

# 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.

In North Carolina we have seen a steady increase in cases (shown below) and outbreaks over the past several years.

Year	2010	2011	2012	2013	2014
Cases	282	179	146	330	396

#### 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) by an infected food handler (or infected bather) can happen, the vast majority of case 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; less 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 feces or rectal swabs provides confirmatory diagnosis. Non-culture based methods such as PCR testing of feces is becoming more common and also provides laboratory evidence of infection. A person with a clinically compatible illness who has had direct contact with a laboratory-identified case or is a member of a risk group defined by public health authorities during an outbreak meets case definition criteria as a probable case, for surveillance purposes.

## Incubation period

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

## Risk Factors

Anyone can get shigellosis but it is recognized more often in young children and frequently associated with children in group settings, including individuals who work at or attend child care centers. A lack of appropriate handwashing and diapering infrastructure is associated with an increased risk of transmission of shigellosis in childcare centers. [1]

## Period of infectivity

*Shigella* can be spread for as long as the organism can be isolated from a person's stool, which is up to four weeks. Certain antibiotics may shorten the carrier phase, however *Shigella* are frequently resistant to one or more antibiotics.

## 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.
- **Control of contacts:** Identification and testing of contacts to identify secondary cases and apply control measures

- **Control of environment:** Strict attention should be paid to environmental hygiene 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 or likely to occur it is recommended that you develop a **task force** 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 task force should include, at a minimum:

- Communicable disease nursing staff
- Environmental health staff
- NC Div. 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 ([www.nrckids.org](http://www.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 8 & 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. Per the National Health and Safety Standards, Caring for our Children, 3<sup>rd</sup> edition, daily health checks should be conducted as soon as possible after the child enters the childcare facility. Reference CFO3 Standard 3.1.1.1 ([www.nrckids.org](http://www.nrckids.org)).
  - b. As soon as possible and within 24 hours all childcare staff and attendee parents should be contacted.
  - c. Administer the screening questionnaire (see the diarrheal illness memos for staff and parents in Section 4) to all staff and attendees. This should be completed within 24 hours and focus on identification of diarrheal illness within the previous two weeks.
  - d. 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 seven days.
  - e. If clinically compatible cases are identified, conduct surveillance of all staff and attendees each day for seven days to identify additional secondary cases.
    - i. For those clinically compatible cases that are identified complete the shigellosis screening questionnaire (see Section 4).
3. Exclude all symptomatic staff, attendees and volunteers that are identified in step 2. Allow readmission once asymptomatic and tested negative per “readmission testing protocol.”
4. 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. [3] Children and adults must wash their hands

upon arrival to childcare centers, after each visit to the toilet and before eating per 15A NCAC 18A .2803.

5. Enhance environmental cleaning. Clean the classroom, toileting and food preparation areas in affected class using approved disinfectant. Inanimate objects such as toys, doorknobs, tables, etc. may be contaminated with *Shigella*.
6. 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.
7. Stop new admissions to the facility until a determination is made that this is a single isolated case and no additional cases have been found. This determination is made by the local health department after administering and reviewing the “Diarrheal Illness Screening Questionnaire for Staff and Parents”. 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, the facility may continue to admit new attendees but must continue supervised hand washing and environmental cleaning.
8. Inform childcare community. Use this as an opportunity to ask childcare directors/owners to be alert for illness in their facilities and self-report to public health. 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.

## **2. Recommended steps following identification of two (or more) *Shigella* cases in a childcare center (see flowchart on page 8 & 9)**

Many of the steps here are the same as if one case was identified in the childcare center. Additional, or different, steps are highlighted in **bold**.

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. Identify additional cases in the facility
  - a. Per the National Health and Safety Standards, Caring for our Children, 3<sup>rd</sup> edition, daily health checks should be conducted each day as soon as possible after the child enters the childcare facility. Reference CFOC3 Standard 3.1.1.1 ([www.nrckids.org](http://www.nrckids.org)).
  - b. As soon as possible and within 24 hours all childcare staff and attendee parents should be contacted.
  - c. Administer the screening questionnaire (see the diarrheal illness memos for staff and parents in Section 4) to all staff and parents of attendees. This should be completed within 24 hours and focus on identification of diarrheal illness within the previous two weeks.
    - i. For those clinically compatible cases that are identified complete the shigellosis outbreak screening questionnaire (see Section 4).
  - d. Conduct surveillance of all staff and attendees each day for seven days.

3. Exclude all symptomatic staff, attendees and volunteers. Allow readmission once asymptomatic and has tested negative per “readmission testing protocol.”
4. 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. [3] Children and adults must wash their hands upon arrival to childcare centers after each visit to the toilet and before eating per 15A NCAC 18A .2803.
5. 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*.
6. 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.
7. 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.
8. **Test (PCR or culture) individuals who have had direct contact (classroom, teachers, or household members in high risk occupations – healthcare, child care, food handling) with laboratory confirmed cases within three days of the onset of illness of the case.**
9. **Notify childcare consultant with DCDEE (Division of Child Development and Early Education).**
10. **Notify community health care providers. Clinicians should be aware of**
  - a. the outbreak,
  - b. appropriate control measures,
  - c. laboratory testing requirements for diagnosis and readmission
  - d. the role of antibiotics in shortening duration of shedding
  - e. adapting choice of antibiotic to susceptibility of outbreak strain
11. **If applicable, cohort asymptomatic staff and attendees pending “readmission testing” in a separate area of the childcare facility. Cohorting allows staff and children to return to the facility once they are asymptomatic, pending results of “readmission testing protocol,” as long as they can be separated from well children and staff.**
  - a. The cohorted staff and children should be located together in a designated room of the facility.
  - b. The designated room must be physically separated from the other rooms and have separate toilet facilities.
  - c. Food handling must be completely separated; cohorted children and staff must not be allowed to use food preparation areas in the facility and generally receive meals using disposable tableware.
  - d. Ensure appropriate attendee to staff ratio.

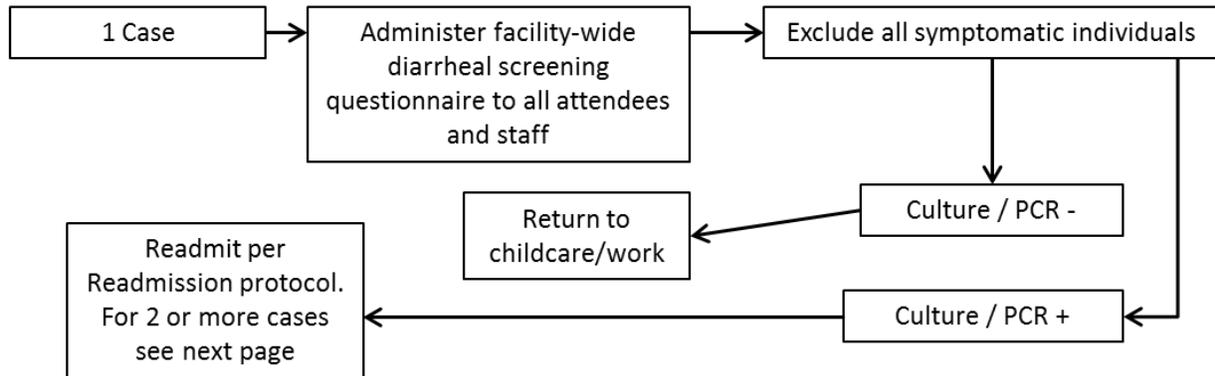
12. Inform childcare community. Use this as an opportunity to ask childcare directors/owners to be alert for illness in their facilities and self-report to public health. Advise directors that children/staff excluded from one child care facility should not be admitted or allowed to work in another facility where they could potentially infect another group of children.

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

In addition to all of 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. Childcare operators should be reminded of the requirement to perform daily health checks per the National Health and Safety Standards, Caring for our Children, 3<sup>rd</sup> edition, and not admit any attendees or staff that have been excluded from other facilities.

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.

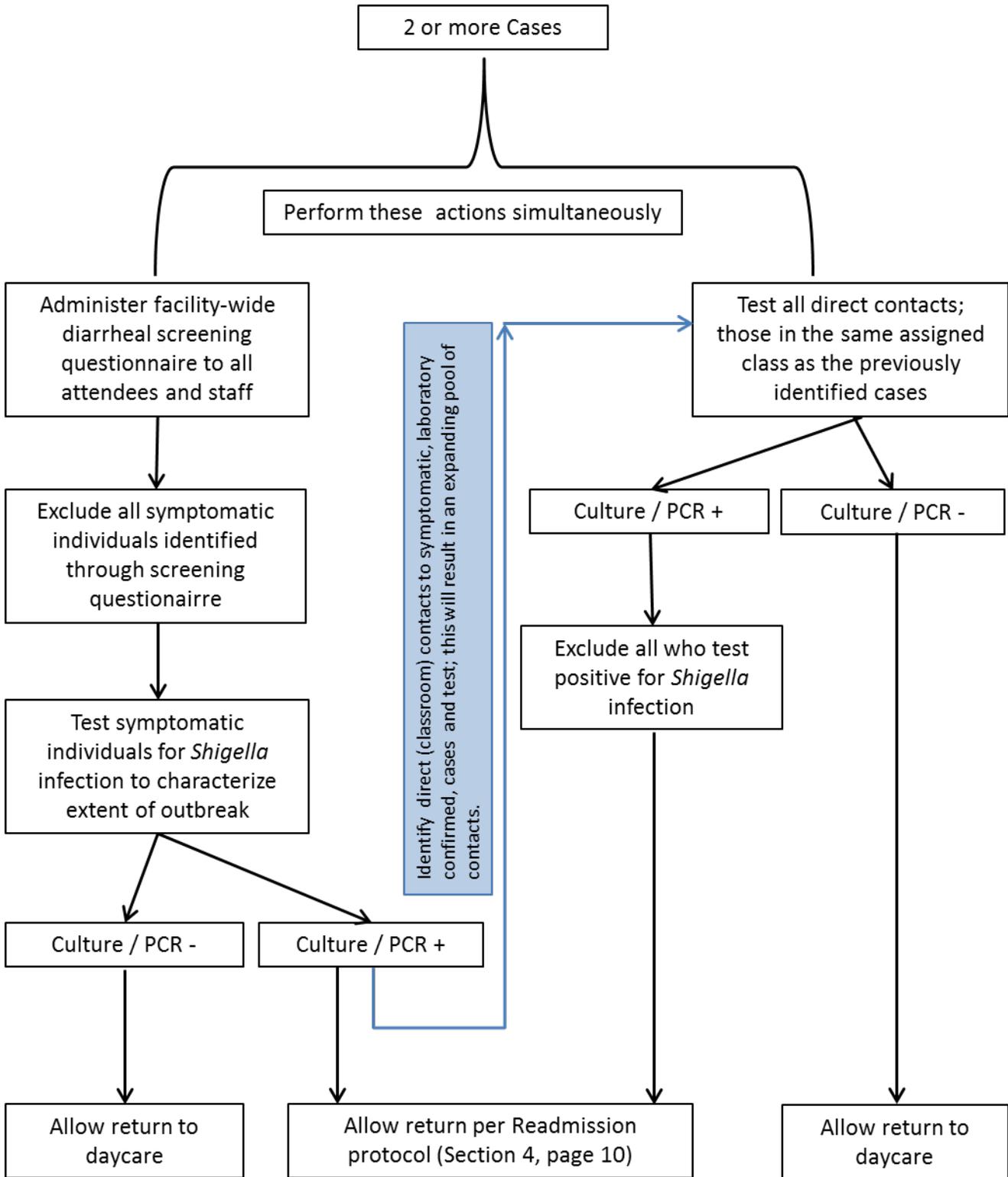
## Shigella Infection Identified in Day Care Center



## Readmission Testing Protocol

Case Type	Readmit Test	Reference
Childcare Attendee (Applies to laboratory identified OR symptomatic contact to lab ID case)	One negative stool sample (culture or PCR) collected at least 48 hours after discontinuing antibiotics	CDC consultation, AAP Red Book, 30th edition
Childcare Staff/Volunteer (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 Diseases Manual (20th edition)
Kindergartener	Based on assessment of hand washing and hygiene ability, readmit after asymptomatic for 48 hours AND 1 negative culture (OR PCR) if hand washing is questionable. If hand washing is appropriate, readmit after 48 hours asymptomatic.	
1 <sup>st</sup> – 12 <sup>th</sup> grade student or K – 12 staff (NOT a food employee) (Applies to laboratory identified OR symptomatic contact to lab ID case)	Asymptomatic for 48 hours	
Children with special healthcare needs	One negative stool culture (OR PCR) result collected at least 48 hours after discontinuing antibiotics	
Food Employee (Applies to laboratory identified OR symptomatic contact to lab ID case)	Consult local Environmental Health Specialist for readmission	NC Food Code Manual, Section 2-201
Health Care Provider (Applies to laboratory identified OR symptomatic contact to lab ID case)	One negative stool sample (culture or PCR) collected at least 48 hours after discontinuing antibiotics	APHA Control of Communicable Diseases Manual (20th edition)

# Shigella Infection Identified in Day Care Center



### 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. [4] However the ability of children to consistently and correctly practice routine hygiene will vary greatly, especially in elementary schools. A kindergarten student will need to be managed quite differently than a 5<sup>th</sup> grader, for example. 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 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. Identify symptomatic (potential source or secondary) cases in the facility.
3. Exclude all symptomatic staff, students and volunteers that are identified in step 2. Allow readmission once asymptomatic for 48 hours.
4. Reinforce hand washing. Students and staff must wash their hands after each visit to the toilet and before eating.
  - a. If the laboratory-identified case is a kindergartner, hand washing in the kindergarten classes should be supervised. Manipulative games (face painting, Play-Doh®, etc.) should be discontinued until there are no new cases for at least one week.
5. Clean hand contact surfaces in the affected class using appropriate disinfectant.

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

Many of the steps here are the same as if one case was identified in the K – 12 school. Additional, or different, steps are highlighted in **bold**.

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. Identify symptomatic (potential source or secondary) cases in the facility
3. Exclude all symptomatic staff, students and volunteers that are identified in step 2. Allow readmission once asymptomatic for 48 hours.
4. Reinforce hand washing. Students and staff must wash their hands after each visit to the toilet and before eating.
  - a. If the laboratory-identified case is a kindergartner, 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.
5. Clean hand contact surfaces in the affected class using appropriate disinfectant.
6. **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.**
- 7. **Notify community health care providers. Clinicians should be aware of**
  - a. **the outbreak,**
  - b. **appropriate control measures,**
  - c. **laboratory testing requirements for diagnosis and readmission**
  - d. **the role of antibiotics in shortening duration of shedding**
  - e. **the need to adapt choice of antibiotic to susceptibility of the outbreak strain**

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

In addition to all of 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: Testing protocol and templates

### Readmission Testing Protocol

Case Type	Readmit Test	Reference
Childcare Attendee  (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, AAP Red Book, 30 <sup>th</sup> edition
Childcare Staff/Volunteer  (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 Diseases Manual (20 <sup>th</sup> edition)
Kindergartener	Based on assessment of hand washing and hygiene ability, readmit after asymptomatic for 48 hours AND 1 negative culture (OR PCR) if hand washing is questionable. If hand washing is appropriate, readmit after 48 hours asymptomatic.	
1 <sup>st</sup> – 12 <sup>th</sup> grade student or K – 12 staff (NOT a food employee)  (Applies to laboratory identified OR symptomatic contact to lab identified case)	Asymptomatic for 48 hours	
Children with special healthcare needs	One negative stool culture (OR PCR) result collected at least 48 hours after discontinuing antibiotics	
Food Employee  (Applies to laboratory identified OR symptomatic contact to lab identified case)	Consult local Environmental Health Specialist for readmission	NC Food Code Manual, Section 2-201
Health Care Provider  (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	APHA Control of Communicable Diseases Manual (20 <sup>th</sup> edition)

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

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

To: 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. Please answer the following questions:

Child's Name: \_\_\_\_\_
Your Name: \_\_\_\_\_
Best time to call you and telephone number: \_\_\_\_\_

- 1. Has your child had diarrhea (two or more loose stools in a 24 hour period) anytime in the last [7] days or since [DAY OF WEEK, MONTH DATE]? Please circle one answer: Yes No Do Not Know
If yes, when did the diarrhea start? \_\_\_\_\_/\_\_\_\_\_ (day and date)
2. Have you traveled out of the country with your child in the last month? Yes No Do Not Know
3. Is your child still sick? Please circle one answer: Yes No Do Not Know
4. Did your child see a doctor for this illness? Please circle one answer: Yes No Do Not Know
5. Did your child 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
6. Do you know of anyone else in your family or among your child's friends who has had diarrhea during the past two weeks? Please circle one answer: Yes No Do Not Know
7. If yes, please give the name? \_\_\_\_\_ Relationship to your child? \_\_\_\_\_

Please return this form to the school/child care tomorrow morning. If your child is 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: \_\_\_\_\_

**Diarrheal Illness Memo/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 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 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 Screening Questionnaire

Last Name: \_\_\_\_\_ First Name: \_\_\_\_\_ Middle I. \_\_\_\_\_  
 Birth date: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_  
 Address: \_\_\_\_\_ County of Residence: \_\_\_\_\_  
 Telephone Number: \_\_\_\_\_ (w) \_\_\_\_\_ (h/c) \_\_\_\_\_

1. Symptom Onset Date: \_\_\_\_\_

2. Symptoms:	<u>Yes</u>	<u>No</u>	<u>Unknown</u>
Diarrhea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bloody Diarrhea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vomiting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fever, Chills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Body Aches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Headache	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Abdominal pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Teacher: \_\_\_\_\_ Grade/Age Group: \_\_\_\_\_

4. Before School Care: \_\_\_\_\_ None:  (check here if none)

5. After School Care: \_\_\_\_\_ None:  (check here if none)

6. If adult, other Employment: \_\_\_\_\_ None:  (check here if none)

7. Household Members (list all): Symptomatic in last two weeks? Since \_\_\_\_\_ (date)?

| 1. | _____ | <input type="checkbox"/> |
|----|-------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 2. | _____ | <input type="checkbox"/> |
| 3. | _____ | <input type="checkbox"/> |
| 4. | _____ | <input type="checkbox"/> |
| 5. | _____ | <input type="checkbox"/> |
| 6. | _____ | <input type="checkbox"/> |
| 7. | _____ | <input type="checkbox"/> |
| 8. | _____ | <input type="checkbox"/> |

**Complete new screening sheet for anyone identified as symptomatic.**

8. Other close contacts that have been symptomatic in last two weeks?

1. \_\_\_\_\_
2. \_\_\_\_\_

9. Doctor: \_\_\_\_\_ Telephone #: \_\_\_\_\_

10. Date Seen: \_\_\_\_\_ Was a stool specimen collected for testing? \_\_\_\_\_ (If yes, give date) \_\_\_\_\_

11. Treated with Antibiotic? \_\_\_\_\_ (If yes, specify type, dose, and length)

	Date Collected	Date Sent	Lab	Results
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____

13. Last Day at Child care/School/ Work? \_\_\_\_\_

14. Date of Exclusion: \_\_\_\_\_

| 15. Education Provided:          | <u>Yes</u>               | <u>No</u>                | <u>Comment</u>           | <input type="checkbox"/> |
|----------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Hand Hygiene/Sanitation       | <input type="checkbox"/> |
| 2. Symptom Recognition/Reporting | <input type="checkbox"/> |
| 3. Treatment/Follow up Care      | <input type="checkbox"/> |
| 4. Symptom Recognition/Reporting | <input type="checkbox"/> |
| 5. Exclusion                     | <input type="checkbox"/> |
| 6. Other (specify)               | <input type="checkbox"/> |

(*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.

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.

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.

## Draft Memo to Health Care Providers

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

### Introduction

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. Shigellosis is a reportable condition as outlined in the North Carolina Administrative Code (10A NCAC 41A .0101). The risk of transmission is high due to a very low infectious dose. One case of *Shigella* infection requires immediate and thorough control measures as prompt public health intervention following reports of shigellosis cases is required to prevent further transmission.

Shigellosis is highly communicable, having a very low infectious dose. CDC indicates that in the U.S. annually, while about 14,000 cases of shigellosis are reported, the estimated true total is 450,000 cases. Although the vast majority of illness caused by *S. sonnei* is uncomplicated, the social and economic disruption caused by shigellosis outbreaks is significant. North Carolina has experienced periods of high incidence of over 1,000 reported cases per year in the past (e.g., 1993-95, 2001-02). Therefore 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 ordering a stool culture to confirm etiology, and guide treatment based upon antibiotic susceptibility study. Testing, available commercially, may be done via stool culture (preferred) or rectal swab (PCR). While the North Carolina State Laboratory of Public Health can perform cultures, it does not offer antibiotic susceptibility studies. The local health department staff is involved in assisting with control measures, including performing stool culture prior to release from exclusion from childcare, school, or work, when indicated.

Though less commonly used, PCR-based tests which can identify the presence of multiple pathogens from a single stool specimen are available. These tests will not offer antibiotic susceptibility information but results are available more quickly than culture.

**- Use of Antimicrobials**

*Shigella* infection is typically a self-limited illness lasting 48 to 72 hours. 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. (2012 American Academy of Pediatrics Red Book). Treatment should be based on antimicrobial susceptibility testing if available. Consult the local health department to determine if antibiotic susceptibility testing has been performed on other patients in the community. In the context of an outbreak this will provide useful information for the treatment of your patients.

**Control Measures (subject to change depending on characteristics of outbreak)**

- Child care attendees should 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.
- Patients with known *Shigella* infections should not return to work to handle food or to provide child or patient care until 1 fecal sample is found to be *Shigella*-free by culture or PCR. Return to work criteria should be determined by local environmental health specialists according to the North Carolina Food Code Manual.
- Below is the Readmission Testing Protocol for asymptomatic food employees who are household contacts to a case diagnosed with shigellosis.

Food Employee	Readmit Test	Reference
<p>IF FOOD EMPLOYEE IS...</p> <ul style="list-style-type: none"> <li>• Serving a highly susceptible population</li> </ul> <p>AND</p> <ul style="list-style-type: none"> <li>• A household contact to a case diagnosed with shigellosis</li> </ul>	<p>THEN READMIT WHEN...</p> <ul style="list-style-type: none"> <li>• Case has been asymptomatic for greater than 3 days</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• Last exposure to the case was greater than 3 days</li> </ul>	<p>North Carolina Food Code Manual, Section 201-2</p>
<p>Highly Susceptible Population - Immunocompromised; preschool age children, or older adults; and obtaining food at a facility that provides services such as custodial care, health care, or assisted living, such as child or adult day care center, kidney dialysis center, hospital or nursing home, or nutritional or socialization services such as a senior center.</p>		

Patients should be told of 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* events.

## 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.