crisis management: strategies for simultaneously managing two high profile outbreaks

Grand Traverse County Health Department

Wendy Hirschenberger, MPH, CPHA
Health Officer

Jodi Kelly MSN, RN
Deputy Health Officer
Director of Community Health
objectives

▪ to identify best practice strategies for managing a county-wide Pertussis outbreak

▪ to identify best practice strategies for managing Measles cases in a multi-county outbreak

▪ to identify operational strategies used during outbreaks in order implement communicable disease prevention strategies and build the architecture for outbreak preparedness
outbreak 1: pertussis

Whooping Cough

This infection causes uncontrollable and violent bouts of cough leading to extreme difficulty in breathing.
pertussis outbreak - statistics

- 28,660 cases in US in 2014
  - 1424 in Michigan 2014 (43% increase)
    - 91 cases in Grand Traverse County 2014
    - 142 probable Pertussis cases
    - 13 Parapertussis cases

- average age 11.5 years
  - age range 4 months to 44 years
  - 22 schools, preschools, daycares
pertussis outbreak- timeline

October 21, 2014 Index Case
- Grand Traverse Academy teacher
- prophylaxis offered to entire classroom, family, close contacts

November 4, 2014 2nd Wave
- father of child from classroom failed to have child prophylaxed
- all children in family unvaccinated; 4 grades same school
- prophylaxis entire school; 1200 students and teachers; 18% waiver rate
pertussis outbreak - timeline

by November 12, 2014
- 13 confirmed cases
  - 10 Academy
  - home schooler
  - 4 month old
  - first Traverse City Area Public Schools; waiver rate 10%

by November 19, 2014
- 17 additional confirmed cases
  - last of the Academy cases
  - 12 classrooms in 10 buildings

by First Week of December----Peaked
pertussis outbreak - progression

pertussis hotline
- 4380 calls
- 1450

prescriptions
- 1450

case investigations
- 1 case/2-3months
- 7 cases/day
- transmission sites of risk

vaccination readiness
- Tdap and flu clinics

epidemiological updates
- 6-7% increase in Tdap rates ages 13 and older post outbreak
pertussis - medical guidance

recommended post exposure prophylaxis
  - household members
  - living with infants under 12 months
  - living with immune-compromised

why entire academy?
  - multiple confirmed and linked cases from 2 waves of positive tests separated by 2 week incubation period

cases in other schools
  - hand to mouth contact
  - cautious approach to a preschool cut-off

re-prophylaxis
parapertussis
pertussis- staffing

resource allocation & reassignments
- communicable disease coverage
- hotline coverage
- weekend and holiday coverage
- clerical support
- case investigations-15 household and close contacts

team concept
- all hands on deck approach: be flexible
- know your employee’s strengths
- allow everyone to rotate and evaluate
- narrow team by experience and comfort
- daily pertussis team management
- daily assignments
- staff scheduled vacations
- morning huddles to review status
- everyone needs to take a break
pertussis- COMMUNITY RESPONSE

strategies for partnering

▪ principals, school nurse, administrative assistants
  ▪ 280 calls and emails
  ▪ 72 school letters to parents
  ▪ holiday coverage

▪ physician practice collaboration
  ▪ 30 calls and emails
  ▪ 12 physician health alerts

▪ pharmacy readiness
  ▪ prophylaxis
  ▪ Tdap
  ▪ direct bill
pertussis ah-has

- involve emergency preparedness coordinator early
- inform pharmacies
- give local physicians a “heads up”
- maintain up-to-date list of providers, pharmacies and school contacts
- designate outbreak work area
- provide team members school letters and press releases
- lead with kindness and calmness, trust and be honest
- embrace the opportunity to work together for a common goal: to stop the spread!
"If you connect the measles it spells out ‘My parents are idiots.’"
outbreak 2: measles

measles cases added to a busy 2014

- a *highly contagious* vaccine preventable disease with at least 3 days of rash AND a fever of at least 101 AND cough, runny nose OR conjunctivitis

two cases

- unvaccinated young adult siblings
- traveled to the Philippines
- currently a large measles outbreak in the Philippines

initially diagnosis - typhoid fever
measles - statistics

**typhoid fever vs. measles**
- related to international travel
- similar incubation period
- similar clinical presentation
  - fever, GI, headache, rash

**incidence (CDC)**
- typhoid fever (salmonella typhi)
  - estimated 5,700 cases of typhoid fever occur annually in U.S., mostly among travelers.
  - estimated 2.1 million cases of typhoid fever and 200,000 deaths occur worldwide
- measles
  - since 2000, the number of cases in the U.S. has ranged from 37 in 2004 to 668 in 2014.
  - estimated 20 million people become infected with measles worldwide each year, with 146,000 deaths
measles outbreak- statistics

history - measles cases

- Grand Traverse County - 4 cases in 1989
- Leelanau County - 1 case in 1985
- Michigan - 28 cases since 2000
- Grand Traverse & Leelanau Counties - all 5 Michigan cases in 2014

Measles was off everyone’s radar in Grand Traverse County!
measles outbreak - timeline

11/18  return from Philippines
11/22  unvaccinated family of 3
11/23  urgent care diarrhea/sore throat/nausea/vomiting
11/24  plastic surgery office
11/26  emergency room and admission diarrhea and rash health department alerted of typhoid fever
11/26  unvaccinated children attend ½ school day
11/28  added rule out measles to diagnosis
11/29  2 of 3 family members start to show signs and symptoms
12/1   lab confirmed measles and health department notified
12/1   still hospitalized, discharged home late pm
12/2   public health nurse home visit first thing inpatient

11/22 RASH  0  11/30
Infectious Period
measles outbreak- progression

followed 2014 measles investigation guidelines
grand traverse county close contacts
  ▪ 2 travel companions
  ▪ 2 roommates
  ▪ sibling to the cases and his children
  ▪ plastic surgeon office
  ▪ urgent care waiting room
  ▪ emergency room waiting room
  ▪ 2 workers in home

Leelanau county close contacts
  ▪ children’s mom
  ▪ dad’s girlfriend
  ▪ school
  ▪ under vaccinated family of 4

heightened awareness & concern
measles- staffing

measles AND pertussis!!!

- two nurses were assigned to measles
- two directors, each leading an outbreak team
- pertussis outbreak continued
- minimal staffing for all other public health programs
- health department programs and services were continually prioritized
measles- important dates

December 19th
- notification received to monitor a low, but no risk traveler from an Ebola affected Country

December 21st
- no new cases linked to Grand Traverse

December 31st
- no new cases linked to Leelanau cases

January 2015
- pertussis cases slowed significantly

January 2015
- influenza was in full force

public health never...ever a dull moment!!!

These 2 outbreaks have changed how we do things.
measles – challenges, lessons learned, and pats-on-the-back

reporting
- making measles cases the priority
- home visits

communication
- team work with Benzie-Leelanau District Health Department
- physician health alerts
- divide and conquer outbreak management responsibilities

provider education
- Ebola preparedness paid off
- masking travelers in the emergency room
- guidance from Disneyland outbreak

community education

verifying immunity and labs
- facilitating quick titres

prophylaxis
OUTBREAK
Deadliest Pandemics in History

Because a virus doesn’t care about state lines or national borders, it can wipe out millions and span multiple continents rapidly. Here is a look at the infectious diseases the world has battled throughout history.

What is a Pandemic?
Derived from the Greek word “pandemos” meaning “pertaining to all people,” a pandemic is a widespread disease that affects humans over a wide geographic area.

Key:
- **PLAGUE of JUSTINIAN**
  - 541 - 750
  - 25 million

- **SPANISH FLU**
  - 1918 - 1919
  - 50-100 million

- **MEASLES**
  - 7th Century BC - 1963
  - 200 million

- **HIV/AIDS**
  - 1981 - TODAY
  - 25+ million

- **SMALLPOX**
  - 10,000 BC - 1979
  - 300+ million

- **BLACK DEATH**
  - 1340 - 1771
  - 75 million

- **TYPHUS**
  - 430 BC - TODAY
  - 4 million

- **CHOLERA**
  - 1817 - TODAY
  - 3 million

- **HONG KONG FLU**
  - 1968 - 1969
  - 1 million

- **THIRD PANDEMIC**
  - 1855
  - 12 million

**Ring Around the Rosie, a Pocket Full of Plague**
Legend says the Black Death plague inspired the children’s rhyme “Ring Around the Rosie,” which alluded to the rash-like rings and spots of the deceased victim.

Honorable Mentions
Although the following viruses do not have a figure for total amounts of lives claimed, they continue to terrorize various areas around the world.

- **TUBERCULOSIS**
  - 700 BC - Today
  - Common Symptoms: Chest Pain, Cough, Fever, Chills, Fatigue

- **MALARIA**
  - 1500 - Today
  - Common Symptoms: Chills, Headache, Fever, Jaundice, Muscle Pain, Nausea, Vomiting, Seizures

- **DEATH TOLL**
  - According to the World Health Organization’s 2020 ‘World Malaria Report,’ an estimated 295,000 people are killed by the virus every year.

- **YELLOW FEVER**
  - 16th Century - Today
  - Common Symptoms: Bleeding, Fever, Nausea, Vomiting, Delirium, Seizures, Jaundice

- **Death Toll**
  - Worldwide, 30,000 deaths are caused by the infection every year.
outbreak operational strategies

Incident Command
- activate?
- structure

Using the Logic Model
- event / problem
- criteria / judgment
- level of activation

Why implement?
- effective span of control at all levels
- effective use of resources/staff
outbreak operational strategies

**Evolving Public Health Incident**
Communicable disease outbreak, non-communicable disease outbreak, pandemic, radiological or chemical agent, etc.

**Terrorism**
Intentional release of chemical, radiological, or biological agent, explosive device, etc.

Does the event create a shortage of staff or affect GTCHD’s ability to effectively operate? Is the public/partner/media interest hindering the ability to communicate internally and/or externally?

- **NO**
- **YES**

**Activate GTCHD ICS**
outbreak operational strategies
outbreak operational strategies
outbreak operational strategies
outbreak operational strategies

Early & Consistent engagement of key partners:
- Medical Providers & Pharmacies
- Schools
- Media & Public
- Policy Makers / Board

HOW TO COMMUNICATE IN A PUBLIC HEALTH EMERGENCY RESPONSE

Accuracy of Information  
Speed of Release

CREDIBILITY

Empathy +
Openness

TRUST

= Successful Communication

Source: CDC’s Crisis/Emergency Risk Communication Manual: http://emergency.cdc.gov/ERC
OUTBREAK COMMUNICATION - PROVIDERS

PUBLIC HEALTH ALERT - UPDATE 12/18/14
Notification of Disease or Significant Health Event

From: Michael P Collins, MD, MS, Medical Director    Wendy S Trute, MPH, CPHA, Health Officer

Greetings of the Season - the infectious disease season that is! We have reached a new milestone today: 70 pertussis cases in Grand Traverse County and 14 parapertussis cases as well. There are now 19 schools in the county with students ill from these diseases. In addition to influenza, which has hit the area hard recently, and the normal winter viral bugs that circulate, there are many more northern Michigan counties who now have Pertussis cases as well. Our hotline has been busy, with over 3760 calls to date (and counting)! Some good news regarding the measles cases - we are approaching December 21st, which is the date determined if there will be any further spread from the Grand Traverse County index cases. As of today, we have only seen the additional 3 Leelanau County cases as a result of contact with the index case due to quick and diligent case investigation by public health staff. We have followed up on all exposures and worked closely with the Benzie-Leelanau District Health Department on their case investigation as well, as we know the exposures don’t stop at county lines. December 31st, is the date for where we can all breathe a sigh of relief that there are no more cases of Measles in the area due exposure to the Leelanau cases. Many of us in public health and primary care offices will ring in the New Year with an enthusiasm for having made it through this challenging end to 2014. Both dates are important milestones for our community.

Even though we haven’t talked much about Ebola in these health alerts the past few months, the Ebola preparedness did help prevent a broader exposure to the Measles cases. When the index cases went to the ER at Munson, they were asked the two screening questions about travel to other countries and respiratory symptoms. Because they said yes to both, they were immediately masked and brought to an isolation room, thus preventing many in the ER from being exposed.

Some Epidemiologic Pertussis Analysis that might be of interest to you:
- 55% of the confirmed cases were up-to-date on their pertussis vaccinations... (there's more to the story)
  - However, the mean and median age at diagnosis for this group is 10.4 and 10 - right at the age where they are due for a booster and their previous Tdap is at its lowest effectiveness.
  - Clearly there is room for improvement in the development of a better vaccine for Pertussis; but our anecdotal data on those cases we have been able to follow-up with who were vaccinated is that they were milder cases (as we would expect).
- Age range of cases is 3 months to 44 years of age; 45% of the cases are Male, 55% female

Symptoms:
- Cough: 98%
- Paroxysmal Cough: 71%
- Whoop: 8%
- Posttussive Vomiting: 26%
- Apnea: 8%
outbreak communication - media

GT County Monitoring Pertussis Outbreak at Area School

Date: 11-6-2014
Contact: Debi Miner at 231-995-6100

The Grand Traverse County Health Department is investigating an outbreak of Pertussis that spans several grades and multiple classrooms at Grand Traverse Academy. Pertussis, also known as Whooping Cough, continues to circulate in our community, mirroring increased activity occurring both statewide and nationwide. Currently, there are 8 confirmed cases and 11 suspected cases, as well as additional symptomatic students at this school currently being evaluated. Grand Traverse County Health Department has recommended that all household contacts and close contacts of these cases receive prophylactic antibiotics regardless of immunization status. Additionally, to further stop the spread of the current outbreak we are recommending that all students and staff at this school receive prophylactic antibiotics. Grand Traverse Academy has been working closely with the Health Department and complying with all recommendations.

Early symptoms can last for 1 to 2 weeks and usually include:
- Runny nose
- Low-grade fever (generally minimal throughout the course of the disease)
- Mild, occasional cough
- Apnea — a pause in breathing (in infants)

Pertussis can cause violent and rapid coughing, over and over, until the air is gone from the lungs and you are forced to inhale with a loud "whooping" sound. This extreme coughing can cause you to throw up and be very tired. The whooping is often not there and the infection is generally milder in teens and adults, especially those who have been vaccinated. The incubation period of Pertussis is usually 7 to 10 days. Transmission occurs from close contact with infected human respiratory secretions (large droplets). Immunity from previous illnesses or immunization can vary over time and often older children, adolescents, and adults are the source of disease.

It’s important that both children and adults are up-to-date on their immunizations. Booster shots for pertussis are critical because, unlike some other vaccine-preventable diseases, neither the pertussis disease nor vaccine confers lifelong immunity. The best way to prevent pertussis cases and outbreaks is to have the highest possible level of immunization in the community.

Community members can also help prevent the spread of whooping cough by taking the following precautions:
- Washing hands frequently
- Covering nose/mouth when coughing
- Staying home from work and school when sick, even if just a cough
- Contacting their health care provider if they have a prolonged or severe cough

For additional information on Pertussis please visit the following websites: http://www.cdc.gov/pertussis/ Or http://michigaraedocs/mship/PertussisFactSheet_284515_7.pdf

11-8-2014

Update on Pertussis Outbreak at Area School

The Grand Traverse County Health Department continues to respond to an outbreak of Pertussis, also known as Whooping Cough, at Grand Traverse Academy. The number of cases associated with this outbreak continues to increase; however, at this time, all cases are linked to exposure at this school. As of November 8th, there are 9 confirmed cases, 57 probable cases and many more suspected cases being seen at area physician offices, urgent cares and clinics. We expect the numbers to continue to increase as more cases are reported and evaluated. Grand Traverse Academy has been working closely with the Health Department and complying with all recommendations.

Due to the number of cases and classrooms affected, it is recommended that all students and staff at this school receive prophylactic antibiotics, to prevent additional illness and further spread. Additionally, all household contacts and close contacts of the confirmed and probable cases should receive prophylactic antibiotics regardless of immunization status.

The Health Department continues to staff the hot-line established for families and staff of Grand Traverse Academy, in order to facilitate the prescriptions for prophylaxis through the weekend. That phone number was included in the 1200+ letters sent home with students and on a follow-up call-out message from the academy to parents and staff. (If the outbreak spreads to the general community, this phone number will be made available to the public at that time, but due to the volume of calls at this time, this number is reserved for those affected by the outbreak directly.)

Grand Traverse County Health Department has taken on this role, as some area physician offices and clinics are not able to assist with their own patients who are not symptomatic, due to the large volume. Symptomatic individuals are continuing to overwhelm physician offices and urgent care clinics.

Grand Traverse Academy staff and students are encouraged to refrain from congregating in public places. Further, households that have ill people associated with this outbreak must refrain from public activities such as going to work, church, school and other social gatherings in public. Symptomatic individuals should stay home until they have completed the treatment (typically 5 days of antibiotics). Great care needs to be taken not to spread their illness.

The concern is the spread to the most vulnerable people in our community, infants, pregnant women, and those with suppressed immune systems, some of whom cannot be vaccinated. Whooping cough is a very serious illness, which is preventable by vaccine. Babies cannot receive their first dose until they are two months old. They are the most vulnerable and at high risk of death if they get pertussis. If you are or have a vulnerable member of the community in your household, be aware that there are multiple cases of pertussis in our community and be mindful of where you go, who you’re around, or allow to be around you or your newborn baby.
Measles is a highly contagious infection caused by a virus that is spread through the air. It can be quite serious, especially for young children under 5 and for adults, especially those with other chronic illnesses.

A number of complications, especially diarrhea, are possible and measles can result in hospitalization, pneumonia, encephalitis and death.

Symptoms of measles include fever, runny nose, cough, loss of appetite, “pink eye,” and a rash. The rash usually lasts 5-6 days and begins at the hairline, moves to the face and upper neck, and proceeds down the body. Complications, especially diarrhea, are possible and measles can result in hospitalization, pneumonia, encephalitis and death. Individuals who develop measles begin to be infectious to others several days before they themselves become sick.

The Health Department is working with several entities to directly contact those who may have been exposed. Several close contacts have been isolated and are being monitored for symptoms. The Health Department is also encouraging the public to make sure they are vaccinated against the measles, as world-wide there has been a resurgence of cases.

2 confirmed cases of Measles in Grand Traverse County- both were unimmunized and had recently returned from traveling to the Philippines.

According to the Michigan Department of Community Health, these are the first measles cases in Michigan in 2014. Over 600 measles cases have been reported nationwide in 2014, the highest number in any year since 1994.

The best way to protect yourself from the measles is to get vaccinated with the MMR (measles/mumps/rubella) vaccine, which is very effective and safe.

Adults and children all need to be vaccinated to protect the health their families, friends and the community as a whole.

Immunity to measles is life-long, either through having the measles or being immunized. People born before 1957 can be assumed to be immune, as nearly every child caught measles prior to the availability of a vaccine. Individuals who had the measles shot (MMR) in childhood, are also immune.
community engagement - MEDIA

OUTBREAK

Whooping cough spreads

Health officials urge preventative antibiotic for students, staff

Academy confirms outbreak

Health officials, whooping cough, that span several grades and multiple classrooms at the school. There are six confirmed cases, 10 others are being tested and additional asymptomatic students are being evaluated.

A second outbreak...
GT County will increase staff

Officials hope new addition will help ease workload

BY SARAH ELMS

THE VERSE CITY — Grand Traverse County Health Department officials have been in overdrive since a rash of communicable diseases emerged in the community this year, and they hope adding an additional nurse will help ease the workload.

County commissioners unanimously approved the addition of one full-time public health nurse to the department’s communicable disease program, which monitors and responds to more than 70 communicable diseases that law requires physicians and laboratories to report.

“I’m in support of the motion,” Commissioner Charlie Renny said. “I’d also like to compliment the health department on how they handled all phases of the outbreak this fall.”

Health Officer Wendy Trute said she’s been pulling nurses from other service areas to meet the program’s increased volume of whooping cough, parapneumonia, and measles cases.

That’s resulted in cuts to health clinics, home visits and school vision and hearing screenings, as well as in a loss of revenue to those programs.

“We’ve come to the point where we just can’t continue to do that. It’s not feasible anymore,” Trute told commissioners last week.

SEE STAFF PAGE 2B
outbreak operations & staffing

Biggest Challenge - key staff off
- medical director - 3 weeks
- communicable disease director - 3 weeks
- public information officer - 6 weeks

Staff shifting
- family planning and STD clinics reduced in half
- pulled staff from MIHP, Adolescent Clinics, Children’s Special Health Care Services, Vision & Hearing, Healthy Futures, Medicaid Outreach activities
- called in extra staff (on call)
- EHR & accreditation put on hold
- increased immunization & flu staff

Staff morale

Vacations/Holiday & Illness (influenza)
outbreak operations - COST

Extra staff time
- comp- 88 hours
- overtime- 42 hours

Increased staff time due to outbreak
- management- 536 hours
- nursing & support staff- 660 hours

Prescriptions- $7000
Staff time cost- $55,000

Estimated cost of outbreak for GTCHD: $62,000
post outbreak climate

- Proceed with caution!
  - know before you go
  - be prepared
  - don’t engage

- Increased community interest in vaccination
  - media events
  - Immunization Task Force

How anti-vaxxers do statistics:

If you have 4 pencils and I have 7 apples, how many pancakes will fit on the roof? Purple, because aliens don’t wear hats.
Schools Changed policies!

- Children’s House
- TCAPS

Unvaccinated students no longer admitted to Montessori school in Traverse City

How Schools Are Dealing With Anti-Vaccine Parents

One campus is refusing to admit kids who haven't been immunized, and more could follow.
You never know you need powerful public health laws and an aggressive health department until ... you need them.

Grand Traverse County residents were well served by the vigorous reaction of the Grand Traverse County Health Department to outbreaks of pertussis (more commonly known as whooping cough), parapertussis (a similar upper respiratory disease) and measles since October.

While the department is still coping with whooping cough (there have been 85 confirmed cases in Grand Traverse County since an outbreak began at Grand Traverse Academy in October) and parapertussis, the measles threat has ended for now, officials said.

Two adults who weren't vaccinated for measles came down with the disease after they returned to Grand Traverse County in mid-November from a trip to the Philippines, where there's been an ongoing measles outbreak since November 2013. The two were hospitalized, and three of their relatives in Leelanau County fell ill with the disease soon after.

Health workers monitored people who came into contact with the five individuals for the full 21-day incubation period to be sure no symptoms appeared. New Year's Eve marked the end of the incubation period, and officials rang in 2015 with no new infections.

Michigan is taking steps to make it more difficult for parents to avoid immunizing their children, which should help prevent future pertussis and measles outbreaks in the future.
contact information

Jodi Kelly
Deputy Health Officer
Director of Community Health Services
jkelly@gtchd.org
231-995-6122

Wendy Hirschenberger
Health Officer
whirsch@gtchd.org
231-995-6101