



Cryptosporidiosis Investigation Guideline

Contents

CASE DEFINITION	1
LABORATORY ANALYSIS	1
EPIDEMIOLOGY	2
DISEASE OVERVIEW	2
NOTIFICATION TO PUBLIC HEALTH AUTHORITIES	3
INVESTIGATOR RESPONSIBILITIES	3
Case Investigation	4
Contact Investigation	5
Isolation, Work and Daycare Restrictions.....	5
Case Management	5
Contact Management	6
Environmental.....	6
Education	6
MANAGING SPECIAL SITUATIONS	7
A. Evaluating a Significant Increase.....	7
B. Outbreak (and Significant Increase in Disease)	7
C. Public Drinking Water	9
D. Child Care Settings	10
E. Swimming Pools and Aquatic Facilities	12
F. Animals in Public Settings.....	14
DATA MANAGEMENT	15
ADDITIONAL INFORMATION	16
Fact Sheet 	
Daycare providers' guidelines 	
Daycare parents' notification letter 	
Daycare providers' notification letter 	
Public health notification (daycares) 	
Public health notification (general) 	
Physicians, notification memo 	
Pool Operators guidelines 	
Pool Operators notification 	

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Revision History:

Date	Replaced	Comments
05/2018	06/2012	Notification section and restrictions modified with the requirements of revised regulations. Laboratory analysis section updated. Updated web links.
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. (Removed references to KS-EDSS 02/2012)

Cryptosporidiosis

Disease Management and Investigative Guidelines

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

Contact KDHE (877-427-7317) to seek approval for multiplex PCR testing at the Kansas Health and Environment Laboratory (KHEL). Only after approval will specimens that were collected as part of public health investigations be tested by multiplex PCR. If screening results are negative and a parasite pathogen is still suspected, specimens for microscopy should then be collected.

1. Multiplex PCR testing

- Specimen: ½ dollar to ping pong ball sized amount of stool placed and emulsified in a Cary-Blair transport vial.
- Must be received by KHEL within 4 days of collection.

2. Microscopy with Modified Acid Fast stain

- Specimen: ½ dollar to ping pong ball sized amount of stool placed and emulsified in 10% a Formalin vial and a PVA vial.
- Must be received by KHEL within 7 days of collection.

- 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. Once preserved, the specimens can be stored and transported at room temperature.
- If there is a delay in obtaining the preservatives, refrigerate untreated stool specimens at 4°C (do not freeze) for up to 48 hours.

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.

NOTIFICATION TO PUBLIC HEALTH AUTHORITIES

Suspected cases of cryptosporidiosis 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.
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 ROUTINELY NOTIFIABLE report to the Center of Disease Control and Prevention (CDC).

1. ROUTINE 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 5 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.
 - Collect all information requested in [Step 1](#)) of case investigation
 - Ensure that case is aware of his/her diagnosis.
- 3) Continue [case investigation](#) starting within 3 days of receiving a report.
 - Complete the case investigation within 5 days of receiving the report.
- 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

K.A.R 28-1-6 for Cryptosporidiosis (Control of Cases):

- Each person with a case shall be excluded from working as a food employee, health care worker, and attending or working in a child care facility, and using a recreational water facility outside the infected person’s own private residence for the duration of the acute illness until 24 hours after resolution of symptoms.

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

- A. 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](#).
- B. 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](#).
- C. 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 for the period ending the previous year for the chosen geographic area.
 - For a 5-year period ending the previous year.
- 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
- 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;

- o Source of exposure (i.e., setting; animal contact; recreational water; drinking water source; travel; restaurant);
 - o Specimen collection date and lab results;
 - o 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:
 - o 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.
 - o Place: where are the cases; to what settings are they associated; use plot maps.
 - o 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:
 - o 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:
 - Prevention & Control:
 - <https://www.cdc.gov/parasites/crypto/prevention-control.html>
 - Recreational Water Illness Outbreak Response Toolkits:
 - <https://www.cdc.gov/healthywater/emergency/preparedness-resources/outbreak-response.html>

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.
- 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.
- CDC provides a [Drinking Water-associated Outbreak Response Toolkit](#).

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.
- Additional resources include:
 - [Diapering of Children in Child Care](#)
 - Daycare parents’ notification letter 
 - Daycare providers’ notification letter 
 - Public health notification (daycares) 
 - Public health notification (general) 
 - Physicians, notification memo 

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: <https://www.cdc.gov/healthywater/swimming/>
- 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 <https://www.nspf.org/rwi-outbreak-response-toolkit>.

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.
 - CDC's "[Environmental Health Investigation Questionnaire](#)" 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. 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, using appropriate data collection tools including:
 - The [Cryptosporidiosis Reporting Form](#) can be used to collect information.
 - Alternatively, investigators can collect and enter all required information directly into EpiTrax **[Investigation]**, **[Clinical]**, **[Demographics]**, **[Epidemiological]** tabs.
 - During outbreak investigations, refer to guidance from a KDHE epidemiologist for appropriate collection tools.
- C. Report data collected during the course of the investigation via EpiTrax.
 - Verify that all data requested on the [Cryptosporidiosis Reporting Form](#) 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 and/or attached 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 to contact the case have been made:
 - Indicate 'lost to follow-up' on the **[Administrative]** tab with the number of attempts to contact the case recorded.
 - Record at least the information that was collected from the initial reporter.
 - Record a reason for 'lost to follow-up' in **[Notes]**.
- E. After the requirements 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 and close the case after ensuring it is complete and that the case is assigned to the correct event, based on the reported symptoms reported.

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
- D. **Kansas Regulations/Statutes Related to Infectious Disease:** www.kdheks.gov/epi/regulations.htm
- E. **Animals in Public Places Compendium:** www.kdheks.gov/epi/human_animal_health.htm
- F. **Recreational Water Illness Outbreak Response Toolkit (CDC):** <https://www.cdc.gov/healthywater/emergency/preparedness-resources/rec-water-outbreak-toolkit.html>
- G. **Fecal Incident Response Recommendations for Pool Operators:** <https://www.cdc.gov/healthywater/swimming/pdf/fecal-incident-response-guidelines.pdf>
- H. **Environmental Health Outbreak Investigation Survey: Swimming Pool Venue:** www.cdc.gov/healthywater/pdf/emergency/environmental-health-outbreak-survey-swimming-pool.pdf
- I. **Additional Information (CDC):** <https://www.cdc.gov/parasites/crypto/>