“Preventing and Responding to Norovirus in Branson, MO”

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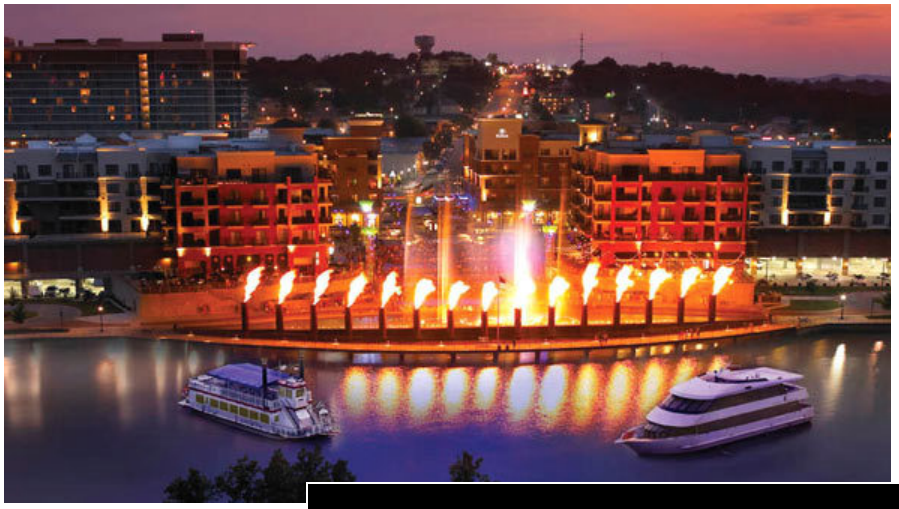
Public Health
Prevent. Promote. Protect.

Overview

Norovirus Outbreaks in Branson
Outbreak Response
Norovirus Training Strategy
Disease Surveillance

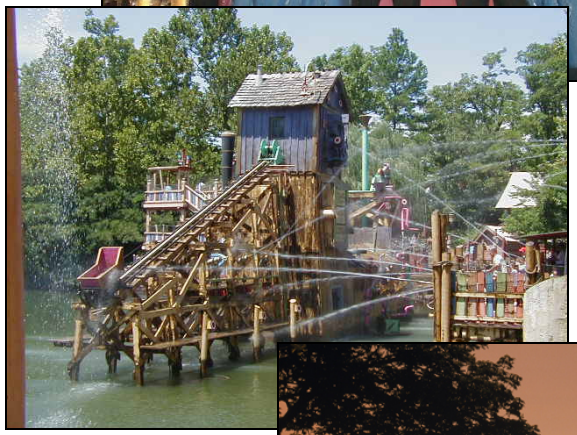
Branson

- Population: ~10,000
- 7.5 to 9 Million Visitors Annually
- 39 Theaters
  - 7 Dinner Theaters
- 369 Food Serv. Facilities
- 140 Lodging Facilities
- 374 Pools/Water Parks
- Shopping Malls
- Attractions



Branson

- Top Motor Coach destination in United States
  - Over 100 buses/week (Oct.-Dec.)
- Average Stay 2.5 Days
  - Multiple restaurants, venues, 2-3 Theater Shows each day
- Theaters may have 25 Motor Coach tour groups/show
- Branson is within a one-day drive of 50% of the US Population.



Branson Norovirus Challenges

Rapid Onset

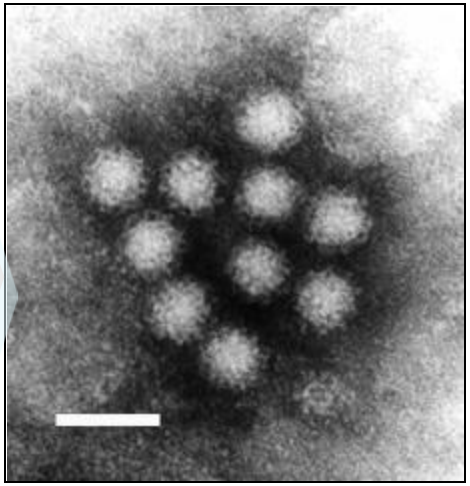
Symptoms appear quickly

Contagious

Norovirus is very contagious!

Complications

Some serious complications
-Branson visitors…



Transmission electron micrograph of noroviruses.
The white bar = 50 nm

Branson Norovirus Challenges

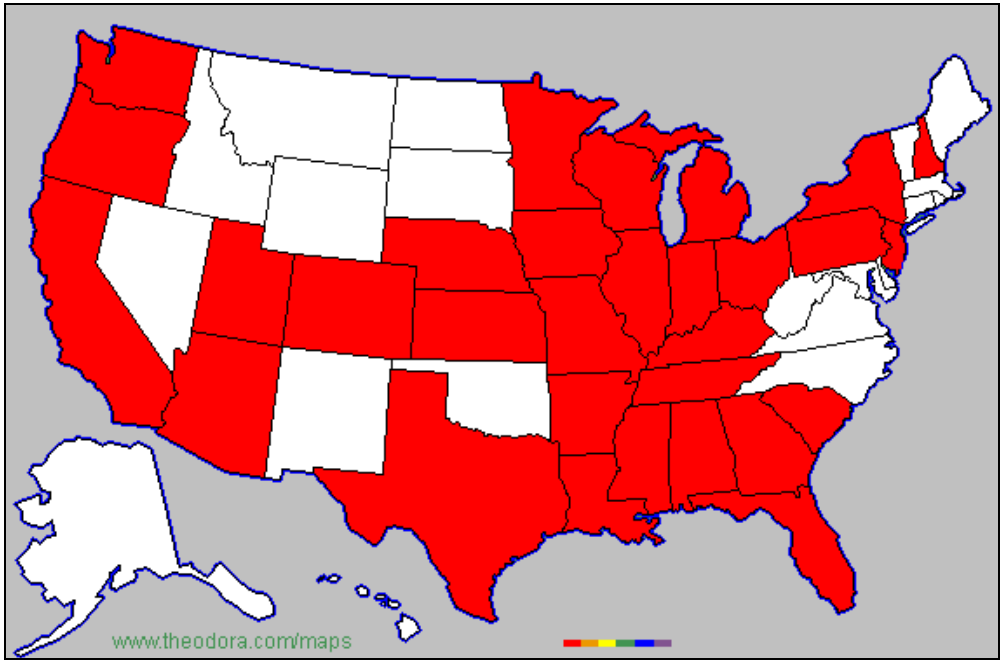
- Public Vomiting Incidents (PVI) and Public Diarrheal Incidents (PDI)
  - Various locations
    - Restrooms, lobbies, restaurants, theaters, motor coaches, balcony, etc.

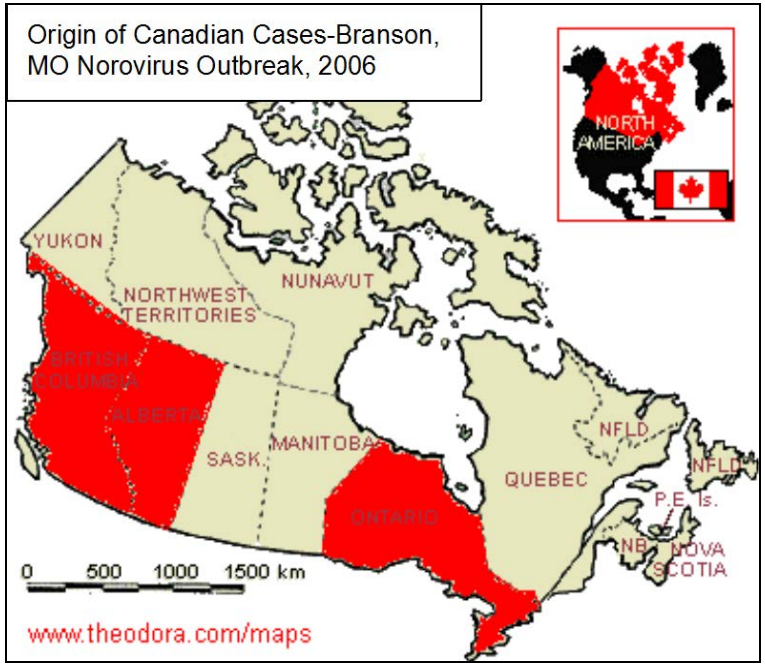
- Other groups with illnesses
  - First Responders (Fire, EMS), healthcare providers, Employees/Managers (theaters, hotels, attractions, malls), family members

Norovirus Outbreak: Fall 2006, Branson

- From Mid-October through December 11, 2006:
  - **524 cases identified** (Confirmed, Probable and Suspect)
  - **47 Tour Groups with ill passengers**
  - **10 Family Groups**
  - **Other Groups with illnesses:**
    - First responders, healthcare providers, theater employees, hotel employees, attraction employees, restaurant employees, and family members

Fall 2006 Outbreak Impact: Origin of Tour Group Passengers





- 30 States
- 3 Canadian Provinces
- Scotland

Norovirus Outbreak: Fall 2006, Branson

- Forty-four groups provided complete itineraries:
  - Locations visited by ill groups (n=127)

- **Theaters** (n=42)
- **Restaurants** (n=37)
- **Lodging** (n=21)
- **Attractions** (n=15)
- **Shopping areas** (n=12)

Norovirus Outbreak: Fall 2006, Branson

54 PVI or PDI were reported:

- Theaters (52.8%)
- Buses (17.0%)
- Public restrooms (7.5%)
- Airplanes (1.9%)
- Restaurants (1.9%)
- Other public areas (20.8%)
  - Parking lots, sidewalks, off balconies, lobbies,…

Norovirus Outbreak: Fall 2006, Branson

Twelve groups reported AGIs prior to arriving

↓

10 States

↓

2 Canadian Provinces

Six PCR positive cultures

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Different bus groups & different states

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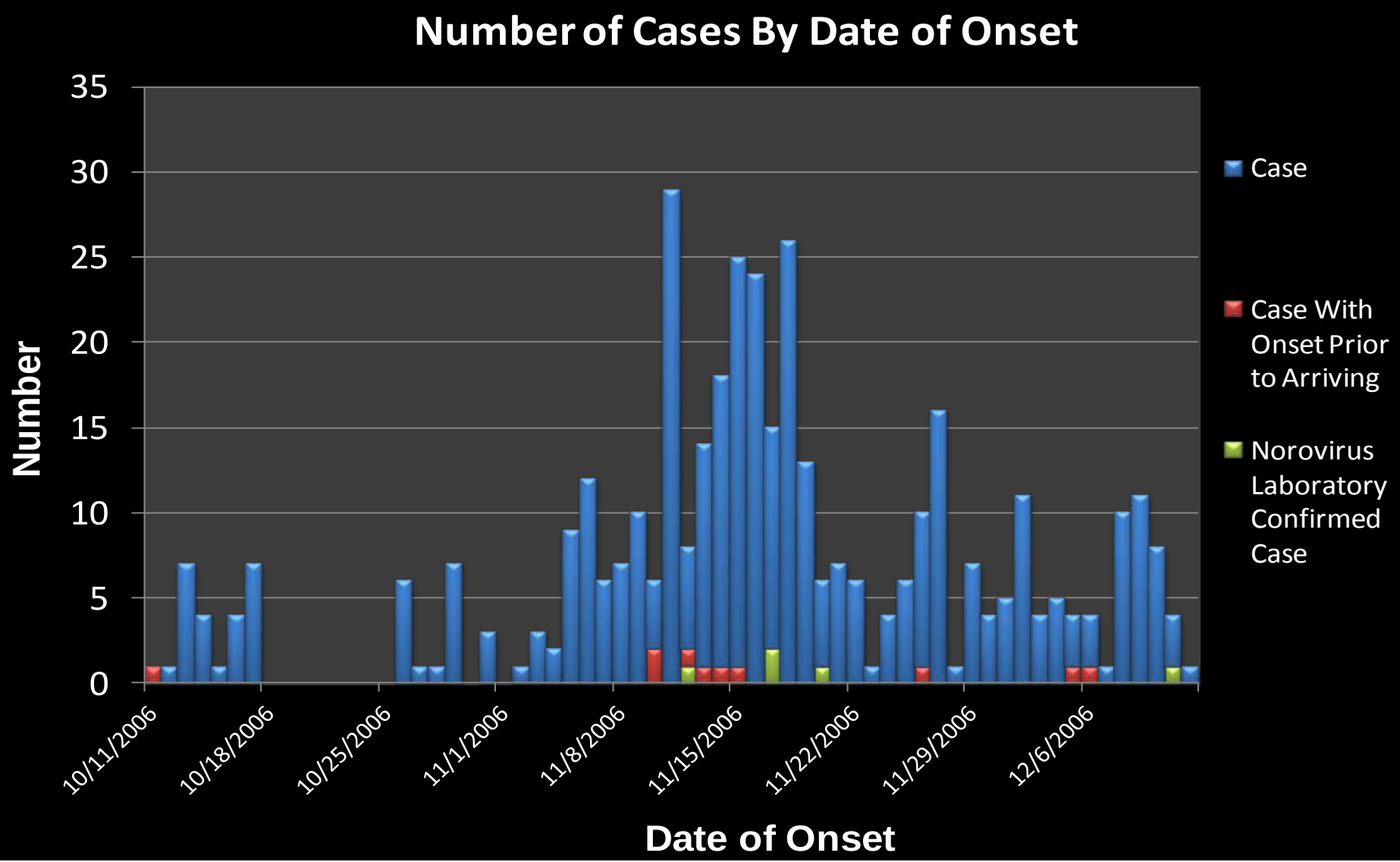
Two Genotypes

- GII.4 Minerva
- GII.4 Farmington

Norovirus Outbreak: Fall 2006, Branson



Nurse Educational Conference Norovirus Outbreak, May 2010

Number of attendees:

- 406

Origin of attendees:

- 37 States and Canada

Consisted of:

- **Pre- Conference Education**
- **Conference with Breakout Sessions**
- **Workshops**
- **Post Conference Meetings**

Nurse Educational Conference Norovirus Outbreak, May 2010

- A total of 63 persons (4 confirmed, 59 probable) met the case definition
  - Attack rate: 15.5%
- Cases reported from 21 states
  - Majority of the cases (22%) from Missouri
- Symptom onset date ranged from April 13 through April 22, 2010
  - Point-source exposure suspected with subsequent person-to-person transmission to later cases.

Nurse Educational Conference Norovirus Outbreak, May 2010

- Questionnaire Results
  - Of the 406 participants, 244 (60%) responded to the survey.
- Laboratory Results
  - Four stool specimens tested positive for norovirus GI.
    - One specimen collected **two weeks** after symptoms had resolved in the patient was positive (Tennessee DH)
  - All six specimens tested were negative for common bacterial enteric pathogens.

Response Priorities

- Immediate Response
  - Dispatch EPHS and Epi
    - Emergency room
    - Hotel
    - Location of motor coach (if possible)
  - Information
    - Hypothesis generating interviews (food history, signs and symptoms, date of onset, others ill, etc.)
    - Other information
      - Hotel and room number, itinerary, tour guide/driver
      - Location of PVI or PDI
      - City of departure, date/time
      - Branson arrival/departure, date/time
      - Other tour groups ill

Response Priorities

- Interviews of Tour Members, Guide, Driver
  - Questionnaire development?
- Education
  - Tour guide and driver
  - Tour group members
  - Facility management
  - Facility staff
- Environmental Inspections of Facilities
  - Restaurants, Theaters, Hotels, Other Venues

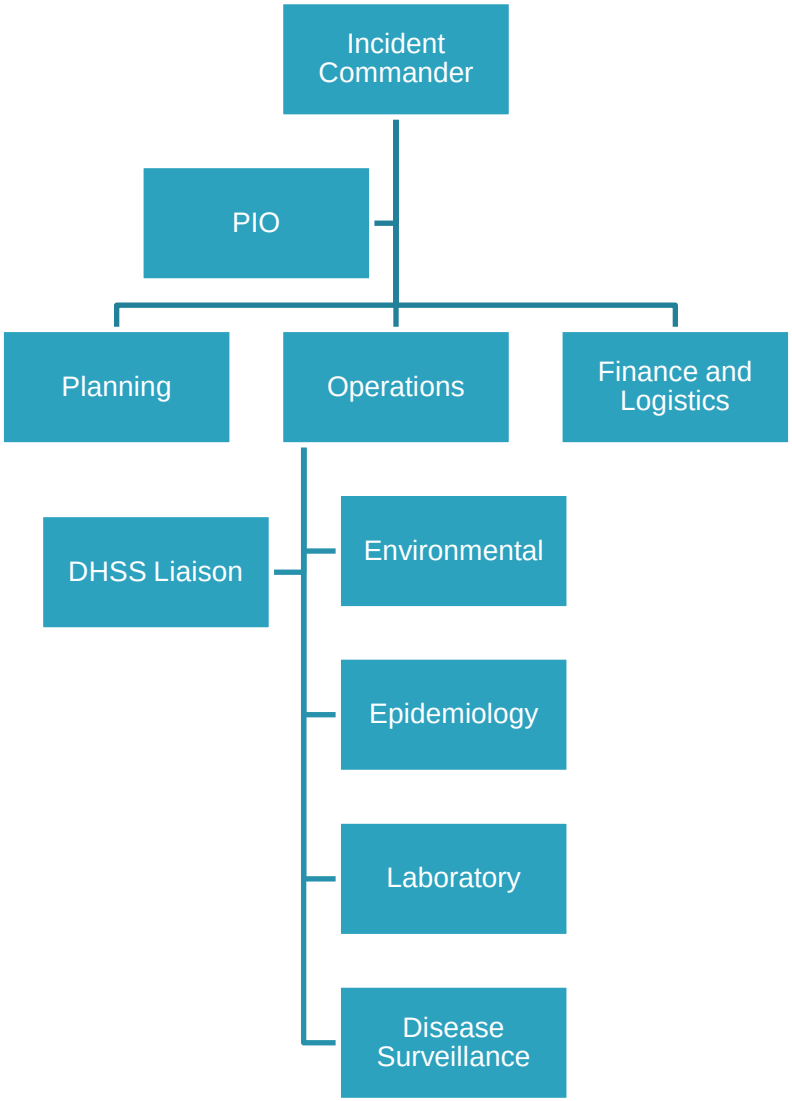
Response Priorities

- Samples…

Response Priorities

- Health Advisories to Response Partners and Businesses
  - EMS, Fire, ER, Restaurants, Hotels, Theaters
  - Missouri Department of Health
- Increased Surveillance
  - ER
  - EMS
- Coordination with other jurisdictions

Outbreak Response: Incident Command System (ICS)



Norovirus Training Strategy: Community-wide Effort

Community-wide

Effort

Community

Employees and Co-workers

Overall Goal: Protection of…

Business and Area Economy

Guests

Norovirus Training Strategy: Community-wide Effort

- Why do we need a community-wide effort?
  - Tour group characteristics
    - visit many locations
    - may bring the virus to/from a hotel, restaurant, theater, etc.
  - Multiple facility response
    - prevents spread to other locations
    - Peer pressure for risk management
  - Reporting

Importance of Training: May 2007

- Two tour groups with ill passengers from two different states
  - Both groups reported having ill passengers prior to arriving

  Group 1
    - 31 passengers ill (62%), including driver and guide

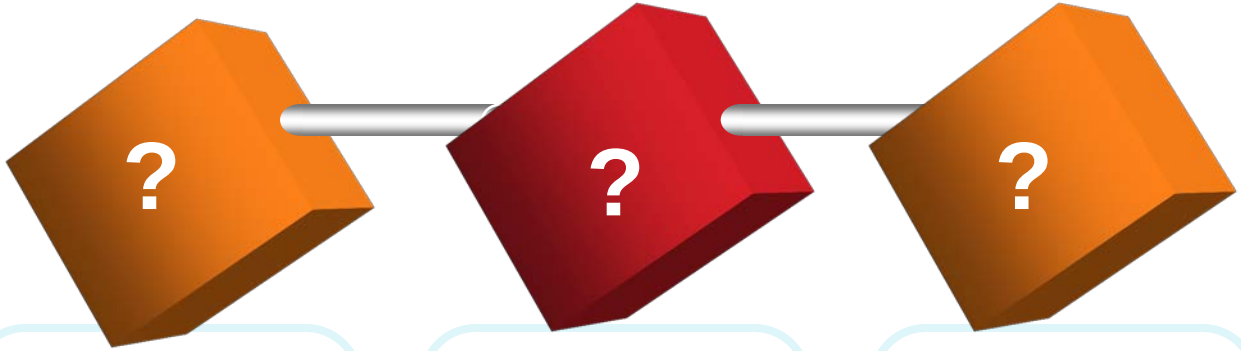
  Group 2
    - 6 passengers ill (18.8%)

- Two different hotels involved

Importance of Training: May 2007

- Both hotels:
  - Managers attended the March seminar
  - Implemented a response plan based on the training
  - Quick response
    - Notified health department
    - Immediately implemented cleaning and precautions
    - Health department notified theaters and attractions
    - Investigation initiated
- Only one additional case was reported with another group at one hotel

Annual Norovirus Training



What is Norovirus?

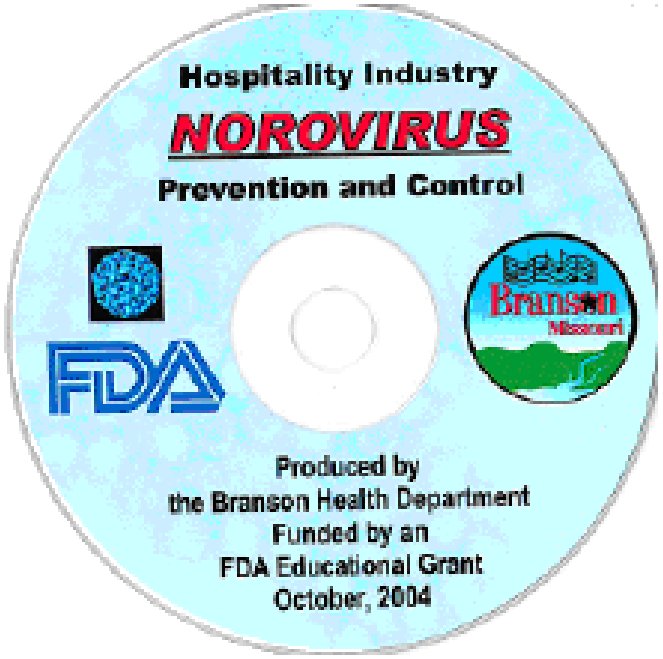
Why is this an important issue?

How can they protect their business?

Annual Norovirus Training

- Proper Cleaning Review
  - Cleaning Procedures
  - Products and Use
  - “Go-kit”
  - PPE
- Education of employees
- Education of guests
- Reporting

“Train-the-trainer”



Annual Norovirus Training

Exposure Control Plan

- Proper cleaning procedures
- Policies and employee designations
- Norovirus and prevention information
- Education of employees
- Education of guests/passengers
- Reporting

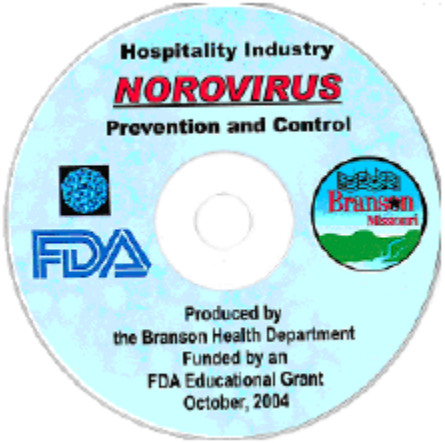
Disease Surveillance:

Increasing Awareness

- Goal is to increase awareness of **all** employees in area businesses
  - Employees and Management
    - *Example: Hotel Front Desk Employees*
- Health Care
  - ER, EMS, Fire, LE
- Received reports from:
  - ER, EMS, Fire, Hotels, Restaurants

Next Steps

1. Continue with annual Norovirus training
2. Expand outreach to area businesses
3. Update Norovirus training materials
   - Current CD is dated (2004)
4. Develop more web-based training and tools
   - Webinars, YouTube, Facebook,Twitter



Thank you

Public Health

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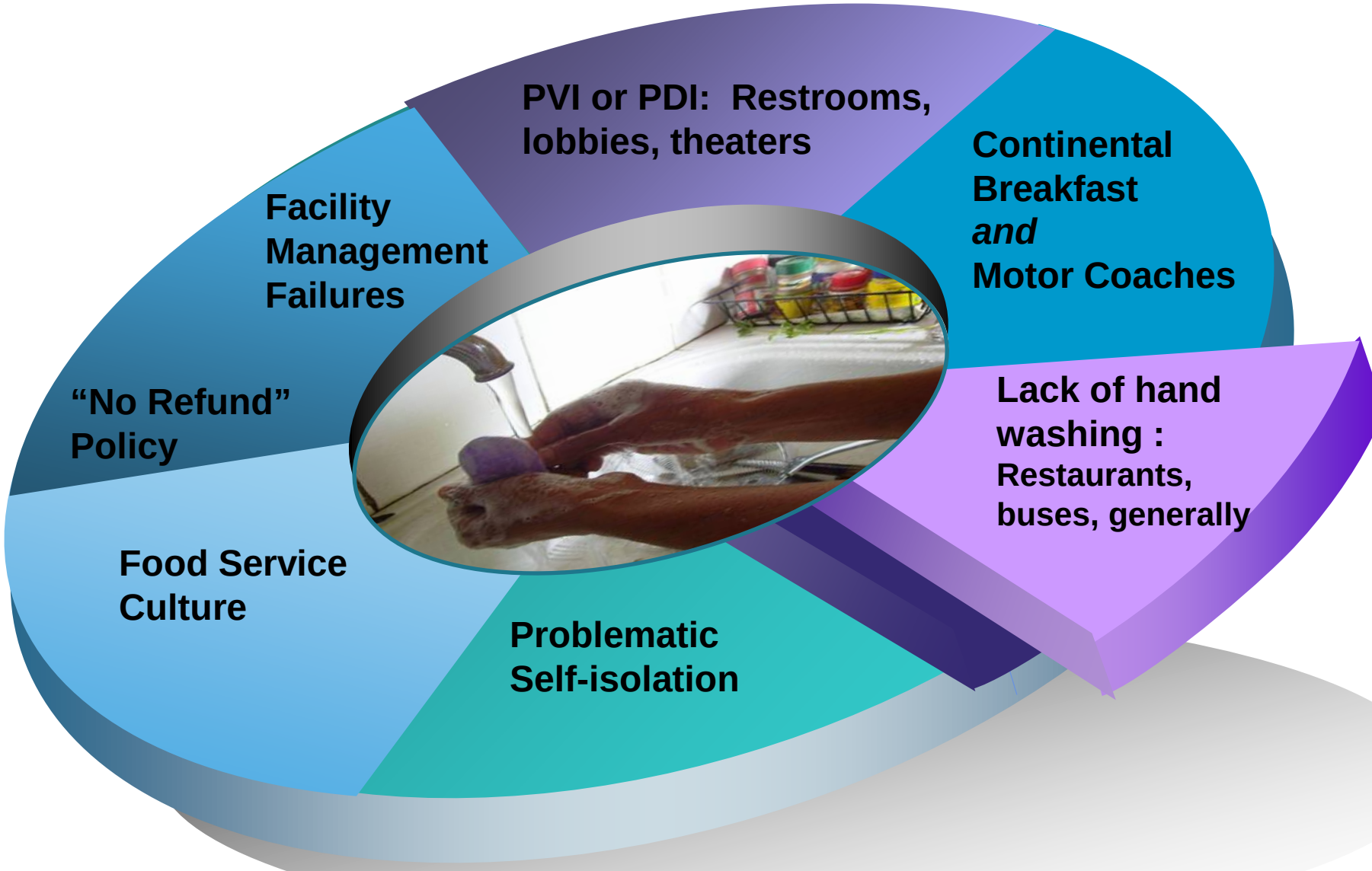
Lessons Learned