Shigella in Northern Kentucky

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Shigella sonnei

- Gram negative non-spore forming rod
- Human is the only reservoir
- Transmitted via fecal-oral route
- Highly infectious, it has a very low infective dose, in some cases as few as 10 cells.
- Produces Shiga toxins similar to those produced by some strains of *E.coli*
Shigellosis

• Identification and Epidemiology

• Incubation Period: Incubation period is usually 1-3 days but can be as short as 12 hours and as long as 4 days
• Communicability:
  • Acute symptomatic carriers
  • Asymptomatic carriers
  • From food contaminated by an ill food handler
  • From contaminated drinking or recreational water
• Susceptibility: Everyone is susceptible, but elderly people, children and those with poor health and nutritional status are at higher risk for severe illness.
It Was a Long Summer
Shigella Cases in Northern Kentucky
Distributed by year

Number of Cases

Year


162 19 54 41 3 0 334 12 69 1 147
Shigella Outbreak 2007
A brief review
2007 Shigella outbreak
Distribution by Age

- Age range 3 months to 58 years, median of 5 and a mode of two
- 79% under 21 years of age
- 54% Female
- 36% were associated with swimming pools
- 61% related to childcare
  - Attendee or contact of attendee
Fast Forward…..2011

It’s Baaaack……
Fast Forward….2011

• Index Case: April 3, 2011 date of onset
  • 2 other family members became ill
• April 6, 2011, 1 year old became ill, (no connection found to the first case) attends a Child Care facility.

Just the beginning….
Normal Shigella Levels:

0-3 Cases per 2nd Quarter

We began to see several cases
• Three cases in a short time period...
• First Child Care Center (CCC)....

26 Cases!!

• Second CCC…7 cases
• Third CCC…7 cases
• Rest CCC’s ranged 1-9 cases
  • Ave 3 cases per CCC
Case Definition:

- **Confirmed Case**: A Northern KY resident experiencing diarrhea on or after April 3, 2011 and has a stool culture positive for Shigella
- **Probable Case**: A Northern KY resident experiencing diarrhea on or after April 3, 2011 and is an epidemiological link to a lab confirmed case of shigellosis.
Linking Cases:
No KY is a small place!!
Shigella cases in Childcare Centers and Schools

- Associated with Child Connections
- Associated with Newport Head Start
- Associated with King's Kids
- Associated with Little Red School House

Number of cases:
- 25 cases associated with Child Connections
- 20 cases associated with Newport Head Start
- 15 cases associated with King's Kids
- 10 cases associated with Little Red School House

Schools:
- Abby's Child Enrichment
- Campbell Ridge
- Child Connection
- Collins Elementary
- Grandview Elementary
- James E. Biggs
- King's Kids
- Little Red School House-Taylor Mill
- Moyer Elementary
- Newport Head Start Preschool
- 6th District Covington
- Southside Baptist
- Newport Primary
- Private sitter
- Redwood School
- Refused information
- Southside Baptist

Northern Kentucky Independent District Health Department
Shigella Cases In Northern Kentucky Distributed by County of Residence

Number of Cases

County of residence

Boone 16
Campbell 50
Grant 11
Kenton 66
Pendleton 3
Gallatin 1
Teamwork

- Epidemiologist
- Environmentalist
- Child Care Coordinator

- “Poo Crew” Weekly Review Meetings
  - All of the above plus HD Director, PIO, State Epi’s (by phone)
Interventions

• Alerts to Healthcare Providers
  • Weekly update via blast fax and email
• Letters to Childcare facilities
  • Via email
• Letters to school nurses and/or Principals
  • Via email
Interventions

• Hand washing, diapering procedures reviewed with Staff
• In childcare centers letters were sent home to parents
• H2O tables Filled with Sand
• Walk Through CCC’s
  • Initially those with cases…
• Environmental Health Inspected CCC Kitchens
More Interventions.....

- Fact Sheets & Hand washing brochures
  - Libraries
  - Park and Recreation Offices
  - Extension Centers
  - Churches for VBS
- Media:
  - TV, Radio, Newspapers
  - Twitter Account to update followers
  - Health Dept website updated Weekly
Interventions for Childcare Centers

• Recommended Sending Children & Staff home after 1 episode of diarrhea
• Require a Neg stool test on children/staff with diarrhea before they return
• Any Pos. stool test requires:
  • Asymptomatic
  • 2 neg. Stool tests
  • 24 hrs apart
  • 48 hrs after antibiotics completed or symptoms resolved
Shigellosis

Shigellosis is an infection of the intestines that occurs most often in young children. Epidemics have occurred in child care settings where there are children in diapers.

<table>
<thead>
<tr>
<th><strong>CAUSES:</strong></th>
<th>Shigella bacteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SYMPTOMS:</strong></td>
<td>Diarrhea (may be watery), fever, stomach cramps, nausea or vomiting. Stools may contain blood or mucus. Illness usually lasts four to seven days. Children may show mild symptoms or they could be infected and show no symptoms</td>
</tr>
<tr>
<td><strong>SPREAD:</strong></td>
<td>Shigella leaves the body through the stool of an infected person and enters another person when hands, food or objects (such as toys) contaminated with stool, are placed in the mouth. Spread can occur whether or not a person has symptoms</td>
</tr>
<tr>
<td><strong>INCUBATION:</strong></td>
<td>It takes one to seven days (usually one to three days) from the time a person is exposed until symptoms develop</td>
</tr>
<tr>
<td><strong>CONTAGIOUS PERIOD:</strong></td>
<td>As long as Shigella is present in the stool - may be up to four weeks after illness</td>
</tr>
<tr>
<td><strong>EXCLUSION:</strong></td>
<td>Until symptoms have resolved and two consecutive stool cultures at least 24 hours apart and at least 48 hours after antibiotic treatment is completed are negative</td>
</tr>
<tr>
<td></td>
<td>---or---</td>
</tr>
<tr>
<td></td>
<td>Until symptoms have resolved and two consecutive stool cultures at least 24 hours apart are negative if no antibiotics are used</td>
</tr>
<tr>
<td><strong>REPORTABLE:</strong></td>
<td>Provider: This disease is reportable to the local or state health department. Parent/guardian: Inform your child care provider if your child has this illness.</td>
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</tbody>
</table>
Child Care Centers with cases posted signs on their doors.
Child Care Coordinator

• Put together a folder for each facility:
  • Review Diapering
  • Review Handwashing
  • Cleaning and Sanitizing Solutions
    • Soap Solution or Bleach
    • ¼ cup/gal H2O
    • 1 tablespoon/quart H2O
  • Daily Health Check
Daily Communication Was Important!

* How many were ill,
* Staff and Children
* Who was healthy
* Answer questions, concerns
* Work Together!
Onset of Summer

**Concern**: Diapered children in pools (Remember 2007)

**Decision**: Close the Pools to Diapered Children!!

**Team Decision**: HD Director, Director Environmental & Epidemiology Manager
We Were Not Popular!
Pool Restrictions Lifted July 1, 2011

• June data indicated no spike in cases

• Although Cases Continued, few had reported being in a pool while infectious
August Concerns…

- Increase seen in the past
- Spoke to School Nurses at Annual Immunization Conference
- Letter from District Director sent to Superintendents
- Environmental Staff hand out info. Sheets during School Cafeteria inspections
- Attend School Readifests
Sink or Swim: Help Prevent Shigella

A bacterium called Shigella is making people in Northern Kentucky ill. Let's stop its spread!

- Wash your hands before you prepare or eat food, treat a cut or wound, care for someone who is sick.
- Wash your hands after you use the restroom, change a diaper, or care for someone who is sick.
- Rub hands together for at least 20 seconds. Use soap. Wash between fingers, under fingernails, and on the backs of your hands. Use a towel to dry hands and turn off the sink.

SWIM

- Anyone who has had diarrhea in the last two weeks should not swim—even if feeling better.
- Don’t swallow the pool water.
- Shower before swimming and wash your hands after using the toilet or changing diapers.
- Change diapers in a bathroom and not at poolside.

Symptoms of Shigella are: diarrhea, fever, stomach cramps, nausea or vomiting. If you think you have it, contact your health care provider and stay home from school or work.

Northern Kentucky Independent District Health Department
PLEASE help
prevent recreational
water-borne diseases like
Shigella, Crypto and Giardia

Northern Kentucky Health Department Encourages:

All Swimmers
Please don’t swim when you have diarrhea, especially kids in diapers. Germs can spread in the water and make other people sick.
Please don’t swallow the pool water. Even avoid getting water in your mouth.
Please practice good hygiene. Take a shower before swimming and wash your hands after using the toilet or changing diapers. Germs on your body end up in the water.

Parents of Young Kids
Please take your kids on bathroom breaks or check diapers often. Waiting to hear “I have to go” may mean that it’s too late.
Please change diapers in a bathroom and not at poolside. Germs can spread to surfaces and objects in or around the pool spreading illness.
Please wash your child thoroughly (especially rear ends) with soap and water before swimming to remove invisible amounts of fecal matter on their bottoms that end up in pools.

Pool Operators
Please properly maintain your facility’s water quality and disinfection level at all times.
Please disinfect hard surfaces such as deck chairs and tables as well as restrooms.
Please report all fecal accidents and follow CDC protocol for disinfection.

For additional information go to www.nkyhealth.org or call 341-4151.
Communications

- Weekly “Poo Crew” Meetings
- Weekly updates to Providers:
  - Case Numbers
  - Symptoms
  - Cases Demographics: Ages, Counties, Etc.
  - Antibiotic Resistance Info
  - Reminder: stay out of pools for 2 weeks!
- Weekly Reports to State
Totals

• 147 Cases
  • 133 Lab Confirmed; 13 Epi-linked
• 64% Were associated with Child Care Ctrs
• 18 Child Care Centers
• 13 Schools
• Cases Range 5 months old - 84 yrs
  • Median age: 4
  • Mean Age: 13
• 6 Counties
No. of Cases of Shigella in Northern Kentucky by Month of Onset

<table>
<thead>
<tr>
<th>Date of Onset of Illness</th>
<th>No. of Cases</th>
</tr>
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<tbody>
<tr>
<td>Apr-11</td>
<td>41</td>
</tr>
<tr>
<td>May-11</td>
<td>33</td>
</tr>
<tr>
<td>Jun-11</td>
<td>30</td>
</tr>
<tr>
<td>Jul-11</td>
<td>13</td>
</tr>
<tr>
<td>Aug-11</td>
<td>14</td>
</tr>
<tr>
<td>Sep-11</td>
<td>3</td>
</tr>
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Impact

• Lost Work Days
  • Staff
  • Parent of Ill Children
  • Hospitalizations

• First day care had 26 cases, some out for several weeks
What Worked

- Childcare Centers must report early
- Act early!
- Work as a Team
- Don’t be afraid to restrict pools

- Communicate:
  - Media: Keep the public Informed!
  - Providers Update
  - Child Care Centers:
    - If diarrhea: Go home!
    - Neg Cultures to return
Conclusions

• Started out in Child Care Centers, mostly in Diapered children
• Ended up in the community
• No spread through food or pools documented
• Early aggressive interventions helped
Thank You!
Any questions?

“Mr Osborne, may I be excused? My brain is full.”
May all your summers be Shigella free!