local laboratories and clinics have rapid influenza diagnostic tests (RIDT) on site that can be used to identify influenza A viruses and B viruses.
- Confirmatory testing:
  - The Kansas Health and Environment Laboratory (KHEL) will use RT-PCR to test for human H1 and H3 strains.
  - If negative for human H1 and H3 and a CDC-provided novel influenza A virus test kit is not available; the specimen is forwarded to the CDC.
    - If confirmed as a novel influenza A results, it will be immediately reported to the submitter and the local health department with jurisdiction over the case.

NOTE: Novel flu virus infection cannot be excluded with negative influenza A rapid antigen tests. If the patient has an epidemiologic link to a confirmed case (i.e. had close contact with a confirmed case), or has either traveled to or resides in a community where there are one or more confirmed novel cases, further testing and treatment should be based upon clinical suspicion, severity of illness, and risk for complications. If there is no epidemiologic link and the patient has mild illness, further testing and treatment are not recommended.

B. Criteria for confirmatory testing at KDHE Laboratory:

Testing at the KHEL is currently available for:

- Patients with ILI* who seek care at a Kansas ILINet Surveillance Network provider,
- All hospitalized patients with ILI*****.
- Any outpatient who resides in a county with community transmission IF part of a cluster that is under investigation. ‡
- Any outpatient who presents with ILI***** that is considered an unusual presentation or occurrence, as determined by a KDHE epidemiologist. Examples may include: ‡
  - A patient test positive by RIDT and the community prevalence of influenza is low, and a false positive result is a consideration.
  - A patient has had recent close exposure to pigs or poultry or other animals and novel influenza A virus infection is possible (e.g. influenza viruses circulate widely among swine and birds, including poultry, and also can infect other animals such as horses and dogs)

*** *ILI*** is defined as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat in the absence of a KNOWN cause other than influenza.

‡ **For** any outpatient specimens, other than those from ILINet providers, approval prior to specimen submission is required from a KDHE epidemiologist by calling 1-877-427-7317.

C. Specimen Collection (Routine):

- Specimen: Nasopharyngeal swab. Use sterile polyester-tipped (Dacron or rayon) swabs with plastic or metal shafts. Do NOT use calcium alginate or cotton swabs, and do NOT use wooden shafts.
- Media: Viral transport media such as UTM, M4, or M4RT.
- Timing: Collected as soon as possible after symptom onset, ideally within the first 4 to 5 days of illness when an infected person is most likely to be shedding virus.
- The specimen should be immediately refrigerated, but not frozen.
- Non-routine specimen collection is not addressed in this document. Refer to historical CDC documents for specimen collection, and guidance that will be provided, as needed.
- Contact (785) 296-1644 for specific questions on collection.

D. Packing and Shipping:

- Complete the Universal Laboratory Specimen Submission Form; marking the virus section and any additional comments on page 2 (back) of form.
  - If needed, request the *KDHE Lab Facility ID* by calling (785) 296-1620.
- Ensure the integrity of the specimen and timeliness of receipt at the KHEL:
  - Package specimens according to current Biological Substance, Category B requirements for refrigerated samples, **including frozen cold packs**. (Refer to guidance at: www.kdheks.gov/labs/downloads/Virus_pictorial_guide.pdf)
  - Verify the expected time of arrival with the transporting company. Some companies may not deliver on Sundays or weekends. For specimens shipped over the weekend, verify that delivery will occur at the laboratory the next day and will not be delayed for any reason. (i.e. stored overnight in truck). The ice packs may only keep the specimen cold for 24 to 48 hours.
- Specimens should be shipped to:

  Kansas Department of Health and Environment
  Health & Environmental Laboratories
  ATTN: Virology Laboratory
  6810 SE Dwight Street
  Topeka, KS 66620

- Contact (785) 296-1620 for further packing and shipping questions.

EPIDEMIOLOGY

Seasonal influenza results in yearly epidemics of varying severity, with sporadic cases or outbreaks of human disease occurring outside of typical seasonal patterns, and, rarely, as a pandemic. Clinical attack rates during annual epidemics can range from 5% to 20% in the general community to more than 50% in closed populations (e.g. nursing homes, schools). During yearly epidemics in industrialized countries, influenza illness often appears earliest among school-age children. The highest illness rates generally occur in children, with accompanying increases in school absences, physician visits, and pediatric hospital admissions. Influenza illness among adults is associated with increases in workplace absenteeism, adult hospital admissions, and mortality, especially among the elderly. In North America, epidemics generally last from 8–10 weeks. One or more strains, subtypes and/or types of influenza can circulate within a single influenza season in the same area. In temperate zones, epidemics tend to occur in winter months. In some tropical countries, influenza can occur year-round with 2 peaks per year consistent with peak activity in Northern and Southern Hemisphere temperate zones, and/or peaks during the rainy season.

Occasionally, a new subtype of influenza A emerges that is infectious for humans (a process termed shift). If such a virus is able to transmit from person to person efficiently enough to cause community outbreaks, then such a virus has the potential to cause a pandemic. Although most human infections with novel influenza A viruses probably result in sporadic cases or very limited human-to-human transmission, all human cases of novel influenza A infection must be considered a potential pandemic infection and should be investigated to assess the risk of human-to-human transmission. The first laboratory clue of a novel influenza A infection is the inability of available tests to subtype influenza A viruses. Suspicion is heightened if illness has occurred after exposure to birds, pigs or other animals that may be infected with influenza or exposure to their environments. Animal influenza A virus subtypes that have infected humans include H5N1, H7N2, H7N3, H7N7, H9N2, H10N7 and swine and avian H1 viruses, which are antigenically distinct from human H1 viruses**.**

DISEASE OVERVIEW

A. Agent:

Two types of influenza virus cause significant disease in humans: type A and type B. Influenza A viruses are composed of two major antigenic structures: hemagglutinin (H) and neuraminidase (N), which define the virus subtype.

B. Clinical Description:

Patients with uncomplicated disease have experienced fever, chills, headache, upper respiratory tract symptoms (cough, sore throat, rhinorrhea, shortness of breath), myalgias, arthralgias, fatigue, vomiting, or diarrhea. Pneumonia, bronchitis, and sinus and ear infections are three examples of complications from influenza. Influenza can make chronic health problems worse.

C. Reservoirs:

Humans are normally infected by human influenza viruses (H3N2, H1N1 and B), and form the primary reservoir for these human viruses. With some notable exceptions, seasonal influenza usually is not a zoonotic disease.

Aquatic birds are natural reservoirs of influenza A subtypes. For some avian influenza viruses, and particularly H5N1, the range of mammals that can be infected from aquatic birds (pigs, whales, seals, horses, ferrets, cats, dogs, tigers, etc.) has been wide. Domestic poultry are also infected and are the main source of human infections. Swine influenza viruses are endemic in pigs. Influenza infections are also known to occur in other animals besides birds and pigs, including horses and dogs, but with the exception of pigs, influenza viruses have not been shown to transmit from these mammals to humans.

D. Mode(s) of Transmission:

The relative contribution of large droplet, droplet nuclei (i.e. airborne spread), and contact transmission (direct and indirect) in the spread of seasonal influenza is unknown, although large droplet spread is believed to be the primary means of transmission, through coughing and sneezing by infected persons. Human influenza virus may persist for hours on solid surfaces, particularly in lower temperatures and lower humidity.

E. Incubation Period:

- Seasonal influenza disease: Average 2 days (range 1–4).
- For H5N1 associated with poultry: 7 days or less, and often 2–5 days.
- For swine influenza: 2–7 days has been reported.

F. Period of Communicability:

For seasonal influenza: In adults, 1 day before symptoms develop and up to 5 to 7 days after becoming sick. In young children, virus shedding can occur 1 day before symptoms develop and up 7–10 days and may be even longer in severely immunocompromised persons.

For H5N1 disease, limited data suggest that patients may remain infectious for as long as 3 weeks, and perhaps even longer in immunosuppressed patients.

G. Susceptibility and Resistance:

Impact of epidemics depend upon several factors, including natural or vaccine-induced levels of protective immunity in the population, the age and condition of the population, strain virulence, and the extent of antigenic variation of new viruses. Infection induces immunity to the infecting virus and antigenically similar viruses. Lasting immunity depends, in part, upon the degree of antigenic similarity between viruses causing immunity and those causing disease.

H. Treatment:

Antiviral agents begun within 48 hours of symptom onset reduce illness duration and may reduce complications associated with influenza. Patients should be watched for bacterial complications, including co-infection with MRSA, and antibiotics prescribed accordingly. Because of the association with Reye syndrome, avoid salicylates in children with suspected influenza.

NOTIFICATION TO PUBLIC HEALTH AUTHORITIES

Suspected cases of pediatric influenza deaths (regardless of laboratory evidence) shall be reported within 24 hours, except if the reporting period ends on a weekend or state-approved holiday, the report shall be made by 5:00 p.m. on the next business day after the 24-hour period:

1. Health care providers and hospitals: report to the local public health jurisdiction or KDHE-BEPHI (see below)
2. Local public health jurisdiction: report to KDHE-BEPHI (see below)
3. Laboratories: report to KDHE-BEPHI (see below)

Kansas Department of Health and Environment (KDHE)
Bureau of Epidemiology and Public Health Informatics (BEPHI)
Phone: 1-877-427-7317 Fax: 1-877-427-7318

Novel influenza A virus infection cases or ***suspected*** cases (as described below) shall be reported within **4 hours by phone to KDHE**:

1. Health care providers and hospitals: report to the local public health jurisdiction or KDHE-BEPHI (see below)
2. Local public health jurisdiction: report to KDHE-BEPHI (see below)
3. Laboratories: report to KDHE-BEPHI (see below)
4. KDHE-BEPHI contacts the local public health jurisdiction by phone within one hour of receiving a report

Kansas Department of Health and Environment (KDHE)
Bureau of Epidemiology and Public Health Informatics (BEPHI)
24/7 Phone: 1-877-427-7317

Additional notes on reporting Novel Influenza A:

Reports should be made to local or state public health authorities on persons who fulfill at least one of the following criteria:

- Human infection with a novel influenza A virus, an un-sub-typable influenza A virus, or an influenza A virus with inconclusive subtyping results reported by a WHO collaborating laboratory.

OR

- ILI occurring in a contact of a confirmed or probable case of novel influenza A virus infection.

OR

- ILI and influenza A virus detected with methods available for detection of currently circulating human influenza viruses **and**
- Close contact with ill animals known to transmit novel subtypes of influenza A, such as wild birds or poultry, swine or other mammals and/or
- Travel, within 14 days, to any country where a novel influenza A virus, such as highly pathogenic avian influenza A (H5N1), has been recently identified in animals or people.

Further responsibilities of state and local health departments to the CDC:

- ***Novel influenza A virus cases prior to classification*** *require an* IMMEDIATE, URGENT *report to the Center of Disease Control and Prevention (CDC).*
  - KDHE epidemiologist will call the CDC EOC at 770-488-7100 within 24 hours of receiving a report of a case.
  - **Local public health jurisdiction** will report information requested on the disease reporting forms as soon as possible.
  - KDHE-BEPHI will file an electronic case notification to CDC by the next regularly scheduled electronic transmission.
- ***Influenza deaths in children less than 18 years of age*** require a ROUTINELY NOTIFIABLE report to the Center of Disease Control and Prevention (CDC).
  - KDHE-BEPHI will file an electronic report for cases within the next reporting cycle.

INVESTIGATOR RESPONSIBILITIES

Influenza Pediatric Death Responsibilities

1) Report all confirmed, probable and suspect cases to the KDHE-BEPHI.
2) Start the investigation within 1 day of receiving a report and complete the investigation in 3 days of the notification.
3) Use current case definition, to confirm diagnosis with the medical provider.
4) For Influenza-associated deaths in those less than 18 years,
- Request and review medical records to allow reporting to CDC.
- If available, request that any isolates are forwarded to the KHEL.
- Additional response, such as post-mortem testing to confirm influenza, will depend on the circumstances of the situation.

5) If requested, assist with completion of the necessary report forms:
- Influenza-death: Influenza-Associated Pediatric Deaths Report Form

Novel Influenza A Responsibilities

1) Report all confirmed, probable and suspect cases to the KDHE-BEPHI.
2) Use current case definition, to confirm diagnosis with the medical provider.
3) For novel influenza A, more detailed instruction will come from the KDHE-BEPHI, but actions will include the following:
- Conduct case investigation to identify potential source of infection.
- Transport of specimens to the KHEL.
- Insure appropriate infection control practices and restrictions are being implemented while testing is pending.
- Conduct contact investigation to locate additional cases and/or contacts.
- Assist in formulating and implementing disease control and prevention activities (Case Management and Contact Management)

4) If requested *, assist with completion of the necessary report forms:
- Novel Influenza A: Novel Influenza A Case Report Form

STANDARD CASE INVESTIGATION AND CONTROL METHODS

* The following standard case investigation guidelines are for **novel influenza A**.

Case Investigation – Novel Influenza A

1) Contact the medical provider who ordered testing of the case or is attending to the case and obtain the following information.
   - Obtain clinical information on symptoms and onset date.
   - Examine laboratory testing and determine if further confirmatory laboratory testing is needed.
   - Collect information to complete the Novel Influenza A Report form.
2) Interview the case or proxy about activities 7 days prior to symptom onset:
   - International travel
   - Contact with animals, such as poultry or swine
   - Contact with others experiencing ILI or who have travelled internationally.
3) Collect information on activities one day prior to symptom onset and the days following symptom onset to assist with the Contact Investigation.
4) Investigate epi-links among cases (clusters, household, co-workers, etc).
   - Highly suspected cases, that have not previously been reported should be investigated as a case and reported to KDHE-BEPHI.
   - For suspected outbreaks refer to Managing Special Situations section.
5) Follow-up as instructed in Case Management and insure restrictions or isolation measures are in place.

Contact Investigation – Novel Influenza A

Consultation with KDHE-BEPHI is required and may result in modifications to the following guidelines for exposure identification and contact tracing.

1) **Close contact** is defined as:
   - Having cared for or lived with a person who is a confirmed, probable or suspected case of novel influenza A virus, or
   - Having been in a setting where there was a high likelihood of contact with respiratory droplets and/or body fluids of such a person.

Notes on determining close contact:

a) *A case that is not immunocompromised is mostly likely infectious:*
   - *For adults and children ≥5 year of age: one day prior to onset of illness until 7 days after or until 24 hours after symptoms resolve, whichever is longer.*
   - *For children <5 years: one day prior to onset until 10 days after onset or until 24 hours after symptoms resolve, whichever is longer.*

b) *When an infected person coughs or sneezes near a susceptible person a high-likelihood of transmission requires close proximity (< 6 feet) between a source and recipient. It is the contact with respiratory droplets and/or body fluids that results in transmission not just proximity to an infectious person.*

c) *Examples of close contact include kissing or embracing, sharing eating or drinking utensils, physical examination, or any other contact between persons that is likely to result in exposure to respiratory droplets.*

d) *Close contact typically does not include walking by an infected person or sitting across from a symptomatic patient in a waiting room or office.*

2) Interview close contacts:
   - Note any symptoms of ILI.
   - Identify those close contacts at high-risk for complications of influenza.
   - Identify those contacts that are household contacts and those household contacts that attend school or daycare.
3) Educate household and close contacts on avoiding future exposures:
   - Designate a single household family member as the ill person's caregiver to minimize interactions with asymptomatic persons.
   - The caregiver should not be a person considered to be at high risk of complications from influenza. If this is unavoidable, the high risk caregiver should consider using a facemask or respirator.
   - The use of a facemask or respirator is not recommended for other household members or those caregivers who are not at high risk of complications.
4) Follow-up with household and close contacts (especially high risk contacts) as recommended under Contact Management.
5) Institute control measures as indicated under Isolation, Work and Daycare Restrictions.

Isolation, Work and Daycare Restrictions

***K.A.R 28-1-6* for Influenza:**
Control of Cases

- For each person hospitalized with a case, droplet precautions shall be followed for seven days following onset of illness or for the duration of the illness if the case is in an immune-compromised patient.
- For each person with a case shall remain in home isolation for seven days following onset of illness or for the duration of illness if the case is immune-compromised, except when seeking medical care.

Consult KDHE-BEPHI, for matters involving novel influenza strains; the following serve as guidelines and will be modified as more is discovered about the novel agent.

1) Hospitalized patients suspected of having a **novel** influenza A virus should be placed in an airborne isolation room with 6 to 12 air changes per hour, and:
   - Health care personnel should use contact precautions, wear a fit-tested respirator (N-95 or higher) when entering the room, and use eye protection when within 3 feet of the patient.
   - Continue measures for 14 days after onset of symptoms or until either an alternative diagnosis is established, or diagnostic test results indicate that the patient is not infected with a novel influenza A virus. (Refer to: https://www.cdc.gov/flu/avianflu/infection-control.htm.)
2) Asymptomatic household and close contacts of a novel influenza A case should:
   - Return/remain at home at the earliest sign of illness;
   - Minimize contact in the community to the extent possible, for a period of 7 days after the last exposure to the case during the infectious period.
3) Children who are household contacts of a novel influenza case should be excluded from school and/or childcare settings for a period of 7 days after the last exposure to the case during the infectious period.

* Only those close contacts who are at high risk for influenza complications should receive chemoprophylaxis. Chemoprophylaxis does not alter exclusion recommendations for school or childcare.

Case Management – Novel Influenza A

1) Antiviral treatment is recommended for persons with severe or progressive influenza illness and for ill persons at increased risk of severe disease.
2) Persons taking antiviral medications should adhere to the same infection control practices.
3) Most persons with influenza will be cared for at home.
   - Educate patients to stay home until 24 hours after fever resolves (without fever reducing medications).
   - If necessary to leave home to obtain health care, wear a facemask, if available and tolerable.
   - While ill, follow infection control measures such as covering coughs and frequently cleansing hands.
   - Refer to https://www.cdc.gov/flu/consumer/caring-for-someone.htm to educate those taking care of the patient.
4) Initiate outbreak control measures appropriate to setting, as needed
   - If necessary, reference the Kansas Community Containment Toolbox.
5) Report any changes any changes in patient status, especially complications.

Contact Management – Novel Influenza A

1) Symptomatic contacts:
   - Considered a case; report to KDHE-BEPHI
   - Review case management and initiate any restrictions.
     - All contacts symptomatic with ILI should avoid work, school, child care, and other public settings until 24 hours after fever has resolved.
   - Those at high risk for influenza complications should contact their provider immediately to discuss the need for treatment.
2) Asymptomatic Contacts:
   - Those at high risk for influenza complications should contact their provider immediately to discuss the need for chemoprophylaxis. In general:
     - Post-exposure chemoprophylaxis should not be started more than 48 hours after the last exposure, and
     - Should not be used for those not at high risk of influenza complications.
   - Inform asymptomatic contacts to stay home if they develop symptoms.
   - Initiate any other restrictions based on the situation.
3) As needed, provide education on avoiding further exposures and to ensure proper medical care is obtained and precautions taken if symptoms develop.

Environmental

1) Standard cleaning and disinfecting should be done for any potentially contaminated surfaces where persons with influenza may have been present.
2) In addition, surfaces touched often, such as doorknobs, refrigerator door handles, telephones, keyboards, and bathroom handles, should be cleaned and disinfected frequently in public areas during influenza season and in a household with a potentially communicable influenza case.

For additional information refer to: www.cdc.gov/flu/school/cleaning.htm.

Education

1) Instruct on the necessary restrictions.
2) Counsel contacts to watch for signs or symptoms within 1 week of exposure and to seek medical attention if needed.
3) Provide education on preventing the spread of disease.

MANAGING SPECIAL SITUATIONS

A. Investigation of pneumonia clusters or respiratory outbreaks:
In outbreaks, cases are clustered in time and place among groups that share a common air space.

- Notify KDHE immediately, 1-877-427-7317.
- Active case finding will be an important part of any investigation.
- Recommendations will be made based on information collected.
- Guidance will be used from Unexplained Respiratory Disease Outbreaks (URDO) website: https://www.cdc.gov/urdo/outbreak.html

1) Review and familiarize yourself with differential diagnoses for the respiratory outbreak: https://www.cdc.gov/urdo/differential.html
2) Start to collect information: Respiratory Outbreak Survey at https://www.cdc.gov/urdo/downloads/RespiratoryOutbreakSurvey.pdf
3) Compile available data
   - Develop case definition - defining population at risk. https://www.cdc.gov/urdo/downloads/CaseDefinitions.pdf
   - Complete line list. https://www.cdc.gov/urdo/downloads/LineListTemplate.pdf
   - Generate an epi-curve https://www.cdc.gov/urdo/downloads/epicurve.xls
   - Collect and store available clinical and pathologic specimens. https://www.cdc.gov/urdo/specimen.html
   - Consider additional data collection forms to collect information relevant to identifying etiologies of respiratory outbreaks. https://www.cdc.gov/urdo/sampleforms.html.
   - List current control measures implemented to date, if any.
4) Develop public health response to outbreak. Consider:
   - Number of cases and severity of disease
   - Need and potential for interventions (e.g., cohorting, quarantine, vaccination, use of prophylaxis, elimination of a potential source of disease)
   - Likelihood of natural versus intentional source of infection
   - Level of public health, provider or community concern
   - Notify appropriate local and state public health officials
     - KDHE at 1-877-427-7317
     - Discuss with staff in your program (e.g., laboratory, epidemiology, environmental and veterinary and other personnel as appropriate)
     - Notify CDC about clusters of special concern

B. Groups at high risk for influenza complications:

High-risk groups: The list below includes the groups of people more likely to get flu-related complications if they get sick from influenza. As more epidemiologic and clinical data become available, these risk groups might be revised. (Source: www.cdc.gov/flu/about/disease/high_risk.htm)

1) Children younger than 5, but especially children younger than 2 years old
2) Adults 65 years of age and older
3) Pregnant women (and women up to two weeks postpartum)
4) Residents of nursing homes and other long-term care facilities
5) Also, American Indians and Alaskan Natives seem to be at higher risk of flu complications
6) People who have medical conditions including:
   - Asthma
   - Neurological and neurodevelopmental conditions [including disorders of the brain, spinal cord, peripheral nerve, and muscle such as cerebral palsy, epilepsy (seizure disorders), stroke, intellectual disability (mental retardation), moderate to severe developmental delay, muscular dystrophy, or spinal cord injury].
   - Chronic lung disease (such as chronic obstructive pulmonary disease [COPD] and cystic fibrosis)
   - Heart disease (such as congenital heart disease, congestive heart failure and coronary artery disease)
   - Blood disorders (such as sickle cell disease)
   - Endocrine disorders (such as diabetes mellitus)
   - Kidney disorders
   - Liver disorders
   - Metabolic disorders (such as inherited metabolic disorders and mitochondrial disorders)
   - Weakened immune system due to disease or medication (such as people with HIV or AIDS, or cancer, or those on chronic steroids)
   - People younger than 19 years of age who are receiving long-term aspirin therapy
   - People who are morbidly obese (Body Mass Index, or BMI, of 40 or greater)

C. CDC Guidance for Antiviral Use and Influenza

Access information at: http://www.cdc.gov/flu/antivirals/index.htm

Additional guidance will be provided depending on the situation.

D. Kansas Specific Guidance on Pandemic Influenza

Access information at: http://www.kdheks.gov/cphp/pan_flu.htm

E. CDC Guidance for Managing Special Situations with Influenza

1) Schools and Child Care Settings: https://www.cdc.gov/flu/school/index.htm
2) Health Professionals and Health Care Facilities: https://www.cdc.gov/flu/professionals/index.htm
3) Institutional Outbreak Control: https://www.cdc.gov/flu/professionals/infectioncontrol/index.htm
4) Long-Term Care Facilities: https://www.cdc.gov/flu/professionals/infectioncontrol/ltc-facility-guidance.htm

DATA MANAGEMENT AND REPORTING TO THE KDHE

A. Accept the case assigned to the LHD and record the date the LHD investigation was started on the [Administrative] tab.

B. Organize and collect data.

- Influenza-death: Influenza-Associated Pediatric Deaths Report Form
- Novel Influenza A: Novel Influenza A Case Report Form

C. Report data collected during the course of the investigation via EpiTrax**.**

- Verify that all data requested on the forms has been recorded on an appropriate EpiTrax [tab], or that actions are completed for a case lost to follow-up as outlined below.
- Some data that cannot be reported on an EpiTrax [tab] may need to be recorded in [Notes] or scanned and attached to the record.
- Paper report forms do not need to be sent to KDHE after the information is recorded in EpiTrax. The forms should be handled as directed by local administrative practices.

D. If a case is lost to follow-up, after the appropriate attempts:

- Indicate 'lost to follow-up' on the [Administration] tab with the number of attempts to contact the case recorded.
- Record at least the information that was collected from the medical records.
- Record a reason for 'lost to follow-up' in [Notes].

E. After the steps listed under Case Investigation have been completed, record the "Date LHD investigation completed" field located on the [Administrative] tab.

- Record the date even if the local investigator's Case or Contact Management for the contact is not "Complete".

F. Once the entire investigation is completed, the LHD investigator will click the "Complete" button on the [Administrative] tab. This will trigger an alert to the LHD Administrator so they can review the case before sending to the state.

- The LHD Administrator will then "Approve" or "Reject" the CMR.
- Once a case is "Approved" by the LHD Administrator, BEPHI staff will review the case to ensure completion before closing the case.

ADDITIONAL INFORMATION / REFERENCES

A. Treatment / Differential Diagnosis: American Academy of Pediatrics. Red Book: Report of the Committee on Infectious Disease, 29th Edition. Illinois, Academy of Pediatrics, 2014.

B. Epidemiology, Investigation and Control: Heymann. D., ed., Control of Communicable Diseases Manual, Washington, DC, American Public Health Association, 2010.

C. Case Definitions: CDC Division of Public Health Surveillance and Informatics, Available at: wwwn.cdc.gov/nndss/

D. Quarantine and Isolation: Kansas Community Containment Isolation/ Quarantine Toolbox Section III, Guidelines and Sample Legal Orders http://www.kdheks.gov/cphp/operating_guides.htm

E. Kansas Regulations/Statutes Related to Infectious Disease: www.kdheks.gov/epi/regulations.htm

F. Additional Information (CDC): www.cdc.gov/health/default.htm

ATTACHMENTS

To view attachments in the electronic version:

1. Go to <View>; <Navigation Pane>; <Attachments> – OR – Click on the "Paper Clip" icon at the left.
2. Double click on the document to open.