

# Shigellosis Control Measures for Childcare Centers and K – 12 Schools

## Information for Local Health Departments

Provided by the NC Division of Public Health  
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### Section 1: Introduction to *Shigella* infection and control measures

#### Introduction

Shigellosis is a gastrointestinal illness that is caused by species of bacteria in the genus *Shigella*. There are four species of *Shigella* including *S. dysenteriae*, *S. flexneri*, *S. boydii*, and *S. sonnei*. Almost all cases reported in North Carolina are caused by *S. sonnei*. According to the Centers for Disease Control and Prevention, there are approximately 14,000 laboratory confirmed cases of shigellosis and an estimated 450,000 total cases (72% due to *S. sonnei*) that occur in the United States each year.

The five-year average number of *Shigella* cases reported statewide in North Carolina from 2013 – 2017 was 378 cases per year.

#### Transmission

*Shigella* bacteria are shed from the intestinal tracts of infected people and are transmitted when ingested by another person (fecal-oral transmission). While contamination of food or water can happen, the vast majority of cases reported in NC are caused by person-to-person transmission. Humans are the reservoir for *Shigella* bacteria; there is no animal reservoir. The infectious dose for shigellosis is very small, fewer than 200 organisms. As a result even seemingly minor breaches in hygiene can result in outbreaks.

#### Clinical signs and symptoms

Infection with *S. sonnei* (the most common cause of shigellosis in the US) and *S. boydii* usually cause relatively mild illness in which diarrhea may be watery or bloody. While mild and asymptomatic infections do occur, the signs and symptoms of shigellosis typically include abdominal cramping, fever and mild or severe diarrhea (with or without blood).

#### Diagnosis

Isolation of *Shigella* from any clinical specimen provides confirmatory diagnosis. Non-culture-based methods such as PCR testing of feces is becoming more common and also provides laboratory evidence of infection.

## Incubation period

The symptoms of shigellosis usually appear within one to three days of infection but may range from 12 to 96 hours.

## Outbreaks

Most outbreaks of shigellosis are associated with childcare centers. A lack of appropriate handwashing and diapering practices is associated with an increased risk of transmission of shigellosis in childcare centers. [1] While shigellosis outbreaks are less common in elementary and middle schools (as compared to childcare centers) they can occur.

## Period of infectivity

*Shigella* can be spread for as long as the organism can be isolated from a person's stool, which can be up to four weeks. Antimicrobial therapy, while not generally required in mild cases, is somewhat effective in shortening duration of illness and can decrease transmission by hastening eradication of organisms from feces.

## Public Health Significance of *Shigella* Infection

Because of the low infectious dose and significant outbreak potential, single or multiple cases of *Shigella* infection necessitate a prompt and aggressive response and strict application of control measures. Outbreaks are known to persist for weeks or months without appropriate control measures.

## Control of transmission

This document will focus on very specific control measures related to childcare centers and K – 12 schools. The general principles of control of infection are based on the following elements:

- **Preventive measures:** Good personal hygiene is the single most important preventive measure. Frequent and thorough hand washing is important before handling food, before eating and after toilet use, especially in young children who may not be completely toilet trained.
- **Control of cases:**
  - Exclusion until appropriate for re-admission
  - Treatment if indicated by clinician, best supported by antibiotic susceptibility testing
  - Re-admission based on applicable regulations, negative testing, or resolution of symptoms
  - Education on the importance of personal hygiene, particularly after using the toilet and before and after food handling.
  - Identifying symptomatic contacts and applying appropriate control measures
- **Control of environment:** Strict attention should be paid to environmental cleaning in childcare centers, institutions and food premises.

Intervention to control or prevent a shigellosis outbreak is dependent on community collaboration. If an outbreak is ongoing and involves multiple settings it is recommended that you activate your **epi team** to identify the necessary control measures and ensure their uniform application throughout the community. This has been demonstrated to be an effective means of addressing and controlling outbreaks. [2] The epi team should include, at a minimum:

- Communicable disease nursing staff
- Environmental health staff
- NC Division of Child Development and Early Education staff
- Clinicians
- Childcare operators
- School district administrators & nurses
- Public Information Officer

### **Communication**

Shigellosis cases and outbreaks can have a great impact on business operations for childcare centers, schools and parents. It is essential to communicate a clear and succinct plan to all community members to foster cooperation and understanding. Outbreaks of shigellosis may persist for months and community members must be prepared for their impact.

## Section 2: Control measures for childcare centers

As a rule, staff or children should be excluded from childcare settings if they have diarrheal illness and should return only after resolution. According to the National Resource Center for Health and Safety in Childcare and Early Education (<https://nrckids.org/>):

Exclusion is required for all diapered children whose stool is not contained in the diaper and toilet-trained children if the diarrhea is causing soiled pants or clothing. In addition, diapered children with diarrhea should be excluded if the stool frequency exceeds two or more stools above normal for that child. Readmission after diarrhea can occur when diapered children have their stool contained by the diaper (even if the stools remain loose) and when toilet-trained children are continent.

Children and staff diagnosed with *Shigella* infection (by culture or non-culture based method) should only return once stipulated criteria are met as defined by the local health department.

### **1. Recommended steps following identification of one case of shigellosis in a childcare center (see flowchart on page 9)**

1. Exclude the laboratory-identified case (either staff or attendee) until the case is asymptomatic and has tested negative per “readmission testing protocol.” (See Section 4, page 10.)
2. Identify additional cases in the facility
  - a. Remind staff about good hand hygiene and proper diapering techniques. Continue routine cleaning and sanitizing protocols.
  - b. Administer the screening questionnaire (see the diarrheal illness questionnaires for staff and parents in Section 4) to applicable staff and attendees per your risk assessment. This should be completed within 24 hours and focus on identification of attendees and staff absent due to current diarrheal illness.
    - i. If clinically compatible cases are identified see section 2.
    - ii. If no clinically compatible cases (potential source or secondary cases) are identified, keep inquiring about all direct contacts to the index case each day for eight days after last exposure date.

**SCREENING RISK ASSESSMENT** (How expansive should you screen for illness after one case is identified?)

- In a large center where classes are well separated and illness is limited you can limit your initial screening to focus on the classroom where illness started. This is a reasonable strategy when screening all staff and students is not practical given the size of a facility.
- Consider expanding your screening group when there are shared bathrooms. Shared spaces such as cafeteria, playgrounds, and comingling in one classroom before and after school may not pose significant sources of transmission depending on the circumstances.

- Consider asking teachers of other classes about any gastrointestinal illness among their students.

## **2. Recommended steps following identification of two (or more) *Shigella* cases in a childcare center (see flowchart on page 9)**

1. Exclude the laboratory-identified cases (either staff or attendee) until the cases are asymptomatic and have tested negative per “readmission testing protocol.” (See Section 4, page 10.)
2. Exclude all symptomatic staff, attendees and volunteers. Allow readmission once asymptomatic and has tested negative per “readmission testing protocol.”
  - a. Use the screening questionnaire to identify symptomatic individuals, if not already completed (see Section 4). Administer to applicable staff and parents, per your risk assessment. This should be completed within 24 hours and focus on identification of current diarrheal illness among attendees and staff.
    - i. For those clinically compatible cases that are identified complete the additional shigellosis outbreak assessment questionnaire (see Section 4).
3. Implement **supervised** hand washing of attendees. Hand washing is the single most effective method of reducing transmission and its utility has been demonstrated even in generally unsanitary environments.
4. Enhance environmental cleaning. Clean the classroom, toileting and food preparation areas in affected class using approved disinfectant solution. Inanimate objects such as toys, doorknobs, tables, etc. may be contaminated with *Shigella*.
5. Stop water play and similar activities throughout the center that involve objects that cannot be cleaned and sanitized. Water tables, manipulative tables, Play-Doh® and finger painting should be discontinued unless objects can be single use and disposed of after individual play. Swimming should be discontinued as well, if applicable.
6. Stop new admissions to the facility until it can be reasonably determined the outbreak is over which is after there have been no reports of new cases for two incubation periods (8 days for *Shigella*). Excluded staff or attendees should not transfer to other childcare facilities until they have met the “readmission testing protocol” criteria. If analysis of data from returned questionnaire indicates no additional cases, facility may continue to admit new attendees by must continue supervised hand washing and environmental cleaning.
7. Notify childcare consultant with DCDEE (Division of Child Development and Early Education).
8. Consider notifying community health care providers. Clinicians should be aware of
  - a. the outbreak,
  - b. appropriate control measures,
  - c. laboratory testing requirements for readmission**
  - d. the role of antibiotics in shortening duration of shedding
  - e. adapting choice of antibiotic to susceptibility of outbreak strain
9. If there is a concern about children moving between childcare centers, consider informing the childcare community.
  - a. Work with partner agencies (i.e. licensing consultants) if needed to inform others in the childcare community.
  - b. Use this as an opportunity to remind childcare directors/owners to be alert for illness in their facilities, report and institute proper control measures. Advise

directors that children/staff excluded from one child care facility should not be admitted or allowed to work in another facility where they could potentially infect another group of children.

10. Conduct surveillance of all staff and attendees until the outbreak is over. The outbreak is considered over when two incubation periods (8 days for shigella) pass with no new onsets. This would be 8 days after last onset or date of exposure, whichever is longer.

### **3. Recommended steps following identification of *Shigella* cases in multiple childcare centers**

Notify community health care providers as described above in Section 2 (#9) if you have not yet completed this task.

In addition to all the above recommendations, when there is a community outbreak it is important that all childcare center directors be aware of the circumstances and actively engaged in practicing prevention and control measures, even if their facility does not have any identified cases.

Additionally, it would be warranted to engage the local health department Public Information Officer and communicate directly with the public about the outbreak and the need for strict adherence to control measures. A template press release is included in Section 4.

### Section 3: Control measures for K – 12 schools

While shigellosis outbreaks are less common in elementary and middle schools (as compared to childcare centers) they can occur. The principles of control (exclusion of cases, hand washing, environmental cleaning, etc.) remain very similar. Control measures should be appropriate to the developmental ability of the child.

#### **1. Recommended steps following identification of one case of *Shigella* infection in a K – 12 school**

1. Exclude laboratory identified case (staff or student). Case may return no earlier than 48 hours after diarrhea resolves. Case should also be excluded from before and after-school programs and other group activities (i.e. club teams, church teams, etc).
  - a. If the laboratory-identified case is a kindergartner, hand washing in the kindergarten classes should be supervised.
2. Verify that there is not an outbreak at the school (i.e. notify school nurse and assess absenteeism).
3. If other symptomatic students or staff are identified go to section 2.

#### **2. Recommended steps following identification of two (or more) *Shigella* cases in a K – 12 school**

Consider school size and if students move between classes to determine if two or more *Shigella* cases in a K – 12 school are related and should require implementing the control measures below.

1. Exclude laboratory identified cases (staff or student). Cases may return no earlier than 48 hours after diarrhea resolves. Cases should also be excluded from after-school programs.
2. Exclude all symptomatic staff, students and volunteers that are identified in step 2. Allow readmission once asymptomatic for 48 hours.
3. Reinforce hand washing. Students and staff must wash their hands after each visit to the toilet and before eating.
  - a. If the laboratory-identified cases are kindergartners, hand washing in the kindergarten classes should be supervised. Additionally, manipulative games (face painting, Play-Doh®, etc.) should be discontinued until there are no new cases for at least one week.
4. Clean high contact surfaces in the affected class using appropriate disinfectant.
5. Meet with school staff to ensure knowledge of means of transmission and prevention/control measures for shigellosis.
  - a. Environmental Health should assess the facility for adequate stock of hand washing supplies and appropriate environmental cleaning practices.
  - b. Bathrooms should be monitored for cleanliness and cleaned at least twice a day or more as necessary.

## **Recommended steps following identification of *Shigella* cases in multiple K – 12 schools**

Notify community health care providers (Section 4). Clinicians should be aware of

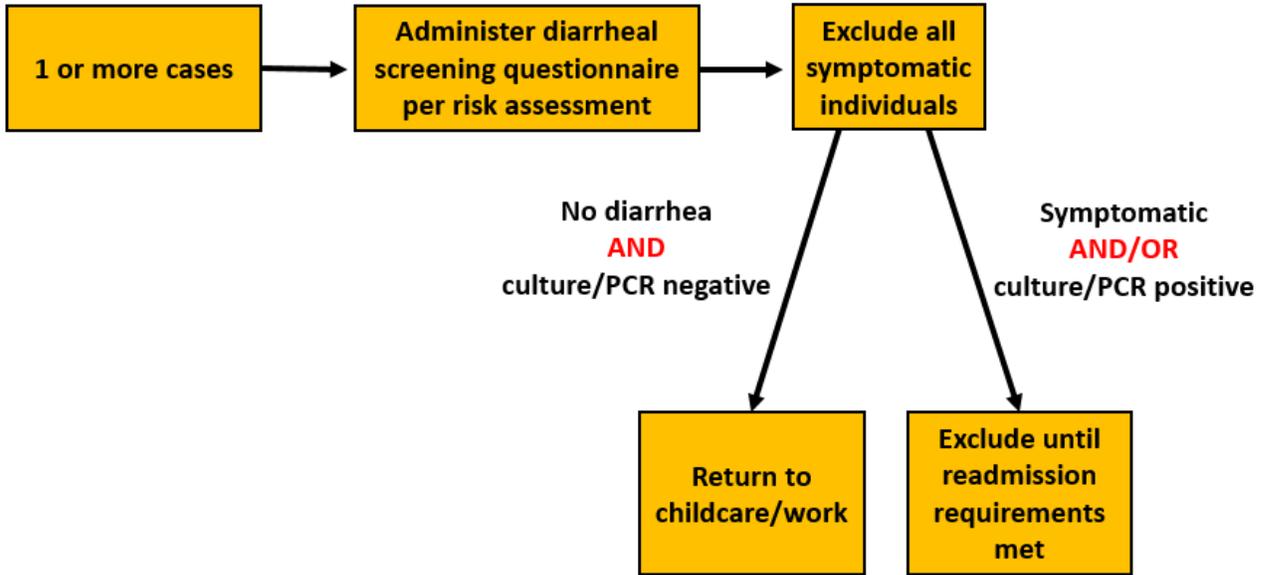
- the outbreak,
- appropriate control measures,
- laboratory testing requirements for diagnosis and readmission
- the role of antibiotics in shortening duration of shedding
- the need to adapt choice of antibiotic to susceptibility of the outbreak strain

In addition to all the above recommendations, when there is a community outbreak it is important that all school administrators be aware of the circumstances and actively engaged in practicing prevention and control measures, even if their facility does not have any identified cases.

Additionally, it would be warranted to engage the local health department Public Information Officer and communicate directly with the public about the outbreak and the need for strict adherence to control measures. A template press release is included in Section 4.

**Section 4: Response steps, readmission requirements, and templates**

**Shigella Response Steps in Childcare Facility**



## Readmission Requirements

Case Type	Readmission Requirement	Reference
<b>Childcare Attendee</b> (Applies laboratory identified OR symptomatic contact to lab identified case)	One negative stool sample (culture or PCR) collected at least 48 hours after discontinuing antibiotics	CDC consultation, AAP Red Book, 30 <sup>th</sup> edition
<b>Childcare Staff/Volunteer</b> (Applies to laboratory identified OR symptomatic contact to lab identified case)	One negative stool sample (culture or PCR) collected at least 48 hours after discontinuing antibiotics	CDC consultation, APHA Control of Communicable Disease Manual (20 <sup>th</sup> edition)
<b>Kindergartener (located in a childcare facility)</b>	Readmit according to childcare attendee readmission requirement	
<b>Kindergartener (located in a school)</b>	Asymptomatic for 48 hours	
<b>1<sup>st</sup> – 12<sup>th</sup> grade student or staff (NOT a food employee)</b> (Applies to laboratory identified OR symptomatic contact to lab identified case)	Asymptomatic for 48 hours	
<b>Children with special healthcare needs</b>	One negative stool sample (culture or PCR) collected at least 48 hours after discontinuing antibiotics	
<b>Food Employee</b> (Applies to laboratory identified OR symptomatic contact to lab identified case)	Consult local Environmental Health Specialist for readmission requirement	NC Food Code Manual, Section 2-201

Note: Variations from the published guidance may sometimes be indicated but should be done in consultation with the Division of Public Health.

**Diarrheal Illness Screening Questionnaire for Parents  
Child Care Facility/School Letterhead**

**To:** Staff/Parents/Caregiver of \_\_\_\_\_  
**Re:** Diarrheal Illness at Child Care Facility or School  
**Date:**

We have had a case of SHIGELLOSIS at our school. Shigellosis is an illness caused by a bacterium called Shigella. Shigellosis can cause diarrhea with or without blood, fever, vomiting, or abdominal cramping.

Shigella is passed from person to person by direct contact with very small amounts of infected feces. Young children are most likely to be infected with Shigella and are also most likely to infect others. They usually get it by being in a group of children who do not wash their hands properly after having a bowel movement and then handle food or put their fingers in their mouths. Treatment with an antibiotic may shorten the illness but is not necessary all of the time.

We know that several students in our school have been out with stomach aches and diarrhea. The health department is trying to prevent a larger outbreak of this illness at our school by offering free stool cultures to anyone who may be sick with this illness.

We need your help in making sure those children who have diarrhea, vomiting, fever, and/or stomach aches do not come to school/child care while they are sick and for at least 48 hours following recovery from illness. Please answer the following questions:

**Staff/Child's Name:** \_\_\_\_\_

Are you a staff member or childcare attendee (circle one)?    Staff                                  Childcare attendee

**Your Name:** \_\_\_\_\_

**Best time to call you and telephone number:** \_\_\_\_\_

Since \_\_\_\_\_ (enter date here)

1. Do **you (staff) / your child (attendee)** have diarrhea (two or more loose stools in a 24-hour period)? Please circle one answer:

Yes -> **If yes**, when did the diarrhea start? \_\_\_\_\_ / \_\_\_\_\_ (day and date)

No -> **If no**, you do not have to answer any additional questions

2. Did **you (staff) / your child (attendee)** see a provider for this illness? Please circle one answer:

Yes -> **If yes**, was a test done?    Yes -> What was the test result? \_\_\_\_\_

No, did not see a provider

3. Did **you (staff) / your child (attendee)** have any other symptoms? Please circle all that apply:

Bloody diarrhea	Yes	No	Do Not Know
Stomach cramps	Yes	No	Do Not Know
Fever	Yes	No	Do Not Know
Chills	Yes	No	Do Not Know
Headache	Yes	No	Do Not Know
Body aches	Yes	No	Do Not Know
Abdominal Pain	Yes	No	Do Not Know

**Please return this form to the school/child care tomorrow morning. If you or your child are still sick do not send them to school/child care, but please call the school/child care center. If you have any questions, please call: \_\_\_\_\_**

Please return this form immediately to the childcare center or school

## Diarrheal Illness Screening Questionnaire for Staff

### Child Care Facility/School Letterhead

To: Staff of \_\_\_\_\_  
Re: Diarrheal Illness at Child Care Facility or School  
Date:

We have had a case of SHIGELLOSIS at our school. Shigellosis is an illness caused by a bacterium called Shigella. Shigellosis can cause diarrhea with or without blood, fever, vomiting, or abdominal cramping.

Shigella is passed from person to person by direct contact with very small amounts of infected feces. Young children are most likely to be infected with Shigella and are also most likely to infect others. They usually get it by being in a group of children who do not wash their hands properly after having a bowel movement and then handle food or put their fingers in their mouths. Treatment with an antibiotic may shorten the illness but is not necessary all the time.

We know that several students in our school have been out with stomach aches and diarrhea. The health department is trying to prevent a larger outbreak of this illness at our school by offering free stool cultures to anyone who may be sick with this illness.

We need your help in making sure that children and staff who have diarrhea, vomiting, fever, and or stomach aches do not come to school/child care while they are sick. Please answer the following questions:

Your name: \_\_\_\_\_ Position \_\_\_\_\_  
Best time to call you and telephone number: \_\_\_\_\_

1. Has you had diarrhea (two or more loose stools in a 24 hour period) anytime in the last [XX] days or since [DAY OF WEEK, MONTH DATE]? Please circle one answer:

Yes      No      Do Not Know

2. If **yes**, when did the diarrhea start? \_\_\_\_\_/\_\_\_\_\_ (day and date)

3. Have you traveled out of the country in the last month? Yes    No    Do Not Know

4. Are you still sick? Please circle one answer: Yes      No      Do Not Know

5. Did you see a doctor for this illness? Please circle one answer:

Yes      No      Do Not Know

6. Did you have any other symptoms? Please circle all that apply:

Bloody diarrhea	Yes	No	Do Not Know
Stomach cramps	Yes	No	Do Not Know
Fever	Yes	No	Do Not Know
Chills	Yes	No	Do Not Know
Headache	Yes	No	Do Not Know
Body aches	Yes	No	Do Not Know
Abdominal Pain	Yes	No	Do Not Know

7. Do you know of anyone else in your family or among your close friends who has had diarrhea during the past two weeks? Please circle one answer: Yes      No      Do Not Know

8. If **yes**, please give the name? \_\_\_\_\_ Relationship to you? \_\_\_\_\_

Please return this form to the director promptly. If you have any questions, please call: \_\_\_\_\_

## Shigellosis Outbreak Assessment Questionnaire

**Demographics:**

Last Name: _____	First Name: _____	Middle Initial: _____
Birth date: _____	Age: _____	Sex: _____
County of Residence: _____	Telephone Number: _____	

**Symptoms: (check appropriate box)**

**Symptom Onset Date:** \_\_\_\_\_

	Diarrhea	Bloody Diarrhea	Vomiting	Fever, Chills	Body Aches	Headache	Abdominal Pain
Yes	<input type="checkbox"/>						
No	<input type="checkbox"/>						
Unknown	<input type="checkbox"/>						

- 1) Child's Teacher's Name: \_\_\_\_\_
- 2) Before School Care Location: \_\_\_\_\_ (check here if none)
- 3) After School Care Location: \_\_\_\_\_ (check here if none)
- 4) If childcare staff, are you also employed as a healthcare worker or food handler in a restaurant or cafeteria? Yes  No  (if yes, specify location)  
\_\_\_\_\_
- 5) Do you have any household members currently symptomatic? Yes  No  (If so, specify below)
- 6) Did you/your child see a provider (i.e. doctor, nurse, etc.) for this illness? Yes  No
- 7) When was your last dose of antibiotics for this illness? (specify date) \_\_\_\_\_
- 8) Was a stool specimen collected for this illness? Yes  No  (if yes, complete chart below)

**Results from laboratory testing:**

Date Collected:	What provider collected the specimen?	Results:

- 9) Child/Adult last day at childcare facility: \_\_\_\_\_
- 10) Date(s) of Exclusion: \_\_\_\_\_

**Education Provided:**

	Hand Hygiene/Sanitation	Symptom Recognition/Reporting	Treatment*/ Follow-up Care	Exclusion
Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\* If antibiotics have been prescribed, ensure they are appropriate based on susceptibility testing.

(*LOCATION*) – Local health officials encourage people to wash their hands and stay home from work or school if they have diarrhea. This recommendation follows an increase in the number of people reported to the *LOCAL HEALTH DEPT.* during *TIMEFRAME* with *Shigella* infections.

“Handwashing with soap and running water is the single most important preventive measure to interrupt the spread of shigellosis,” said *JURISDICTION* Director, *NAME*. “Everyone should thoroughly wash their hands after using the restroom or changing diapers and before eating or preparing food. People diagnosed with *Shigella* infection should be especially vigilant in their handwashing practices.”

Persons with any diarrheal illness should always refrain from attending child care, school, or group activities, and should not participate in occupations involving food preparation or healthcare until their diarrhea has resolved. Routine and thorough handwashing and cleaning of surfaces in the above settings is important to limiting the spread of disease.

Most *Shigella* infections are the result of the bacteria passing from improperly washed hands of one person to the mouth of another person, often through handling contaminated objects or food. Poor handwashing and hygiene (especially after changing diapers or toileting) increases the risk of infection. *Shigella* infections are particularly likely to occur among toddlers who are not fully toilet-trained. Family members and playmates of such children are at high risk of becoming infected.

Shigellosis is a highly infectious disease caused by a group of bacteria called *Shigella*. Individuals infected with *Shigella* may experience abdominal cramping, mild or severe diarrhea, often with traces of blood or mucous in the stool and fever. Some infected people may not show any symptoms. The illness usually resolves in 5 to 7 days.

Health care providers are required to report *Shigella* infections to Public Health. Local health officials follow-up with each diagnosed person to help minimize the risk of spreading the infection to friends, family and other contacts. People who experience diarrhea for more than two days should see their health care provider and ask about being tested for *Shigella*. This is especially true for people who had contact with someone diagnosed with shigellosis.

## Draft Memo to Health Care Providers

Date:  
To: NC Health Care Providers  
From:  
Subject: Shigellosis outbreak in local childcare facility

We want to inform you of an outbreak of *Shigella* infection in a childcare facility in XXXX County and provide you with resources should more cases arise. *Shigella* infection is typically a self-limited illness lasting 48 to 72 hours and is a reportable condition as outlined in the North Carolina Administrative Code (10A NCAC 41A .0101). Transmission risk is high due to a very low infectious dose. One case requires immediate and thorough control measures to prevent further transmission.

XXXX County is alerting the local medical community about the outbreak of shigellosis and asking medical providers to increase vigilance for *Shigella* infections and to report suspected cases to your local health department, **even before laboratory confirmation**. Prompt reporting of cases will allow for timelier public health prevention and control interventions.

### Recommendations for Healthcare Providers:

#### Diagnosis

The spectrum of shigellosis manifestations ranges from loose, watery stools without systemic symptoms to more severe presentations with fever, cramps, and bloody diarrhea. Due to the ease of transmission we ask that you consider *Shigella* in patients presenting with compatible symptoms.

#### Laboratory Testing

Providers should consider testing since antibiotic treatment should be based on susceptibility testing. In addition, a negative stool sample will be required for the patient to return to the facility. While the North Carolina State Laboratory of Public Health can perform cultures, which may take up to two weeks, it does not offer antibiotic susceptibility testing.

#### Use of Antimicrobials

Antimicrobial therapy, while not generally required in mild cases, is somewhat effective in shortening duration of illness and can decrease transmission by hastening eradication of organisms from feces. Treatment should be based on antimicrobial susceptibility testing if available.

#### Childcare Exclusion and Readmission

The local health department will provide clearance when the childcare attendee/employee may return. Child care attendees/employees will be excluded until asymptomatic **and** one stool culture or PCR test is negative. If the patient received antibiotics the stool specimen must be collected no sooner than 48 hours after completion of antibiotic therapy.

If the patient is a food employee at the childcare facility the return to work criteria will be determined by the local environmental health specialists according to the North Carolina Food Code Manual.

Please emphasize the importance of hand washing with soap and water after defecation as a means of curtailing transmission of *Shigella*. Patients should not participate in recreational water activities (e.g. swimming pools, water parks, splash parks) for 1 week after symptoms resolve.

Your local health department is able to assist with shigellosis case investigations and can be reached at XXX – XXX – XXXX for any questions you may have regarding management of *Shigella*.

## Section 5: References

1. Arvelo, W., et al., *Transmission risk factors and treatment of pediatric shigellosis during a large daycare center-associated outbreak of multidrug resistant Shigella sonnei: implications for the management of shigellosis outbreaks among children*. *Pediatr Infect Dis J*, 2009. **28**(11): p. 976-80.
2. *Shigellosis in child day care centers--Lexington-Fayette County, Kentucky, 1991*. *MMWR Morb Mortal Wkly Rep*, 1992. **41**(25): p. 440-2.
3. Khan, M.U., *Interruption of shigellosis by hand washing*. *Trans R Soc Trop Med Hyg*, 1982. **76**(2): p. 164-8.
4. Schulte, J.M., et al., *How we didn't clean up until we washed our hands: shigellosis in an elementary and middle school in North Texas*. *South Med J*, 2012. **105**(1): p. 1-4.