

# Cryptosporidiosis Investigation Guideline

**CONTENT:**

**VERSION DATE:**

**Investigation Protocol:**

- Investigation Guideline 06/2012

**Supporting Materials found in attachments:**

- Fact Sheet 06/2012
- Daycare Providers, Sample Notification Letter 05/2012
- Daycare Providers, Control Guidelines 04/2009
- Daycare Parents, Sample Notification Letter 04/2009
- Daycare Parents, Public Outbreak Notice 04/2009
- Diapering Guidelines 04/2009
- Physicians, Sample Notification Memo 04/2009
- Pool Operators, Sample Notification Letter 04/2009
- Pool Operators, Control Guidelines 04/2009
- Public Outbreak Notice 04/2009

**Revision History:**

<b>Date</b>	<b>Replaced</b>	<b>Comments</b>
06/2012	04/2009	Minor formatting changes to investigation guideline. Changes to Laboratory Analysis. Changes to Standard Investigation sections to agree with EpiTrax system. Added new reporting for and fact sheet.
02/2012	-	Removed references to KS-EDSS. Updated case definition to 2012. Additional edits are required in future with guideline.

# Cryptosporidiosis

## Disease Management and Investigative Guidelines

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### CASE DEFINITION (CDC 2012)

#### Clinical Description for Public Health Surveillance:

- A gastrointestinal illness characterized by diarrhea and one or more of the following: diarrhea duration of 72 hours or more, abdominal cramping, vomiting, or anorexia.

#### Laboratory Criteria for Case Classification:

##### Confirmed:

- Evidence of *Cryptosporidium* organisms or DNA in stool, intestinal fluid, tissue samples, biopsy specimens, or other biological sample by certain laboratory methods with a high positive predictive value (PPV), e.g.,
- Direct fluorescent antibody [DFA] test,
- Polymerase chain reaction [PCR],
- Enzyme immunoassay [EIA], or
- Light microscopy of stained specimen.

##### Probable:

- The detection of *Cryptosporidium* antigen by a screening test method, such as immunochromatographic card/rapid card test; or a laboratory test of unknown method.

### LABORATORY ANALYSIS

Acid-fast staining methods, with or without stool concentration, are most frequently used clinically. For greatest sensitivity and specificity, immunofluorescence microscopy is the method of choice (followed closely by enzyme immunoassays). Molecular methods are mainly a research tool.

For testing at the Kansas Health and Environmental Laboratory (KHEL):

- KHEL will provide testing upon request for a case meeting at least one of the following criteria: watery diarrhea, immuno-suppressed, < 5 years of age, institutionalized, or contact of a known case.
  - Performed ONLY when the R/O *Cryptosporidium* box is checked on the laboratory request form.
- Contact KHEL at 785-296-3718 before sending.
- Collection: Parasite (O & P) Feces Mailer. The traditional two vial system is preferred but the commercially available one vial system is accepted.
- Specimen: Feces, marble size, mixed well in 10% formalin and PVA bottles
- Timing of specimens: Collect three specimens within a 10-day period while a person is symptomatic or within 2 weeks after diarrhea resolves..
- Do not refrigerate the preserved samples. If there is a delay in obtaining the preservatives, refrigerate untreated stool specimens at 4°C (do not freeze) for up to 48 hours. Once preserved, the specimens can be stored and transported at room temperature.
- For additional information and/or questions concerning isolate submission, and laboratory kits call (785) 296-1620 or refer to online guidance at [http://www.kdheks.gov/labs/lab\\_ref\\_guide.htm](http://www.kdheks.gov/labs/lab_ref_guide.htm)

## EPIDEMIOLOGY

Cryptosporidiosis has a worldwide distribution. In the United States, children < 2 years of age, animal handlers, travelers to endemic areas, men who have sex with men, immunocompromised individuals and those in close contact with infected individuals are most likely to be infected. Outbreaks have been associated with daycares, public drinking water, swimming pools and other contaminated bodies of water. Cryptosporidium is resistant to chlorine and filtration systems are critical for the safety of public water supplies. Most swimming pools sand filters will not remove oocysts from contaminated water.

## DISEASE OVERVIEW

### A. Agent:

Many species of *Cryptosporidium* exist that infect humans and a wide range of animals. Although *Cryptosporidium parvum* and *Cryptosporidium hominis* (formerly known as *C. parvum anthroponotic* genotype or genotype 1) are the most prevalent species causing disease in humans, infections by *C. felis*, *C. meleagridis*, *C. canis*, and *C. muris* have also been reported.

### B. Clinical Description:

A parasitic infection characterized by profuse and watery diarrhea. Additional symptoms include weight loss, stomach cramps, nausea, vomiting, and low-grade fever. If left untreated, symptoms may occur intermittently for weeks and/or months. Persons that are immunodeficient, especially with HIV, are often unable to clear the parasite and may have a prolonged clinical course that may contribute to death.

### C. Reservoirs:

Humans, cattle and other domestic animals.

### D. Mode(s) of Transmission:

Fecal-oral, including: person-to-person, animal-to-person, waterborne and foodborne. The oocysts are resilient and may survive in the environment for months. They are resistant to concentrations of chlorine and other disinfectants commonly used in the treatment of drinking water but may be killed by heat or removed by adequate filtration.

### E. Incubation Period:

Range 1-12 days; average 7 days.

### F. Period of Communicability:

A case is considered communicable as long as oocysts are being shed in their stools. Excretion continues in stools for several weeks after symptoms resolve. Oocysts may remain infective outside the body for 2-6 months under ideal environmental conditions.

### G. Susceptibility and Resistance:

It is unknown if re-infection and/or latent infection with reactivation can occur.

### H. Treatment:

A 3-day course of nitazoxanide oral suspension is recommended for treatment of children 12 months of age and adults. In immunocompromised patients with

cryptosporidiosis, oral administration of Human Immune Globulin or bovine colostrum has been beneficial.

<b>Immunocompetent Persons Nitazoxanide Dosages for Diarrhea Caused by Cryptosporidium</b>	
<b>Adult dosage (<math>\geq 12</math> years)</b>	500 mg BID x 3 days
<b>Pediatric dosage</b>	1-3 years: 100 mg BID x 3 days
	4-11 years: 200 mg BID x 3 days

## **NOTIFICATION TO PUBLIC HEALTH AUTHORITIES**

Cryptosporidiosis shall be designated as infectious or contagious in their nature, and cases or suspect cases shall be reported within seven days:

1. Health care providers and hospitals: report to the local public health jurisdiction
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**

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

*As a nationally notifiable condition, cryptosporidiosis cases require a STANDARD report to the Center of Disease Control and Prevention (CDC).*

1. STANDARD reporting requires KDHE-BEPHI to file an electronic report for cases within the next reporting cycle.
  - KDHE-BEPHI will file electronic reports weekly with CDC.
2. Local public health jurisdiction will report information as requested in the Kansas electronic surveillance system, as soon as possible, ensuring that the electronic form is completed within 7 days of receiving a notification of a report.

## **INVESTIGATOR RESPONSIBILITIES**

- 1) [Report](#) all confirmed, probable and suspect cases to the KDHE-BEPHI.
- 2) Use the [case definition](#), to confirm the diagnosis with the medical provider.
- 3) Conduct [case investigation](#) to identify potential source of infection.
- 4) Conduct [contact investigation](#) to locate additional cases and/or contacts.
- 5) Identify whether the source of infection is major public health concern,
  - Involvement of a recreational water source.
  - Involvement of foodhandler, daycare, or a direct patient care provider.
  - Commercial raw milk or water supply involved.
- 6) Initiate control and prevention measures to prevent spread of disease.
- 7) Complete and report information requested in the state electronic surveillance system.
- 8) As appropriate, use the notification letter(s) and the disease [fact sheet](#) to notify the case, contacts and other individuals or groups.

## STANDARD CASE INVESTIGATION AND CONTROL METHODS

### Case Investigation

- 1) Contact the medical provider who ordered testing of the case or is attending to the case and obtain the following information. (This includes medical records for hospitalized patients.)
  - Obtain data on symptoms, onset date and time and recovery date and time.
  - Determine if further laboratory testing is needed.
  - Collect case's demographic data and contacting information (birth date, county, sex, race/ethnicity, address, phone number(s))
  - Record hospitalizations: location and duration of stay
  - Record outcomes: survived or date of death
- 2) Interview the case to determine source, risk factors and transmission settings:
  - At least 3 phone attempts at different times of day should be made before the [Generic Letter to Case](#) is used or the case is closed as lost to follow-up.
  - For **12 days** prior to symptom onset (unless otherwise indicated) examine:
    - Association to international adoption or refugee screening
    - Water exposures:
      - Source of water at home and work.
      - Recent plumbing / construction work on water system at home
      - Accidental ingestion of untreated water
      - Water activities such as fishing or boating (specify)
      - Swim or wading in recreational water (type, location, and dates)
    - Animal exposures:
      - Visitation or residence on farm
      - Visit to animal exhibits
      - Exposure to manure
      - Contact with pets (indicate type of animal and if any were recently acquired or ill)
    - Food exposures:
      - Unpasteurized (raw) milk or unpasteurized milk products
      - Unpasteurized juice or cider
      - Produce from farm or farm stand
      - Bottled water with flavors or vitamins
    - Other exposures:
      - Gardening and hand hygiene after handling dirt
      - Sexual activity may have resulted in contact with feces
      - Contact with others with similar symptoms or diagnosed with cryptosporidiosis
    - Travel History (**15 days** prior to symptom onset):
      - Outside of USA, Kansas, or county (specify dates and locations)
- 3) Case finding and transmission setting:
  - Identify cases occupation and involvement in the any of the following (note locations and dates attended and worked if ill):
    - Food handler
    - Health care

- Group living, day care, or school
  - Laboratory work (including class attendance)
- 4) Investigate epi-links among cases (clusters, household, co-workers, etc).
- If the case had contact with person(s) who have/had the disease or if there was a possible point source of infection, determine if the other “cases” have been reported to the State:
    - Use names and birthdates of possible cases to search the electronic surveillance system.
    - If found, record the previously reported case’s record number in the notes of the case you are investigating.
  - Highly suspected cases, that have not previously been reported should be investigated as a suspect case and reported in the state electronic surveillance system.
  - For suspected [outbreaks](#) refer to Managing Special Situations section.

### Contact Investigation

- 1) Consider case activities since diarrhea began, including occupation:
  - Recreation water use (location, date, activities)
  - Food handling (location, date, activities)
  - Sexual contacts
  - Daycare attendance
- 2) Based on identified activities, examine dates and locations during the period from illness onset till the resolution of symptoms to identify potential contacts.
- 3) Contacts are defined as sexual partners, household members, daycare workers and attendees and those that may have consumed food, water or other beverage or bathed in a recreational water body that is known to be a source of infection.
- 4) ONLY if a risk of transmission exists, create a line listing of contacts at-risk of developing disease. Note possible high risk contacts
- 5) Follow-up symptomatic contacts as suspect cases.
- 6) Follow-up with household and close contacts (especially high risk contacts) as recommended under [Contact Management](#).
- 7) Institute control measures; see [Isolation, Work and Daycare Restrictions](#).

### Isolation, Work and Daycare Restrictions

Cryptosporidiosis is not a disease considered for quarantine or isolation under Kansas Administrative Code; however, the following guidelines are suggested:

- Children with diarrhea may not attend daycare until symptoms have resolved for 24 hours.
- Food handlers are restricted from handling food, or are excluded from work when they serve high risk groups, until diarrhea has resolved for 24 hours.
- Healthcare workers involved in direct patient care (feeding patients, handling or dispensing medications, ect.) are considered food handlers and are subject to food handling restrictions.
- Cases should not swim or engage in other form of recreational water use until 2 weeks after symptoms resolve.

## Case Management

Generally not indicated unless the case works in a daycare and/or food service position (including direct patient care); in which case, follow-up is recommended to ensure compliance with control recommendations.

## Contact Management

Contacts at risk of serious complications from disease or who pose an increased risk to others because of their activities (i.e., daycare attendees, immunocompromised, and/or frequent swimmers) should be informed of the signs and symptoms of illness, to seek medical attention if symptoms develop and to avoid activities during illness that may spread the disease.

## Environmental

- 1) More than one case associated with a childcare facility requires an inspection of the facility. 3% hydrogen peroxide is the disinfectant of choice for prevention of crypto in child-care facilities. See Managing Special Situations for [Childcare settings](#).
- 2) More than one case associated with an aquatic facility requires an inspection of the facility. Hyper-chlorination of water may be needed. See Managing Special Situations for [Swimming Pools and Aquatic Facilities](#).
- 3) For cases associated with a public water supply, see Managing Special Situation for Public Water Supplies. Precautions include using only water for drinking, washing or cooking that has been:
  - Purified by boiling for 1 minute;
  - Distilled; or
  - Filtered with filters that are labeled as able to remove crypto; reverse osmosis; absolute pore size of 1 micron or smaller; and/or tested and certified by NSF Standard 53 for cyst removal or cyst reduction.

## Education

- 1) Provide basic instruction in fecal-oral modes of transmission and personal hygiene, emphasizing proper hand washing techniques.
- 2) Household members should be advised to thoroughly wash their hands after toileting, changing diapers, and assisting a child with toileting; as well as, before preparing, serving and eating meals. Serve food individually and not family style.
- 3) Discuss risks associated with drinking untreated surface water, including private water supplies and water from streams or lakes. Generally, persons should be informed about the risks of both giardiasis and cryptosporidiosis.

## MANAGING SPECIAL SITUATIONS

### A. Evaluating a Significant Increase in Crypto Cases for Community

- Determine the total number of crypto cases reported for the month.
- Create a 5 year history report, based on following variables:
  - For a 5-year period ending the previous year.
  - By month; from the current month; through the current month.
  - Case status = Confirmed, probable, and/or suspect
  - Disease = Cryptosporidiosis
  - For chosen geographic area (i.e., county or region)
- Determine the median number of cases for the previous five years.
- If the current number of cases is greater than 2x the median number of the previous 5 years (disease action threshold), investigate as a possible outbreak.

### B. Outbreak (and Significant Increase in Disease) Investigation:

- Outbreak definition: Two or more cases clustered in time and space with a suspected common source.
- Initial notifications:
  - Notify KDHE immediately, 1-877-427-7317.
  - Notify internal and local partners – including representatives from different disciplines (i.e. environmental health specialists, laboratories)
  - Notify and mobilize all community partners that may be impacted; instruct them to intensify control measures.
    - Aquatics operators/managers
    - Child care programs
    - Immunocompromised persons
    - Schools
    - Nursing homes / extended care facilities
    - Restaurants and hotel/motels
    - Providers of public water supplies (PWSs)
    - Other important community partners that might be impacted
- Consult the following KDHE resources:
  - [Foodborne Illness and Outbreak Investigation Manual](#) for food.
  - [Control of Enteric Outbreaks in Child-Care Facilities](#) for child-care.
- Identify a team leader for local case investigators. The team leader is responsible for tracking of new cases in the jurisdiction; noting what needs to be done; and providing updates to local, regional and state partners.
- Communicate with other health departments and agencies:
  - Use periodic, regularly scheduled conference calls with key contacts to keep informed, plan next steps and share information.
  - Decide how to maintain and share information outside of the calls. (i.e., e-mail, fax, website). Make sure communication method is effective.
  - After reviewing resources and contingency plans, request assistance as needed from regional partners or state health department.

- Organize and maintain all data related to outbreak
  - Keep logs of phone calls regarding the outbreak.
  - Document the number of hours spent on outbreak for future reference in budgeting and resource allocation.
  - Create and maintain a line listing of cases that includes:
    - Record number;
    - Name and DOB (or age);
    - Symptoms and onset date;
    - Source of exposure (i.e., setting; animal contact; recreational water; drinking water source; travel; restaurant);
    - Specimen collection date and lab results;
    - Case status (i.e., confirmed, probable, suspect)
- Data collected will be reported through the Kansas EpiTrax system.
- Evaluate findings and all relevant information to identify population(s) at risk of infection based on scope and intensity of the outbreak;
  - Use the information collected to define:
    - Person: who is getting ill (i.e., age, gender, immunocompromised, occupations); associations to drinking water sources, daycares, recreational water or animal exposure 2 weeks before onset.
    - Place: where are the cases; to what settings are they associated; use plot maps.
    - Time: when did it start and is it still going on; use epi curves
  - Establish an official case definition to assist with counting cases and monitoring the outbreak.
- Active case-finding and surveillance should be activated at the beginning of the outbreak to classify as many confirmed cases as possible to help identify the source of the outbreak.
  - Contact medical providers about need to consider crypto testing and reporting of all suspected cases with watery diarrheal symptoms.
  - Survey hospitals, emergency departments, and physician's offices for suspect cases of watery diarrheal illness.
  - Examine records of patients with diarrhea at nursing homes.
  - Examine reports of school absenteeism for diarrheal illness.
  - Inquire about diarrheal illness in day-care facilities.
  - If possible, establish a hotline for outbreak-related calls. (i.e., self reported cases)
- If no association is identified: consider the need for additional laboratory testing to rule out false-positive tests; as well as, using additional surveys and more intensive epidemiological studies to evaluate the situation.
- Engage media to help disseminate public health messages.
  - Establish contact points with media sources.
  - If needed, form a working group to establish a relationship with media.
  - Use fact sheets and prepared press releases to reinforce educational efforts on healthy swimming and hand washing basics.
  - Send out frequent updates to keep media correctly informed.

- After the increase in cases or outbreak is under control:
  - Active surveillance continues for two incubation periods (i.e., 4-6 weeks) after case numbers have fallen below the disease action threshold; any increases in disease should be examined to determine if new groups are being affected and/or if response modifications are needed.
  - Assist state in collecting data needed to complete the required reports of waterborne, foodborne or person-to-person disease to the CDC.
  - Contact all impacted community partners:
    - Notify that the increase in cases or outbreak has been controlled.
    - Debrief to identify barriers to control measures and how to address.
    - Discuss how well communication worked between partners and
    - Examine the effectiveness of the distributed public health messages.
  - As needed, modify control strategies and revise/distribute health communication messages based on debriefings and the overall evaluation of response.
  - Share lessons learned with local, state, and national partners.
- Important references for outbreak situations:
  - Cryptosporidium and Water. A Public Health Handbook (1997): [www.cdc.gov/ncidod/diseases/crypto/crypto.pdf](http://www.cdc.gov/ncidod/diseases/crypto/crypto.pdf)
  - Cryptosporidiosis Outbreak Response & Evaluation Guidelines. [www.cdc.gov/parasites/crypto/resources/core\\_guidelines.pdf](http://www.cdc.gov/parasites/crypto/resources/core_guidelines.pdf)
  - Recreational Water Illness Outbreak Response Toolkits:
    - [www.cdc.gov/healthywater/emergency/toolkit/rwi-outbreak-toolkit.html](http://www.cdc.gov/healthywater/emergency/toolkit/rwi-outbreak-toolkit.html)
    - [www.kdheks.gov/beh/water\\_guidelines.htm](http://www.kdheks.gov/beh/water_guidelines.htm)

### **C. Public Drinking Water Supply:**

- The National Primary Drinking Water Regulations (NPDWR) (141.2) define a waterborne disease outbreak as the significant occurrence of acute infectious illness, epidemiologically associated with the ingestion of water from a public water system which is deficient in treatment, as determined by the appropriate local or State agency.
- Upon learning of a waterborne disease outbreak, public water suppliers (PWSs) are required to issue a Tier 1 public notice as soon as practical or within 24 hours via radio, hand delivery, posting or other method specified by the state to reach all persons served by the PWS (not just billing customers). PWSs must initiate consultation with KDHE within 24 hours for all Tier 1 situations. PWSs may consult either with 1) KDHE District Office Staff; or 2) KDHE Bureau of Water, Public Water Supply Section in Topeka.
- When the source of the crypto outbreak has not been identified but the association to the ingestion of water from a PWS has not been ruled out; the following steps are recommended:
  - Response should be determined by a task force that includes representatives from health departments, water regulation, water utilities and public information officers, who are supported, as needed, by advisory groups.
  - Information is needed to evaluate risk; examined in cooperation with local water treatment plant and KDHE Public Water Supply Section:

- Identify source(s) and types of water (i.e., spring, surface, well)
- Determine type(s) of treatment.
- Determine number of PWSs and coverage areas; compare to epidemiologic plot maps.
- Review water quality data. Graph peak turbidity levels each day before and during the suspected outbreak period; compare to epidemiologic curves.
- Any recent changes in treatment protocol, temporary malfunctions or treatment failures before cases began.
- Any chronic filtration problems. (i.e., frequent turbidity spikes in the 0.3 – 1.0 NTU range.)
- Any recent repairs to the plant or distribution system, vandalism or unauthorized access; examine case distribution with affected sites.
- Determine whether system pressure recently fell to less than 5 psi.
- Determine whether there have been any recent changes in the water shed (i.e., flood, drought, land use, sewage overflow) that may have increased chances for crypto contamination.
- Response is based upon risk:
  - Health risk no longer suspected: event determined not to be associated to drinking water source; no further action.
  - Health risk indeterminate at current time: heighten water monitoring and surveillance activities for an agreed upon period and re-evaluate situation as needed; notifications to immunocompromised persons may be considered.
  - Health risk suspected (but epidemiological association is not strong and PWS is not deficient in treatment): considering releasing notifications based on local assessments of risk; modify notifications as needed based special populations at risk.
  - Health risk strongly suspected: issue Tier I notification with boil water advisories.
- Suggested notifications to consider when there is not enough evidence to support a Tier I notification:
  - Health risk possible for immunocompromised persons: issue notice directed to immunocompromised that increased level of suspicion exists regarding possible presence of parasites in water.
  - Health risk possible for general population: strongly recommend water use precautions for immunocompromised and advise public that they may wish to take precautions.
- Templates for notifications can be found in the following resources:
  - Cryptosporidium and Water. A Public Health Handbook (1997): [www.cdc.gov/ncidod/diseases/crypto/crypto.pdf](http://www.cdc.gov/ncidod/diseases/crypto/crypto.pdf)
  - KDHE Public Water Supply resources: [www.kdheks.gov/pws/pn.html](http://www.kdheks.gov/pws/pn.html)
- After boil water advisories are rescinded; notices need to go out by proper media outlets to inform public water users how to restart and flush water-using fixtures. This includes private water lines, commercial ice makers, medical and dental equipment, and fixtures used in commercial establishments.

#### **D. Child Care Settings:**

Coordinate activities with school nurse and/or administration.

For a single case association in a child-care setting:

- Reinforce the practice of frequent and good hand washing techniques for all children and adults. (Crypto is not killed by alcohol gels or hand sanitizers.)
- Reinforce good diapering practices including keeping diaper changing areas separate from children's play areas and keeping diapering and food-handling areas and responsibilities separated.
- Educate staff and parents:
  - Inform all staff about the symptoms of crypto, how it is spread, and control measures to be followed.
  - Inform parents about the symptoms of crypto, how it is spread, outbreak control policies, and needed changes in hygiene and cleanliness.
  - Notify parents of children who have been in direct contact with a child or adult caregiver with diarrhea; informing them to contact the child's healthcare provider if their child develops diarrhea.
  - Inform parents of children and staff about crypto's potential to cause severe disease in immunocompromised persons. Immunocompromised persons should consult their healthcare provider for further guidance.
- Exclude any child with uncontrolled diarrhea, from the setting until the diarrhea has stopped for 24 hours. This includes children that have not been diagnosed with cryptosporidium.
  - Uncontrolled diarrhea: increased number of stools, increased stool water, and/or decreased form that is not contained by the diaper
- Children with or who had cryptosporidium that have no diarrhea (i.e., asymptomatic) may remain in the facility if extra precautions are taken for 2 weeks following the resolution of their diarrhea.
  - Observe all hand washing and assist when needed.
  - Ensure the child's hands are washed at appropriate times.
  - Adults should ensure that they wash their hands after helping a child use the toilet or after diapering a child and before handling food.
  - The child should not participate in water-play activities for 2 week period following diarrhea resolution.
  - If the child requires diaper changes:
    - Use disposable gloves and paper over the diaper changing surfaces. Change gloves and papers after each diaper change.
    - Ensure clothing is worn over diapers.
    - If possible, those who change diapers should not prepare/serve food.
  - Handle soiled clothing appropriately. Do not rinse out, store in a labeled plastic container or bag before returning home with parents.
  - Disinfect surfaces and objects used by the child, including but not limited to bathrooms, diaper-changing areas, food-prep area, tabletops, high chairs and toys with a solution of 3% hydrogen peroxide.
- Establish, implement and enforce polices on water-play that:
  - Exclude children with diarrhea from water-play or swimming activities.
  - Discourage children from getting the water in mouths.

- For swimming activities, have children shower with soap before entering the water or have staff wash younger children, particularly the rear end.
- Take children on frequent bathroom breaks or check diapers often.
- Change diapers in a diaper changing area not by the water.
- Do not use the fill and drain swimming pools.
- Assign adults with diarrhea to jobs that will lower possibility of transmission.
- Active case-finding;
  - If the center includes diapered children, interview the operator and inspect attendance records to identify suspect cases among children or staff during the past month.
  - The day care operator should be instructed to call the health department immediately if new cases of diarrhea occur.
  - The facility should be called or visited once each week for 6 weeks after onset of the last case to verify that surveillance and appropriate preventive measures are being carried out.
  - Newly symptomatic children should be managed as outlined above.

For more than one case association to a child-care setting:

- Notify and mobilize operator.
  - Along with recommendations “For a single case association...” there will be a need to intensify control measures.
- A thorough inspection of the facility is needed. Examine situations that may encourage transmission and are not in line with recommendations.

Intensified control measures in a child-care setting:

- When enforcing good diapering practices, recommend the following:
  - Use of disposable gloves and paper over the diaper changing surfaces. Change gloves and papers after each diaper change.
  - Clothing should be worn over diapers to reduce the chance of leaks.
  - If possible, those who change diapers should not prepare or serve food.
- When educating the staff and parents, inform them about the outbreak.
- Encourage and educate on the need to exclude symptomatic children from child-care settings and that extra precautions are needed with asymptomatic children with crypto.
- Depending on the facilities capabilities, recently returning children can be grouped together in one classroom to minimize the exposure to uninfected.
- Terminate all water play or swimming activities – this includes any play or activities involving pool visits.
- Disinfect surfaces and objects with a 3% concentration of hydrogen peroxide. Soak contaminated surfaces for 20 minutes. This includes:
  - Bathrooms, diaper areas, food prep surfaces, faucets and toilet handles.
  - Toys, tabletops, and high chairs more frequently (at least twice daily).
- Dishwasher-safe toys may be washed in a dishwasher with a dry cycle or a final rinse that exceeds 113°F for 20 minutes or 122°F for 5 minutes or 162°F for 1 minute.
- Cloth toys may be washed and heat-dried on the highest clothes dryer heat setting for 30 minutes.

- Put away toys that cannot be disinfected until the outbreak is over. Dispose of old play dough and use a new, individual container for each child.
- Closing day-care centers is not recommended, because infected children might be placed in other day-care centers.
  - If there is evidence of noncompliance and/or continued transmission within the center – it can be closed to new admissions.
- Continue active case-finding. Instructing all day care operator(s) to inform health department of new cases and calling or visiting those facilities with associated cases weekly for 6 weeks after onset of the last case.
- Refer to the [KDHE Control of Enteric Disease Outbreaks in Childcare Facilities](#) for additional information.

#### **E. Swimming Pools and Aquatic Facilities:**

The following are standard activities that are recommended before an increase of crypto is seen in your community; LHD's may perform these during National Recreational Water Illness (RWI) Week, the week before Memorial Day:

- Update e-mail, fax and/or phone list for aquatics operators/managers.
- Begin educational campaigns directed at patrons and staff of facilities on crypto, how it is spread, and how they can protect themselves and others.
  - Resources at: [www.cdc.gov/healthyswimming/health\\_materials.htm](http://www.cdc.gov/healthyswimming/health_materials.htm) and at [www.kdheks.gov/beh/water\\_guidelines.htm](http://www.kdheks.gov/beh/water_guidelines.htm).
- Ensure that diarrhea-exclusion policies are implemented and enforced at facilities, including:
  - Alerting swim coaches to suspend swimmers with diarrhea.
  - Reassignment of staff with diarrhea to duties that do not require them to enter the water.
- Ensure that a fecal incident response plan is in place at the facility and that all staff is well trained on the appropriate response.
- Encourage the use of supplemental disinfection systems or actions known to inactivate crypto.
- Encourage facilities to review resources from the National Swimming Pool Foundation and to sign up for the crypto outbreak alert system at [www.nspf.org/en/Resources/ref\\_links/crypto\\_toolkit.aspx](http://www.nspf.org/en/Resources/ref_links/crypto_toolkit.aspx).

#### For one case associated to an aquatic setting:

- If a case used the facility within the 2 weeks prior to or after symptom onset:
  - Alert the facility operator to the situation.
  - Review the standard activities listed above with the operator.
  - Attempt to identify any potential cases that were not previously reported.
  - Consider need for further action, including hyper-chlorination, based on the potential risk of transmission and community level of crypto activity.
  - Utilize the [Sample Letter for Pool Operators](#), as needed.

#### For more than one case association to an aquatic setting:

- Notify and mobilize operator:
  - Review the standard activities (listed above) with operator.
  - Inform of the need to intensify control measures.

- A thorough inspection of the facility is needed, examining situations that encourage transmission and practices that are not in line with recommendations.
  - The CDC’s [“Environmental Health Outbreak Investigation Survey: Swimming Pool Venue”](#) should be used to inspect the aquatic facility.
  - Ensure that operators maintain and monitor pH and free residual chlorine levels to prevent transmission of most waterborne pathogens.
  - Consult with BEPHI on the need to collect water samples. Instructions on collection will be provided, as needed.
- If a period of possible contamination is identified, examine facility records during that period for events (i.e., swim meets) and other group activities, especially those involving high-risk groups (i.e., child care groups)
- Contact groups, as needed, to make them aware of signs of illness, to stop further transmission of disease and to identify new cases.

Intensified Crypto Control Measures for Aquatic Facilities include:

- Reinforce efforts to educate patrons about crypto, how it is spread in the water, and how they can protect themselves and others
- Reinforce diarrhea-exclusion policies for patrons and staff
  - Post diarrhea-exclusion messages that can be seen and understood.
  - Alert swim coaches to suspend swimmers who are ill with diarrhea.
  - Reassign staff ill with diarrhea to duties not requiring entry into water.
- Hyper-chlorinate the water (when not being used) to levels that will inactivate crypto (contact time of 15,300). See chart below for chlorine levels needed in parts per million (ppm) based on the amount of time the free chlorine levels are maintained (disinfection time).

Chlorine Levels (ppm)	Disinfection Time
10	25.5 hours
20	12.75 hours
40	6.5 hours

- If hyper-chlorination has not occurred since the cases were at the facility, instruct operator to perform hyper-chlorination immediately.
- Recommend hyper-chlorinating weekly as a preventive measure.
- Clean or dispose of materials used in water that may retain water (i.e. porous mats or toys).
- Discuss with operator(s) other possible steps to prevent transmission such as suspending group events, closing “kiddie pools” and/or limiting access to diapered/toddler-aged children.
- Release information by an appropriate media outlet that those at risk for serious illness should consider not swimming during an outbreak.

**F. Animals in Public Settings:**

- Consult with the Office of Surveillance and Epidemiology.
- Refer to [“Animals in Public Places Compendium.”](#)

## DATA MANAGEMENT AND REPORTING TO THE KDHE

- A. Organize and collect data.
- B. Report data via the state electronic surveillance system.
  - Especially data that collected during the investigation that helps to confirm or classify a case. (For epi-linked cases, please include the Record Number of the related case.)

## ADDITIONAL INFORMATION / REFERENCES

- A. **Treatment / Differential Diagnosis:** American Academy of Pediatrics. 2009 Red Book: Report of the Committee on Infectious Disease, 28th Edition. Illinois, Academy of Pediatrics, 2009.
- B. **Epidemiology, Investigation and Control:** Heymann. D., ed., Control of Communicable Diseases Manual, 19th Edition. Washington, DC, American Public Health Association, 2009.
- C. **Case Definitions:** CDC Division of Public Health Surveillance and Informatics, Available at: [www.cdc.gov/ncphi/diss/nndss/casedef/case\\_definitions.htm](http://www.cdc.gov/ncphi/diss/nndss/casedef/case_definitions.htm)
- D. **Kansas Primary Drinking Water Regulations:** [www.kdheks.gov/pws/regs/drinking\\_water\\_regs.pdf](http://www.kdheks.gov/pws/regs/drinking_water_regs.pdf)
- E. **Kansas Pubic Water Supply – Public Notification:** [www.kdheks.gov/pws/pn.html](http://www.kdheks.gov/pws/pn.html)
- F. **KDHE Foodborne Illness and Outbreak Investigation Manual:** Available at: [www.kdheks.gov/epi/download/kansas\\_foodborne\\_illness\\_manual.pdf](http://www.kdheks.gov/epi/download/kansas_foodborne_illness_manual.pdf)
- G. **KDHE Control of Enteric Disease Outbreaks in Childcare Facilities:** [www.kdheks.gov/epi/download/Enteric\\_Disease\\_in\\_Daycare\\_Centers.pdf](http://www.kdheks.gov/epi/download/Enteric_Disease_in_Daycare_Centers.pdf)
- H. **KDHE Recreational Water Toolkit:** [www.kdheks.gov/beh/water\\_guidelines.htm](http://www.kdheks.gov/beh/water_guidelines.htm)
- I. **Animals in Public Places Compendium:** [www.kdheks.gov/epi/human\\_animal\\_health.htm](http://www.kdheks.gov/epi/human_animal_health.htm)
- J. **Cryptosporidiosis Outbreak Response & Evaluation (CORE) Guidelines (CDC):** [www.cdc.gov/parasites/crypto/resources/core\\_guidelines.pdf](http://www.cdc.gov/parasites/crypto/resources/core_guidelines.pdf)
- K. **Cryptosporidium and Water.** A Public Health Handbook (1997). [www.cdc.gov/ncidod/diseases/crypto/crypto.pdf](http://www.cdc.gov/ncidod/diseases/crypto/crypto.pdf)
- L. **Fecal Incident Response Recommendations for Pool Operators:** [www.cdc.gov/healthywater/pdf/swimming/pools/fecal-incident-response-recommendations.pdf](http://www.cdc.gov/healthywater/pdf/swimming/pools/fecal-incident-response-recommendations.pdf)
- M. **Environmental Health Outbreak Investigation Survey: Swimming Pool Venue:** [www.cdc.gov/healthywater/pdf/emergency/environmental-health-outbreak-survey-swimming-pool.pdf](http://www.cdc.gov/healthywater/pdf/emergency/environmental-health-outbreak-survey-swimming-pool.pdf)
- N. **Recreational Water Illness Outbreak Response Toolkit (CDC):** [www.cdc.gov/healthyswimming/rwi\\_outbreak.htm](http://www.cdc.gov/healthyswimming/rwi_outbreak.htm)
- O. **Additional Information (CDC):** [www.cdc.gov/health/default.htm](http://www.cdc.gov/health/default.htm)

# Supporting Materials

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