Outbreaks in Long Term Care & Assisted Living Facilities

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What is an outbreak?

• In general:
  – More illness than expected

• For LTC / other health care facilities:
  – More diarrhea or vomiting in unit or facility than would be expected at a particular time of year

• CDC definition of a foodborne outbreak:
  – “Two or more cases of a similar illness resulting from the ingestion of a common food in the United States”
Most common causes of outbreaks in LTC facilities

- Norovirus
  - Influenza
  - Enteric organisms
    - Salmonella
    - Shigella
    - Campylobacter
How are they spread?

• Person to person
  – Norovirus
  – Influenza

• Common source
  – Norovirus
  – Enteric organisms
    • Salmonella, Shigella, Campy, etc
What is Norovirus?

- Causes viral gastroenteritis: rarely fatal
  - Vomiting
  - Low-grade fever
  - Headache
  - Chills
  - Diarrhea (watery)
  - Abdominal cramps
  - Nausea
  - Malaise

- Incubation period: 12 – 48 hours
- Duration: 12 – 60 hours
- Reservoir: humans
- Treatment: fluid replacement
Transmission

- **Highly contagious!**
- Very low infectious dose (<100 particles)
- Virus highly concentrated in stool/vomit of infected people
- **Communicability:**
  - Most contagious while symptomatic
  - Transmission documented at least 2 days after recovery
  - People can shed virus for up to three weeks after recovery
Transmission

• Fecal → oral transmission
  – Foodborne
  – Person to person
  – Fomites
• Airborne spread (aerosolized vomitus)
Norovirus Outbreaks

- Common source vs. person-to-person
- Settings: *long term care facilities*
  - Restaurants
  - Catered events
  - Schools
  - Hospitals
- Control measures: *implement immediately*
  - *do not wait for test results*
Non-foodborne Outbreaks of Known or Suspected Norovirus

Report Month

Number of Outbreaks

Non-foodborne Outbreaks of Known or Suspected Norovirus

Jan-03  Mar-03  May-03  Jul-03  Sep-03  Nov-03  Jan-04  Mar-04  May-04  Jul-04  Sep-04  Nov-04  Jan-05  Mar-05  May-05  Jul-05  Sep-05  Nov-05  Jan-06  Mar-06  May-06  Jul-06  Sep-06

0  2  4  6  8  10  12  14  16  18  20

## Settings of Non-foodborne Norovirus Outbreaks, 2003-2006*

<table>
<thead>
<tr>
<th>Setting</th>
<th>Count</th>
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</thead>
<tbody>
<tr>
<td>Long term care / skilled nsg</td>
<td>128</td>
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<tr>
<td>Assisted living</td>
<td>13</td>
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<tr>
<td>School / school trips</td>
<td>7</td>
</tr>
<tr>
<td>Psych / behavioral</td>
<td>6</td>
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<tr>
<td>Summer camps</td>
<td>6</td>
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<tr>
<td>Hospital</td>
<td>5</td>
</tr>
<tr>
<td>Child care</td>
<td>3</td>
</tr>
<tr>
<td>Rehab facility</td>
<td>2</td>
</tr>
<tr>
<td>Campground</td>
<td>1</td>
</tr>
<tr>
<td>Correctional facility</td>
<td>1</td>
</tr>
<tr>
<td>Misc community / housing units</td>
<td>6</td>
</tr>
<tr>
<td>Unknown</td>
<td>5</td>
</tr>
</tbody>
</table>

*2006 data as of Sept 30
Norovirus Outbreaks in Health Care Settings, 2003-2006*

- 157 outbreaks reported
- 23 counties
- Median outbreak duration: 12 days (1-50 d)
- Median attack rates:
  - Residents/patients 30% (0-100%)
  - Number of residents 23 ill (0-79)
  - Staff 13% (0-100%)
  - Number of staff 10 ill (0-49)
- 44% (66) of outbreaks confirmed norovirus (i.e. 2 or more positive specimens)
What to do if you suspect an outbreak at your facility?

• Call public health
  – Either local county or CDPHE

• Review norovirus guidelines:
  http://www.cdphe.state.co.us/dc/epidemiology/dc_guide.asp

• Implement control measures as soon as possible; do not wait for lab results!
Outbreak Reporting Resources

• Local health departments
• Regional epidemiologists
• CDPHE numbers:
  – Communicable Disease Program, 303-692-2700
  – Consumer Protection Division, 303-692-3620
  – Alicia Cronquist, 303-692-2629; alicia.cronquist@state.co.us
What to Expect from Public Health?

- Review control measures with you
- Review circumstances of outbreak and determine degree of additional investigation necessary
What to Expect from Public Health

• Is it an outbreak?
  – How many residents, staff ill?
  – What is “usual” at your facility?
• Determine if norovirus is likely cause
  – Symptoms, duration of illness, hospitalizations? deaths?
• Determine if spread likely person-to-person or from common source (e.g. food)
  – First onset date, onset dates of subsequent persons, distribution around facility
Next Steps for PH

• If outbreak likely norovirus and appears to be spread person-to-person
  – Focus on control measures
  – PH will ask facility to monitor for new cases and submit summary info at end of outbreak
  – PH will stay in touch with facility to be sure things are resolving, no new issues, etc.
  – Facility may send specimens for norovirus testing on fee for service basis
Next Steps for PH

• If outbreak does not seem to be norovirus OR appears to be from a common source (such as food)
  – Focus on control measures
  – PH will likely conduct more extensive investigation; ask for more info
  – PH may request specimens be sent to state lab for testing (free of charge)
Control measures – health care / residential facilities

Residents/patients:

• Contact precautions for ill residents
• Restrict ill persons to rooms (until 2 days after symptoms resolve)
• Increase handwashing
• Discontinue group activities in affected units
• Create a line list of ill residents
Control measures – health care / residential facilities

Staff

• Increase handwashing / inservice
• Exclude ill staff (until 2 days after symptoms resolve)
• Ask staff not to work at any other facilities during this time
• Discontinue “floating” from affected to unaffected units/wings
• Use gloves/gowns
• Create a line list of ill staff
Control measures – health care / residential facilities

Facility:
• Increase facility cleaning/disinfecting with appropriate agents
• 10% solution of bleach
• Post signs for visitors about GI outbreak (please don’t say “flu outbreak”)
• Consider halting/limiting admissions
Recommendations for Hand Hygiene

• Traditional soap and water
  – mechanical removal
  – thorough rinsing and drying
  – increase emphasis during outbreaks

• Alcohol hand rubs
  – effective *adjunct* to traditional wash

• Gloves are important PPE, but not a replacement for hand hygiene
Control measures – any setting with food service

- Prevent food handlers from working while ill with diarrhea or vomiting (sick leave policies)
- Encourage workers to report on-the-job illness to management
- Exclude ill workers until at least 2 days after illness resolves (vomiting and diarrhea cease)
- Increase cleaning throughout facility
- Glove order during outbreaks
Diagnosis

• CDPHE and commercial laboratories can test bulk stool/vomitus
• Use real-time PCR (polymerase chain reaction)
• Best to collect specimen during first 48 hours of illness
• Outbreak: 2-6 specimens from different ill individuals
• Testing on fee-for-service basis ($103/specimen at state lab)
Norovirus in an Assisted Living Facility: Foodborne outbreak during a propagated outbreak, April 2004
The call

- Friday April 23
- MD reported that on Thursday he had seen 3 patients in the ED with vomiting, diarrhea and low grade temp; sudden onset of symptoms
- All 3 patients were admitted
- All live at same long term care facility
Facility

- 170 residents (Assisted Living and Independent Apts)
- Median age 87 years
- Meals eaten in 3 dining rooms served by one kitchen
Where to start?

- Suspected foodborne outbreak
- Suspected bacterial toxin (*Staph aureus* enterotoxin)
- Chicken dumplings for Thursday lunch
- Local health dept called the facility
- Requested line list of ill residents
- Requested stool specimens
  - At hospital
  - At facility
Investigation

- Inspected the kitchen
- Reviewed control measures
- Interviewed staff about illness – especially kitchen staff
- Attempted to interview residents
  - Hard to find
  - Recall issues
Cases of GI illness at a Metro-Denver LTC facility, 2004

<table>
<thead>
<tr>
<th>Onset Date</th>
<th>Number of Cases</th>
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<tbody>
<tr>
<td>4/14</td>
<td>Residents 1</td>
</tr>
<tr>
<td>4/16</td>
<td>Residents 1</td>
</tr>
<tr>
<td>4/18</td>
<td>Residents 1</td>
</tr>
<tr>
<td>4/20</td>
<td>Residents 3, Staff 1</td>
</tr>
<tr>
<td>4/22</td>
<td>Residents 8</td>
</tr>
<tr>
<td>4/24</td>
<td>Residents 13, Staff 1</td>
</tr>
<tr>
<td>4/26</td>
<td>Residents 3</td>
</tr>
<tr>
<td>4/28</td>
<td>Residents 1</td>
</tr>
<tr>
<td>4/30</td>
<td>Residents 1</td>
</tr>
<tr>
<td>5/2</td>
<td>Residents 1</td>
</tr>
</tbody>
</table>

Notes:
- Dining rm sup. out sick
- Cook's helper sent home
Cases

- 58 total residents ill (34% attack rate)
- 4 staff ill
- 5 hospitalizations
- No deaths
- 7 / 9 positive for norovirus by PCR
  - 6 residents
  - 1 cook’s helper (tested positive again 2 weeks later)
How did it start?

• Don’t know
• Day treatment facility with reported similar illness among staff members
• Family members of residents reported similar illness in community
• Message:
  – Can’t prevent norovirus from entering a facility
  – CAN identify outbreaks quickly
  – CAN prevent further spread
Questions?