

Shigellosis Outbreak Response in Child Care

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Hello, and welcome to this presentation on shigellosis outbreak guidance and response in child care. My name is Lorri Taylor. I am the foodborne disease nurse epidemiologist and one of the regional communicable disease nurse consultants. I will be guiding you through this lesson and the tools in the Shigellosis Tool Kit.

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What is the picture of a typical shigellosis outbreak? It's Wednesday afternoon at 4:00 pm and you receive a call from someone at a child care facility informing you that they have a "little bit" of diarrhea in the facility. First of all, there is no such thing as a "little bit" of diarrhea in a child care facility. You discover one child had diarrhea the previous Friday, two on Monday and four more today. You determine that all of the children with diarrhea have been excluded from the facility. Three of the children have been tested by private providers and have cultures pending. On Thursday morning, you talk with the child care facility director and discover that several more children and now, some staff members are ill. Later that morning you receive lab reports on the three children and, you guessed it, they all tested positive for shigella. You have a shigellosis outbreak in a child care facility in your county. What do you do now?

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At the end of this presentation, you will be able to locate resources to manage a shigellosis outbreak in a child care facility, and identify three control measures to prevent secondary cases of shigellosis in a child care facility.

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How many *shigella* organisms does it take to make a person sick? The answer is not very many. *Shigella* organisms are small. 400 organisms can fit on the head of a pin and as few as 10 organisms can produce symptoms. Shigellosis is highly contagious. It can make you quite sick for about a week. More severe cases may require hospitalization. *Shigella* organisms are spread via the fecal-oral route. And know – if you have one case, you probably have another.

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Shigellosis is an illness of variable severity characterized by diarrhea, fever, nausea and abdominal cramps. Isolation of shigella from a clinical specimen, including sources other than the gastrointestinal tract, meets the laboratory criteria for diagnosis; however, it is almost always from a stool specimen. There are two case classifications: Confirmed and Probable. A confirmed case meets the laboratory criteria for diagnosis. A probable case is a clinically compatible case that is epidemiologically linked to a confirmed case. An epi-linked case is a case in which the patient currently has or has had clinically compatible symptoms and currently has or has had contact with one or more persons who currently have or had the disease, and transmission of the agent by the usual modes of transmission is likely to have occurred. 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.

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I would like you to know about a new resource available to help you, the Shigellosis Tool Kit. It is located in the online CD Manual, under the Outbreak Section of the manual. There is also a link in the LHD Investigation Steps under Shigellosis. The tools in the kit include guidance on control measures, investigation, and cohorting. (Cohorting is just another name for grouping the children and staff during an outbreak). There are also sample letters and questionnaires available to you in the event of an outbreak of shigellosis in a child care facility. Let's talk about the tools in the Shigellosis Tool Kit. It is important to implement control and prevention measures as early as possible. It is more important to put the control measures in place, than to find the source case of infection.

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Hand washing, hand washing, hand washing! Reinforce proper and frequent hand washing. Shigellosis is preventable. Hand washing is the single most effective measure for preventing infection. Remind and ensure that all employees wash their hands upon reporting for work, before handling food, and after changing diapers. Children and adults should wash their hands after each visit to the toilet and before eating (and generally as described in the child care facilities sanitation rules).

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In the event of an outbreak in a child care facility, one control measure that you want to implement quickly is to *exclude all symptomatic individuals*. All children, staff and volunteers with diarrhea should be excluded from the child care facility and referred to a healthcare provider for evaluation. Also, contact other child care facilities in the area to ensure that children excluded from one child care facility will not be admitted to another facility where they could potentially infect another group of children.

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Review the cohorting guidance in the Shigellosis Tool Kit. If several individuals are infected, a cohort system should be considered until all stool cultures are negative. Cohorting is a control measure used in communicable disease outbreaks. It is the practice of grouping children and staff who display similar signs and symptoms of disease together into one room. This practice effectively separates children and adults recovering from the disease from well children and staff, decreasing the likelihood of disease transmission. Used correctly, cohorting may allow a facility to remain open during an outbreak. It also allows *asymptomatic* children and staff to return to the facility and parents to return to work. *Asymptomatic* children and staff awaiting culture results and those on treatment should be cohorted in a separate area of the child care facility. This is recommended by the American Academy of Pediatrics and should be attempted as soon as possible after an outbreak is detected. Efforts should be made to look for a temporary space arrangement that can allow cohorting, such as a room or a partitioned room, including a bathroom for use by the cohorted group only, in such a way that the

cohorted children cannot be in contact with the rest of the children. Cohorted children and staff must be physically separated and not enter each other's space. The exception is the outside play area, but only if all children and staff wash their hands before and after using the area.

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When you have an outbreak, it's a good idea to advise the childcare facility director to contact his or her Licensing consultant. The Licensing consultant works closely with public health and the childcare staff to implement control measures. The DCD (Division of Child Development) Licensing consultant should be consulted about the cohort group size and child/staff ratio. The DCD usually supports the recommendations of the health department, and may be able to help you plan and designate group size and ratios. Different age groups may have to be mixed together as one cohort, but the child/staff ratio should be in accordance with the younger children in this group.

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Most individuals with shigella require only hydration and rest, and recover without any further treatment. However, some individuals may require antibiotic treatment and hospitalization. Refer to the healthcare provider regarding antibiotic treatment. Antibiotics may be used, but are usually reserved for more severe cases or hospitalized individuals. Wide use of antibiotics is not recommended during an outbreak because of concerns about the development of resistant strains of shigella. If an antibiotic is prescribed, it should be one that is effective against the particular strain of shigella because of antibiotic resistance in some strains. Remember, the decision to prescribe should be a clinical decision, and not a public health decision.

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There should be enhanced cleaning of the environment using an effective antiseptic solution. Inanimate objects such as toys, doorknobs, and tables are capable of harboring the shigella organism. Also, suspend the use of play dough and water tables during an outbreak. The child care staff must work with the local health department Environmental Health staff to set up the cohort area, discuss effective cleaning of the environment, and rigorously enforce proper hand hygiene in all areas of the facility.

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You will want to conduct frequent visits to the child care facility once cohorting is initiated. This may be done daily, if necessary, to ascertain that cohorting is adequate and that strict supervised hand washing practices are in use. It is the responsibility of the local health department to determine when children and staff can be released from the cohorted group. This generally occurs after two negative stool cultures. The specimens should be collected at least 24 hours apart and not earlier than 48 hours after the completion of antibiotic treatment (*if an antibiotic was prescribed and taken*).

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Now we will discuss the investigation of the outbreak. An investigation is undertaken simultaneously with the implementation of control measures. You need to determine

who and where the cases are as soon as possible. It is important that you talk with the patient or family member and not rely solely on the information in the patient's medical record. By interviewing the patient or family member, you can collect important epidemiological data that the clinician may not have asked or documented in the patient record. Furthermore, you will probably learn about additional cases. Some children in contact with known cases may be infected with the shigella organisms without exhibiting any symptoms, thus exposing others. Culture stools of all children in the classrooms where cases have been identified. A rectal swab collected by a health care worker may also be used to rapidly evaluate contacts. You will need to obtain laboratory cultures from each symptomatic child or staff member. Inform parents that their child may not be readmitted to the child care facility until the stool specimen is obtained and submitted for testing. Also, culture stools of all staff members in the facility. Since staff may have helped each other, or otherwise have been exposed at some point in time without necessarily remembering it, it is recommended that all staff be tested. Individuals who prepare or serve food should be tested as well. (This may involve foodhandlers outside of the child care facility).

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Administer a questionnaire to find additional cases. Best practice is to attempt a YES/NO questionnaire with 95% of all children, staff, and household members in a 24-hour period. You will need help! Quickly identify additional cases in the child care center, including classrooms where no cases have been reported. Distribute the questionnaire to all children, staff, and foodhandlers in the child care center. Collect the completed questionnaires the day after they are distributed. Determine who has been symptomatic and obtain a culture or rectal swab from these children or staff members.

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Next, no job is finished until the paper work is done. You have to monitor the investigation results and interpret findings. You should already have a line list, usually in a paper form, that should be in a table or spreadsheet format. List children by name and classroom, and record the following: questionnaire distributed, completed and returned; reported symptoms in a Yes/No format; onset date; specimen collection date; and results. NC EDSS will produce an Epi curve if events are entered and linked to the outbreak. The curve, or outbreak statistics, can be done periodically during the outbreak. Then, document your findings in NC EDSS. There should be an individual event created in NC EDSS for all confirmed and probable epi-linked cases. Complete each event and assign it to the state for review and approval. There will also be an outbreak event in NC EDSS. Cases should be linked to the outbreak event.

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NC EDSS outbreak events must be created by the state. Local health departments should contact the on-call epidemiologist or nurse consultant to request the creation of an outbreak event. This also provides an opportunity for the state to assist the local health department with outbreak guidance, development of control measures, and coordination of laboratory testing with the state lab. You will need to name the local lead

investigator in the outbreak event. Also, you will need to complete a line listing, as previously discussed. At the conclusion of the outbreak, the LHD must submit a narrative Outbreak Report within 30 days. The outbreak report will be attached to the outbreak event. The state will use the information in the LHD report to complete a report in the National Outbreak Reporting System, known as NORS, for the Centers for Disease Control.

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Returning to our outbreak, you recall the guidance available in the Shigellosis Tool Kit and spring into action. You notify the Communicable Disease Branch, local health department Environmental Health officials, and the Child Development Consultant. You continue your investigation and implement appropriate control measures. You continue to update your line listing, and update NC EDSS events and link them to the outbreak event. By the end of the month, you have seven confirmed cases. Additionally, there are over 40 persons with symptoms of the disease whose cultures are pending. The cases are primarily occurring among infants and young children who are pre-school and elementary-aged. The seven confirmed cases all attend the same child care center and now three elementary schools are also affected. You summarize this information in your narrative report and submit it to the state within 30 days.

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Congratulations!!! You have now completed the report of an outbreak of shigellosis in a child care facility. Thank you. All of us look forward to working with you as you learn how to prevent and manage outbreaks of diarrheal illness in childcare facilities.