



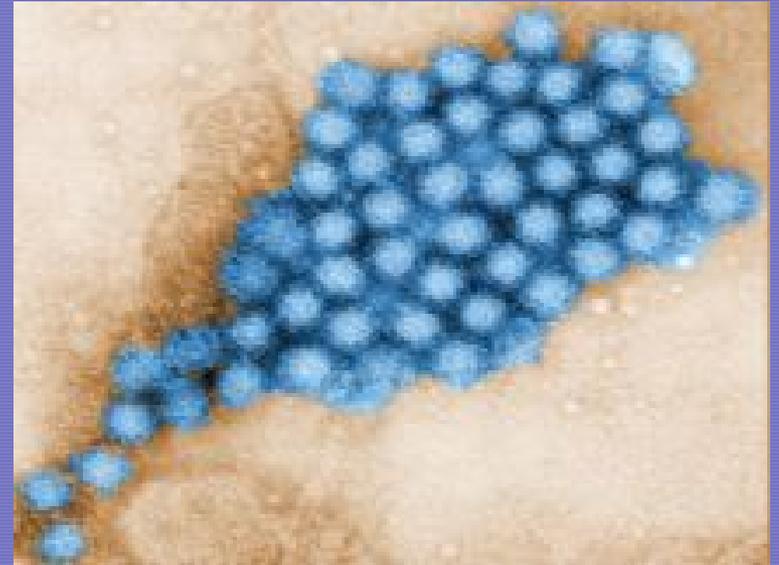
Hope College Norovirus Outbreak 2008

Ottawa County Health Department



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Norovirus





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Norovirus



Symptoms

△ Nausea

△ Vomiting

△ Diarrhea

△ Abdominal cramping





Norovirus

- △ Short incubation period: 24-48 hours
- △ Short duration: 24-48 hours (range: 12-60 hours)
- △ Easily spread
 - △ Food, direct contact, aerosolization
- △ Contagious for at least 48-72 hours after recovery
- △ Virus may be shed in stool for 2 weeks
- △ Virus may last on surfaces up to a month or more

Survival on surfaces

△ 40 degrees F: greater than 60 days

△ 68 degrees F (room temp): 21-28 days

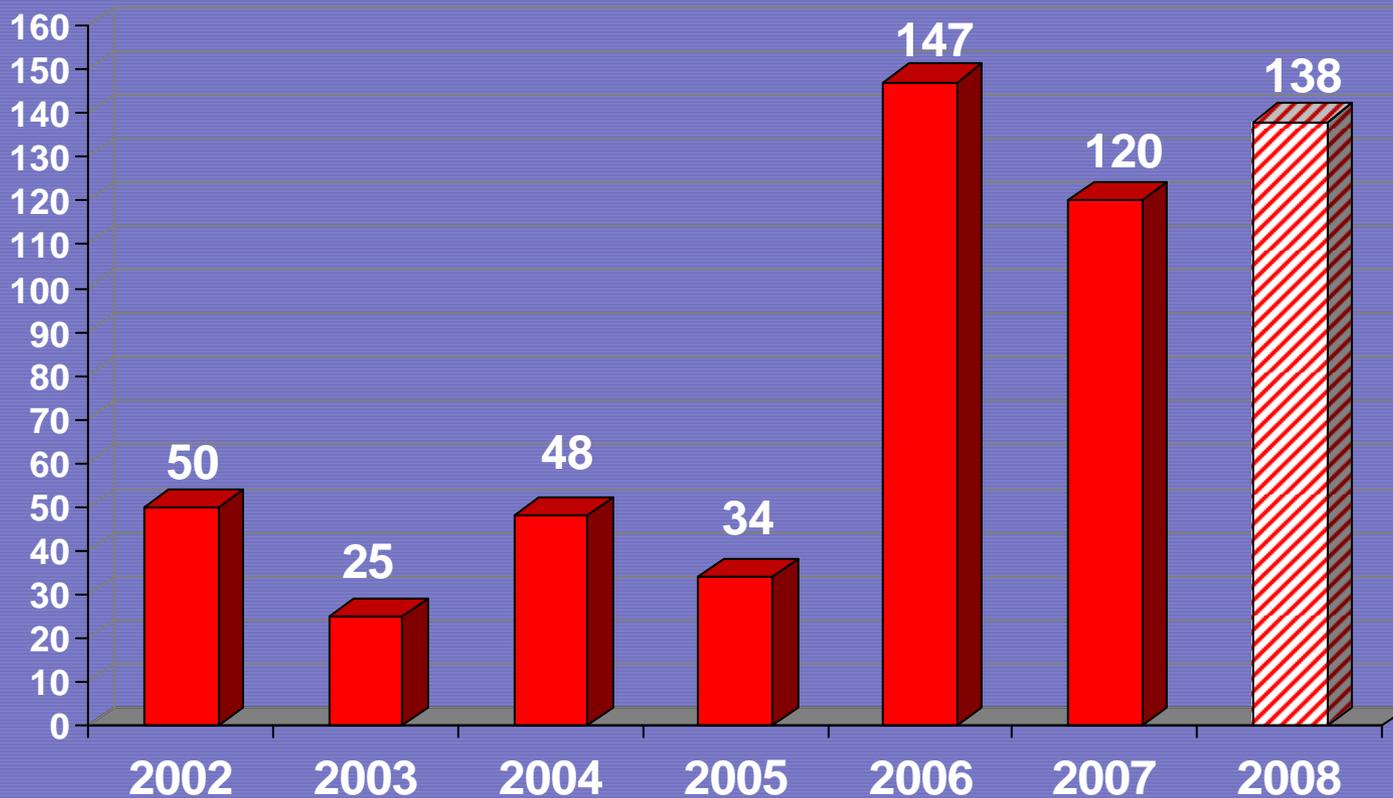
△ 98.6 degrees F: less than 1 day

Norovirus

- △ Usually a “mild” disease
 - △ worse with elderly and immune-compromised
- △ Symptomatic treatment
- △ 30% of infected people may be asymptomatic
- △ Several types of “Noro-like” viruses
- △ Undergoes frequent mutations
- △ No vaccine available

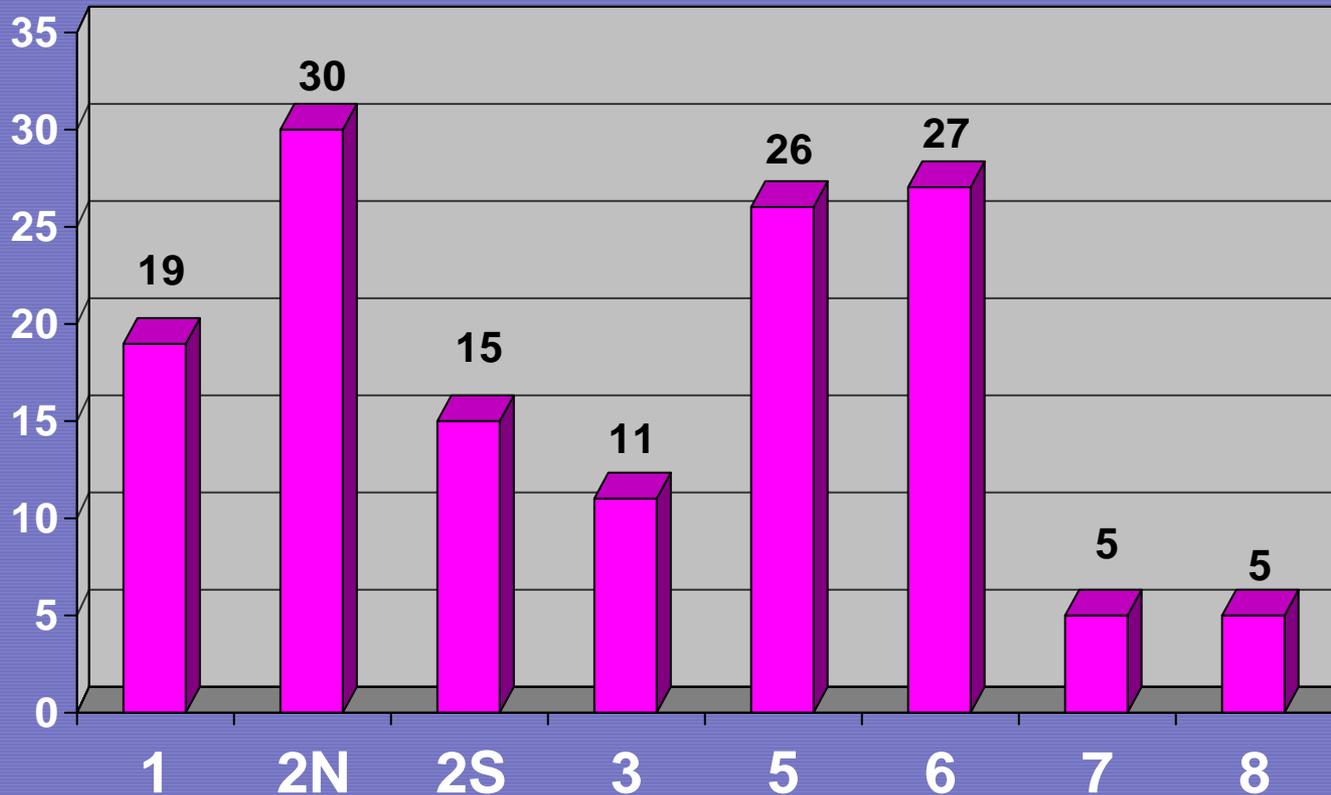


Michigan Outbreaks 2002-2008



Data as of 1/8/2009

2008 Outbreaks by Region

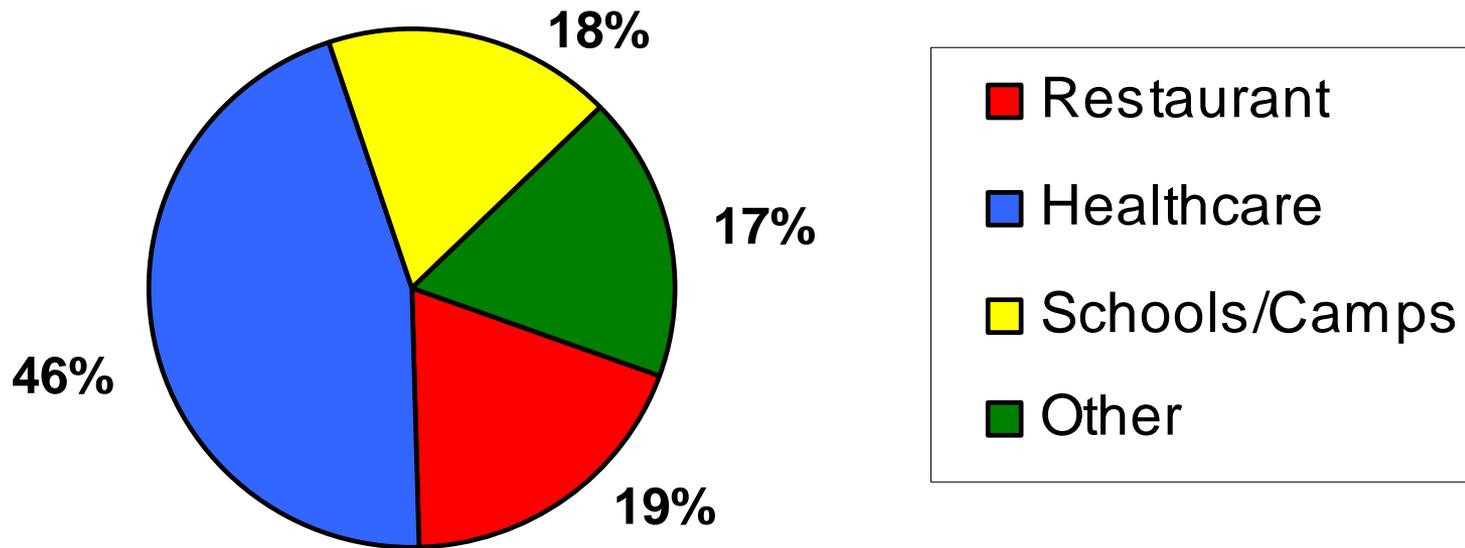




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2008 Outbreaks by Location

Norovirus Outbreak Locations, 2008





Hope College Norovirus Outbreak 2008

Ottawa County Health Department

The End Result





Day 1: Thursday, Nov 6

- △ 9:15 AM: 3 students with vomiting and diarrhea
- △ 9:30 AM: 6 more cases (total of 9 cases)
- △ 9:45 AM: OCHD emergency response team convened
- △ 10:00 AM: Conference call with MDCH
- △ Norovirus considered as possible causative agent
- △ Decision made to allow all college activities to continue
- △ Hope College president notified
- △ Initiation of *investigation, education, prevention*



Investigation

- △ Inspection of Hope College dining facilities
- △ Information gathered from Hope Medical Clinic
 - △ Patients interviewed
 - △ Contacts interviewed
 - △ Request to clinic for additional surveillance
- △ 3 stool samples collected and sent for testing



Education

- △ “Health Alert” and informational packets sent to:
 - △ Community schools
 - △ Medical facilities
 - △ Medical providers

- △ Informational packets included information on:
 - △ Norovirus
 - △ Hand washing
 - △ Cleaning and sanitizing



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Prevention





Prevention



Mid-afternoon Update





Day 2: Friday, Nov 7

- △ 9:00 AM: OCHD emergency response team meets
- △ Approximately 130 cases had been reported
- △ Conference call with MDCH
- △ Decision made to close Hope College and cancel all activities

(Sections 2253 and 2453 of the Michigan Public Health Code)
- △ County Administrator and Corporate Council notified
- △ Meeting scheduled with Hope College administration



Day 2: Friday, Nov 7

△ Reasons for closing:

- △ Rapid increase in the number cases: 130 in 24 hours
- △ Only one main dining hall
- △ Reports of unexcused absences for sickness
- △ Large number of activities planned
- △ Large influx of people expected



Scheduled weekend activities

- △ Parents weekend
- △ Volleyball tournament to determine NCAA bids
- △ Home football game
- △ Nykerk Cup competition
- △ Chapel service for more than 1200 people
- △ Two major business conferences on campus
- △ Wind ensemble concert



Day 2: Friday, Nov 7

△ 11:30 AM:

Meeting with Hope College Administrative Team

- △ President
- △ Dean of Students
- △ Provost
- △ Manager of Food Services
- △ Public Information Officer
- △ Medical Clinic Nurses



Day 2: Friday, Nov 7

- △ Decision made to close school until Tues 8 AM
- △ All school activities canceled
- △ All buildings locked except for cleaning
- △ Extensive sanitation throughout campus
- △ Students, staff and faculty notified



Methods of Notification

△ Electronic notification

△ E-mail

△ Text messaging

△ Hope College web site

△ Media

△ Campus signage



Instructions to students

- △ Stay on campus!
- △ E-mail illness reports to OCHD
- △ Avoid public gatherings
- △ Sanitation/personal hygiene

Sanitation



Student Involvement





Day 2: Friday, Nov 7

- △ 3 PM press conference scheduled

- △ 2:45 PM: Stool samples “negative” for Norovirus

- △ 3 PM: Press conference
 - △ Hope College
 - △ Ottawa County Health Department
 - △ Multiple news media



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Media Outreach



Media Coverage



Food Services

- △ Alternate dining halls closed for cleaning
- △ Take out food service only





Day 3: Saturday, Nov 8

- △ Medical clinic open 9AM – 3 PM (normally closed)
- △ 180 cases reported by 8 AM
- △ Update with Hope College President, Dean of Students
- △ Estimated that 80-90% of students had left campus
- △ Students told to text illness information to Hope College
- △ 280 cases reported by 8 PM
- △ Continue surveillance and sanitation



Day 4: Sunday, Nov 9

- △ Medical clinic open 9AM - 3PM (normally closed)
- △ By mid morning over 400 total cases reported
- △ 3 PM: Meeting with Hope College administration
- △ Closure extended until 6 AM, Wed Nov 12



Day 5: Monday, Nov 10

- △ 12 new cases reported
- △ MDCH requests additional stool samples
- △ Information on sanitation sent to local restaurants
- △ Informational visits made to 17 local hotels



Day 6: Tuesday, Nov 11

- △ 7 new cases reported
- △ Discussion with MDCH and Hope College
- △ Decision to resume classes/all activities the next day



Day 7: Wednesday, Nov 12

- △ Hope College re-opened
- △ No new outbreaks
- △ Prevention stressed to staff, students
- △ Continued sanitation and surveillance



Case Definition

- △ Hope College students, faculty or staff
- △ Symptoms of vomiting and/or diarrhea
- △ Additionally, at least one of the following:
 - △ headache
 - △ body aches
 - △ nausea
 - △ fever
- △ Onset dates Nov 1-19



Final Statistics

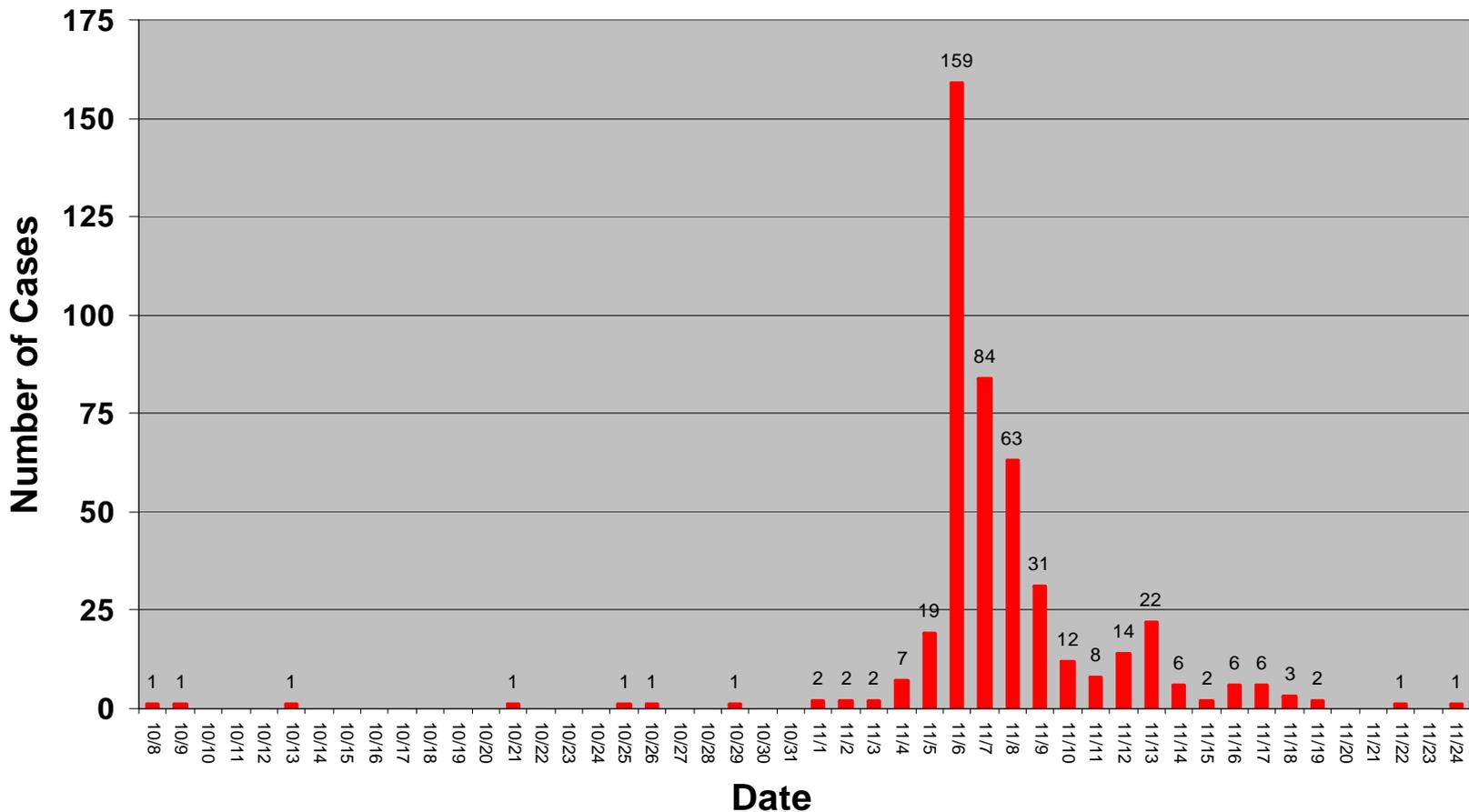
- △ Total cases: 451
 - △ 421 students
 - △ 30 faculty and staff
- △ Treated at Hope Medical Clinic: 73
- △ Sent to ER: 2 (for rehydration)
- △ Hospitalized: None

Symptoms Reported

△ Vomiting	200
△ Diarrhea	153
△ Nausea	152
△ Abdominal cramping	51
△ Fever	47
△ Headache	24
△ Chills	17
△ Muscle pain	17

Number of cases by day

Hope College Norovirus Outbreak - November 2008





Data Sources

- △ Hope College Clinic
- △ Area hospital emergency departments
- △ Self reporting to Hope College/OCHD
 - △ Probably some sick who were not counted
 - △ Probably some counted who were not sick



Follow-up

- △ Nov 18: Report received from MDCH
 - △ All stool samples were positive for Norovirus (G1)
- △ Confirmatory letter sent to Hope College
- △ Other “outbreaks” probably linked to Hope:
 - △ Alma College
 - △ Wheaton College
 - △ Grand Valley State University



Cost

△ Hope College:

Estimated \$115,000 due to food expenses, wages for extra cleaning, lost supplies

△ Local economy:

Thousands of dollars lost for hotels, restaurants, other local merchants

△ Intangible Costs:

“Lost opportunities”



Lesson Learned: Positives

- △ Utilization of technology to inform students
- △ Prior relationships with Hope College/clinic
- △ Early Health Department notification
- △ Updates to -- and by -- the media
- △ Early use of “mass fax” notification
- △ Food service take out
- △ Cleaning kits for students
- △ Use of “Incident Command System”

Lessons Learned: Areas to Improve

- △ Clinic overwhelmed, answering machine used:
 - △ Offer assistance, stress importance of surveillance
- △ Faculty required ill students to be in class:
 - △ Better initial education/involvement of faculty
- △ Difficulty accurately tracking illness data:
 - △ Use of onsite epidemiologist
- △ Incorrect lab results resulting in false negatives:
 - △ Repeat labs sooner if results are suspect
- △ Students did not follow instructions:
 - △ Disciplinary methods, quarantine, ??????????



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How to Make a Buck (or 10!)





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How to Make a Buck (or 10!)





Acknowledgements

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QUESTIONS ???