

# STEPS AND PARTNERSHIPS IN OUTBREAK INVESTIGATION

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Athens, City of Ironton, Gallia, Hocking, Lawrence, Meigs, Ross, and Vinton County Health Departments

# **OBJECTIVES**

- Identify reportable disease resources in Ohio
- Recognize a possible infectious disease outbreak
- Explain the steps of an infectious disease outbreak investigation
- Recognize the appropriate collection and handling of specimens for a suspected outbreak
- Cite advantages of working with the Local Health Department in an outbreak investigation



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Frequently Asked Questions

BCMH Health Care Providers

### Infectious Disease Control Manual

The Infectious Disease Control Manual (IDCM) is a project of the Ohio Department of Health State Epidemiology Office with the assistance of the Bureau of Infectious Diseases, the Bureau of HIV/AIDS, STD and TB and the Bureau of Public Health Laboratories. It is designed to be a reference for local health departments, hospitals, laboratories and physicians in, providing information about infectious diseases from a public health perspective, including prevention, control and reporting of suspected and diagnosed cases. This manual is updated at least annually to reflect changes in public health practices and disease prevention and control activities.



General information, telephone numbers, abbreviations, definitions, lists of reportable diseases Section 1 alphabetically and by class, surveillance and epidemiologic investigations and interagency collaboration.

Section 2 Rules that pertain to infectious disease control.

Reportable and non-reportable infectious diseases are described in this section. Includes reporting requirements, description of the disease agents, case definition, signs and symptoms, Section 3 diagnostic criteria, epidemiology of the disease and public health management. Forms needed for

reporting and to assist in case investigation.

Describes the services available at the Ohio Department of Health Laboratories and discusses proper Section 4 specimen submission.

Limitations on movement and infection control practices to prevent the spread of infectious diseases. Section 5

Section 6 For informational purposes only.

http://www.odh.ohio.gov/healthresources/infectiousdiseasemanual.aspx

### Know Your ABCs: A Quick Guide to Reportable Infectious Diseases in Ohio

From the Ohio Administrative Code Chapter 3701-3; Effective January 1, 2014

### Class A:

Diseases of major public health concern because of the severity of disease or potential for epidemic spread — report immediately via telephone upon recognition that a case, a suspected case, or a positive laboratory result exists.

Anthrax

Betalism, fredborne

Cholefa
 Diphthefia

Influenza A – novel vitus

Meninga coccal disease

Measles

Rabies, human

Inbella (not congenital)

Severe acute tespiratory symillione

Smallpox Tulafemia

Wrathemathagic fever (WHF)

(SARS) • Yellow fevel

Any unexpected pattern of cases, suspected cases, deaths or increased incidence of any other disease of major public health concern, because of the severity of disease or potential for epidemic spread, which may indicate a newly recognized infectious agent, outbreak, epidemic, related public health hazard or act of bioterrorism.

### Class B:

Disease of public health concern needing timely response because of potential for epidemic spread—report by the end of the next business day after the existence of a case, a suspected case, or a positive laboratory result is known.

Amebiasis

 Afbovital neufoinvasive and non-neufoinvasive disease:

 Eastefn equine encephalitis virus disease

 La Crosse virus disease (other California serogroup virus disease)

Powassan vitus disease

 St. Louis encephalitis vitus disease

West Nile vitus infection

Western equine encephalitis virus disease

 Other arthrop of-borne diseases

Bab esiosis

Britsfism, infant
 Britsfism, wound

Britansm, wor

Brucellosis
 Carapylobacteriosis

- Chancfold

Chlamydia trachematis infections

Cuccidinidomycosis

Creutzfeldt-Jukub disease (CID) Cryptospolidiusis

Gyclospotiasis Dengue

E coli O157:H7 and Shiga tooin-producing (STEC) E coli Eletti chiosis langularmosis

Gardixás

Ganetthes (Naisseria garantiaeae) Haemophilus inflaenase (invasive

disease) Hantzvifus

Hemolytic utemic syndrome (HUS)

Hepatitis A Hepatitis B, non-petinatal Hepatitis B, petinatal

Hepatitis C Hepatitis D (delta hepatitis)

Hepatitis E

influenza-asso dated hospitalization Influenza-asso dated peliatric

moltality

Legi unaites' disease

LepTosy (Hansen disease)

Leptospirosis
 Listeriosis
 Lyme disease

Malatia Meningitis:

Aseptic (vital)
 Bacterial

Mumps

Mycobactefial disease, other than tubefoolosis (MOTT)

Mertusais

Poliumyelitis (including vaccine-associated cases)

Psittacusis

Q fevel
 Bubella (congenital)
 Salmonellosis

Shigellosis Spotted Fevel Richettsiosis, includ-

ing Roday Mountain spotted fevel

Staphylococcus aureus, with Tesis-

tance of intermediate resistance to vancomycin (VRSA, VISA)

 Střeptoroccal disease, gřoup A, invasive (IGAS)

 Střeptoroccal disease, gřoup B, in newbořn

 Střeptoroccal toxic shock syndřome (STSS)

Straptococcus pneumonias, invasive

disease (ISP)
- Syphilis

Tetanus
 Toxic shock syndrome (TSS)

Trichinellosis

 Tubefoulosis, including multi-drug resistant tubefoulosis (MDR-TB)

Typhnid fevet
 Typhus fevet
 Varicella
 Vibliosis

Yetsiniosis

### Class C:

Report an outbreak, unusual incident or epidemic of other diseases (e.g. histoplasmosis, pediculosis, scables, staphylococcal infections) by the end of the next business day.

### Outbreaks:

Community

Foodboine

- Healthcale-associated
  - Institutional

- Waterborne
- Zoonetic



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Healthcare-Associated Infections

For Consumers

For Healthcare Professionals

Ohio Hospital Compare

Ohio's Healthcare-Associated Infection Prevention Plan

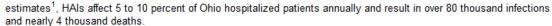
Antibiotic Resistant Organisms

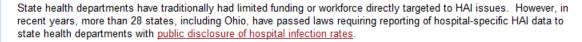
Contact Us

### **Healthcare-Associated Infections**

a the associated Healthcare-Associated Infections (HAIs) are infections that occur during, or as a consequence of, healthcare. In recent years, interest in HAIs has grown steadily in the United States among consumers, legislators, providers, payers and regulatory/accreditation organizations focusing on patient safety and performance improvement.

HAIs are a major clinical and public health problem across the spectrum of healthcare settings that results in high morbidity, mortality and cost. Based on national





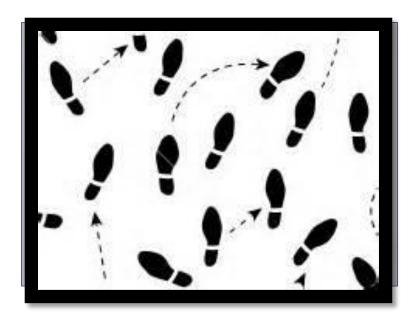
In January, 2009, Health and Human Services (HHS) released the HHS Action Plan to prevent HAIs. Each state has been encouraged to develop a HAI Prevention Plan. Please use the link to access Ohio's HAI Prevention Plan.

McKibben, L., et.al., AJIC 2005:33:4, 217-226.

Last updated: 08/13/12



Ohio Department of Health Phone: (614) 466-3543 ~ Contact Us Address: 246 N. High St., Columbus, Ohio 43215



- 5. Generate descriptive epidemiology
- 6. Develop the hypotheses
- 7. Test the hypotheses
- 8. Reconsider, refine, reevaluate Hypotheses
- 9. Implement control measures
- 10. Communicate findings

- Prepare
- Determine the existence of an outbreak
- 3. Verify the diagnosis
- 4. Define and identify cases

# PREPARE

- Training
- Familiarization with policies and procedures
- Supplies



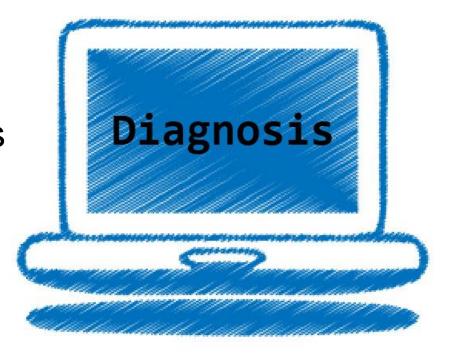
• The occurrence of cases of a disease (illness) above the expected or baseline level, usually over a given period of time, as a result of being in a healthcare facility or receiving healthcare-associated products or procedures.

•The number of cases indicating the presence of an outbreak will vary according to the disease agent, size and type of population exposed, previous exposure to the agent, and the time and place of occurrence.



# **VERIFY THE DIAGNOSIS**

- Conducting interviews and reviewing medical history to determine characteristics of illness
- Comparing suspected etiology to "textbook" cases
- Laboratory testing



Ummm...that's not what I had in mind when I requested a "tissue" specimen!



Recognize the appropriate collection and handling of specimens for a suspected outbreak

 Depends on the illness associated with the outbreak

Local Health
Department
will guide and
facilitate

Follow all specimen handling insturctions

# BASIC SPECIMENS COLLECTED IN OUTBREAKS BY LOCAL HEALTH DEPARTMENTS

STOOL SPECIMENS

FOOD/BEVERAGE SPECIMENS



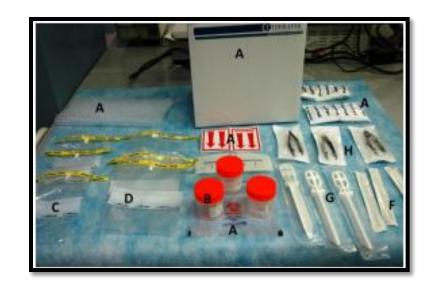
Extremely Depressed Poop



"The End Is Near"

# FOOD/BEVARGE SPECIMENS CAN BE TESTED FOR:

- Botulinum Neurotoxin-Producing Clostridium species
- Culture for Bacillus cereus, Campylobacter spp., Clostridium perfringens, Shigatoxin producing Escherichia coli, Listeria monocytogenes, Salmonella, Shigella spp., Staphylococcus aureus, Vibrio spp., and Yersinia enterocolitica; enzyme immunoassay for Bacillus cereus and Staphylococcus aureus enterotoxin; fecal coliform count

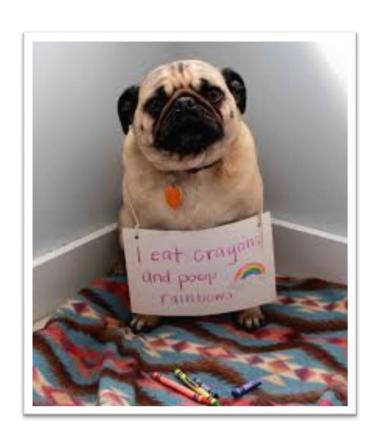


# **METHOD:**

- A minimum of 35 grams of a solid food item or 35 mL of a liquid food item is required
- Use separate sterile utensils and containers for each item
- Label each item
- Place liquid in cups and then bag
- Place more solid items in bags directly
- Maintain foods at the temperature as found when collected



# STOOL SPECIMENS



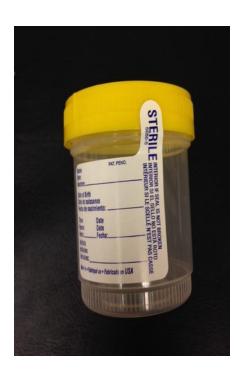
- Bulk
  - C & S (Cary Blair)
- Combination (Bulk and CSM)
  - Crypto

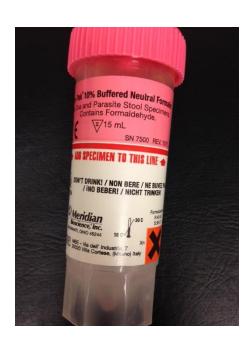
# TYPES OF STOOL SPECIMEN KITS

**BULK** 

**CRYPTO** 

C & S







# BULK STOOL SPECIMENS CAN BE TESTED FOR:

Botulism(botulinum toxin)

•Norovirus
(If submitting
vomitus,
follow same
method as
stool)

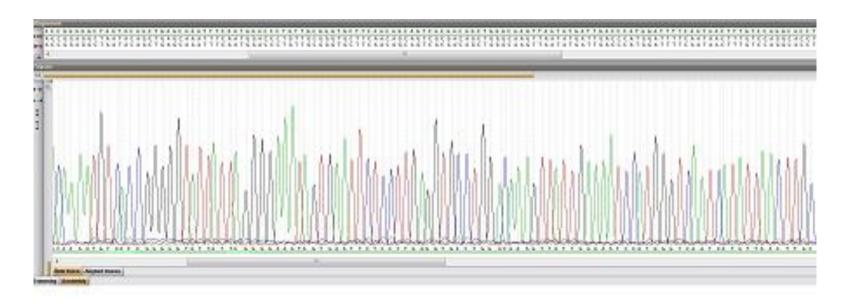
•Sometimes
further
testing for
other viruses
when ODH
requests

# **METHOD:**

- Ship a minimum of 2 mL of liquid or 2 grams of formed stool
- To collect stool use a stool collection pan (if not available, use an alternative such as newspaper, plastic tub, etc.)
- Stool must collected IMMEDIATELY and refrigerated IMMEDIATELY
- Bulks will keep fine in the refrigerator with no time limit, but lab prefers receipt in 5 days
- Stool MUST NOT be mixed with urine
- There is nothing sacred about the specimen containers provided
- Must be refrigerated during shipping

## Norovirus: From Sample Receipt

1-2 days for PCR results



# Crypto SPECIMEN CAN BE TESTED FOR:

# CRYPTOSPORIDIUM SPECIES



# **METHOD:**

- Three samples collected 1 day apart and preserved in 10% formalin are sufficient for reliable diagnosis
- Stool must be added until the formalin level reaches the line indicated on the collection vial. The vial must be firmly capped and the vial shaken vigorously to ensure proper sample preservation
- Ship at ambient temperature

# C & S medium SPECIMEN CAN BE TESTED FOR:

- E. coli
- Salmonella
  - Shigella
- Listeriamonocytogenes

# **METHOD:**

- DO NOT FREEZE
- Stool MUST NOT be mixed with urine
- Depending on suspected agent, if collecting both, determine which is more important
- Ship Cary-Blair overnight at ambient temperature
- Can be shipped with bulk stools under refrigeration/on ice packs
- Cary Blairs do not need to be kept refrigerated, but need to reach our lab within 4 days (96 hours) of being collected

### **Modified Cary Blair Medium Specimen Collection Guidelines**

IMPORTANT: Please read and follow all directions. You have been given a collection kit which is a Modified Cary Blair Medium (see image below). It is used to preserve the stool specimen for transport to the laboratory.

### Safety Measures:

- a) Keep the vial out of the reach of children.
- b) Do not drink the liquid found in the vial. If someone drinks the liquid, call your doctor or Poison Control Center.
- c) If the liquid touches your skin, wash the skin with soap and water.
- d) Do not use the vial if the liquid is yellow. Return the vial to your local health department and get a new vial.
- e) Do not use if the expiration (exp) date that appears on the vial label has passed. Return the vial to your local health department and get a new vial.

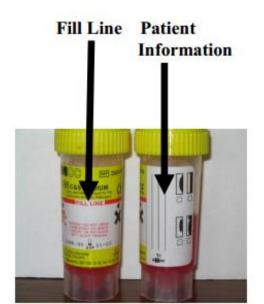
### How to Collect the Stool Specimen:

### a) DO NOT:

- i) Pass the stool directly into the vial.
- ii) Urinate on the stool or into the vial.
- iii) Pass the stool into a toilet.
- iv) Overfill the vial.

### b) DO:

- Make sure the patient name is neatly written in the information section on the side of the vial (see diagram).
- ii) Pass the stool into a clean, dry, container.
- iii) Use the collection spoon built into the lid of the vial to place small scoopfuls of the stool into the vial. Fill the vial until the contents of the vial rise to the "FILL LINE" on the vial label



# Salmonella: From Sample Receipt

- 2 days for a No Growth result
- 2 to 4 days for a Negative result
- 2 to 4 days for a Preliminary Positive result

# Shigella: From Sample Receipt

- 1 day for a No Growth result
- 1 to 2 days for a Negative result
- 2 days for a Positive result



# E. coli 0157: From Sample Receipt

- 1 day for a No Growth result
- 1 to 2 days for a Negative result
- 2 to 3 days for a Positive result-Preliminary positive in 1 to 2 days



# E. coli non0157: From Sample Receipt

- 1 day for a No Growth result
- 1 day for a Negative result
- 4 days for a Positive result-Preliminary positive in 1 day

# Other specimen possibilities:

- Disease specific protocols from ODH
- Influenza
- LHD is in more of a position of coordinator with facility, ODH, and labs

# DEFINE AND IDENTIFY CASES

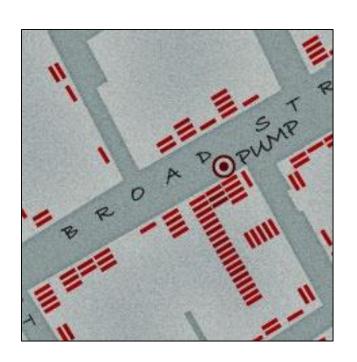
- What is a case?
- How many cases are there?

### CASE DEFINITION:

- •Symptoms
- •Laboratory Results
- •Time
- •Place
- •Person



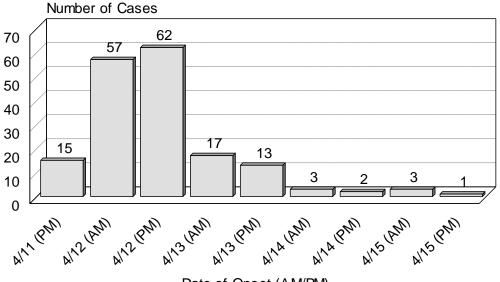
# DESCRIPTIVE EPIDEMIOLOGY



Example 6.1 Common-Source Outbreak Epidemic Curve

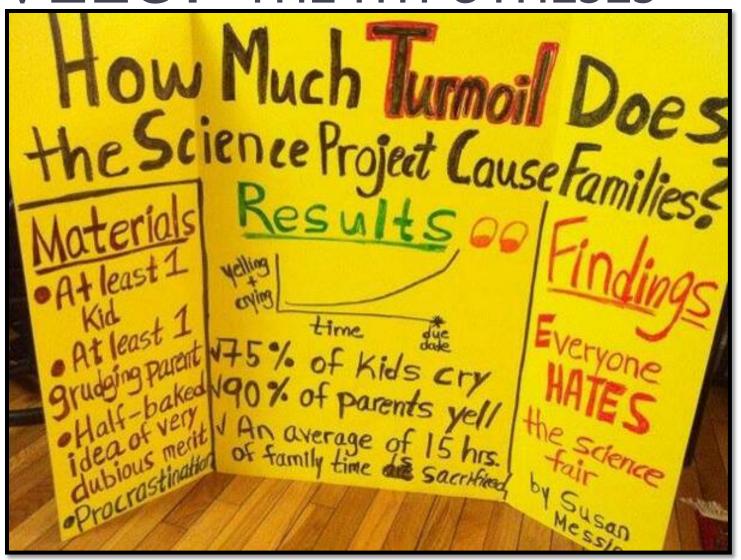
Onset of Illness by Half Day (n=173)

Conference A - April 1995



Date of Onset (AM/PM)

# DEVELOP THE HYPOTHESES



# TEST THE HYPOTHESES



Reconsider, refine, and re-evaluate hypotheses...



# IMPLEMENT CONTROL MEAUSURES

- Contact Tracing
- Isolation
- Quarantine
- Prophylaxis
- Environmental
- Immunization
- Education
- Policy

# QUARANTINE CONTAGIOUS DISEASE

NO ONE SHALL ENTER OR LEAVE THIS WEESITE WITHOUT WRITTEN PERMISSION OF THE LOCAL HEALTH AUTHORITY. (Art. 4477 - V.A.C.S.)

NO PERSON EXCEPT AN AUTHORIZED EMPLOYEE OF THE HEALTH DISTRICT SHALL ALTER, DESTROY OR REMOVE THIS CARD. (Art. 4477 - V.A.C.S.)

ANYONE VIOLATING THIS REGULATION WILL BE FINED NOT LESS THAN \$10.00 NOR MORE THAN \$1,000.00 FOR EACH VIOLATION. (ART. 770 Texas-Penal Code)

BY ORDER O



**COMMUNICATE FINDINGS** 

NO JOB IS
FINISHED
UNTIL THE
PAPERWORK
IS DONE!

# Local example...



Sanitarian gets a phone call on Wednesday, March 24, 2010 from the concerned mom of the birthday girl!

## And comes and tells me...

- Upset mom
- •Following her daughter's birthday party, lots of kids with rashes
- Party at indoor pool/spa at local hotel on Sunday evening



ACTOR PORTRAYAL









## Check with nursing department:



- •Local clinic branch had called the day before to report that they were seeing an unusual incidence
- •Called clinic
- Learned of other birthday party on Saturday night

## CALL FOR CASES...



•E-Mail Infection Preventionists

•Tell-A-Mom



### FIELD INSPECTION AT VENUE





Sanitarians check out the pool and spa while I'm stuck at the office answering phone calls from the parents of kids with rashes.

# Pool and Spa Re-Opened on Saturday Morning!



### What I learned from all that time on the phone...

<u>Table 1:</u> Summary of the symptoms experienced by the 17 case patients who developed a rash (folliculitis) and/or earache in attendance at the pool/spa party at the hotel in Gallipolis on March 21 or March 22, 2010 with information provided by the case patient or his/her parent/guardian or medical provider.

<b>Clinical Symptoms</b>	Number of	Percentage of
	Cases	Cases
Rash (folliculits)	15	88.24%
Earache(s)	8	47.06%
Headache	3	17.65%
Fatigue	6	40.0%
Red/burning eyes	1	5.88%
Fever? >100 degrees F	1	5.88%

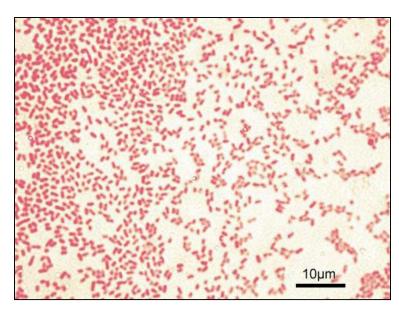
<sup>\*</sup>Two additional individuals experienced burning and itching on legs which were exposed to spa. No pool exposure.

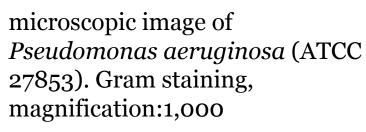
# LAB RESULTS



Pseudomonas (sue-doh-MOH-nass) aeruginosa is a major cause of infections commonly known as "hot tub rush, and "swimmer's rash, ear."

## Slide show not complete without the gross photos...







Pseudomonas folliculitis. Courtesy of Hon Pak, MD.

# Factors that may have contributed to the outbreak:

 Pool operator not certified

Overcrowding of Pool/Spa



### Responsibilities of healthcare provider:

- Contact the local health department to report suspected outbreaks
- Return telephone calls and respond to requests for information in a timely manner
- Notify the Division of Quality
- Collect specimens and handle them appropriately
- Provide and update line lists during the outbreak
- Follow prevention and control recommendations deemed necessary to control the outbreak
- Review and contribute to the outbreak report

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Life Safety Code

urse Aide Verification

idents Rights Advocates

#### **Nursing Homes/ Facilities**

The Ohio Department of Health licenses and/or certifies approximately 960 nursing homes/ facilities.

#### DEFINITION

Nursing home means a home used for the reception and care of individuals who by reason of illness or physical or mental impairment require skilled nursing care and of individuals who require personal care services but not skilled nursing care. A nursing home is licensed to provide personal care services and skilled nursing care.

#### LICENSURE/CERTIFICATION

The Division of Quality Assurance, Bureau of Information and Operational Support is responsible for processing initial, renewal, and change of operator license applications. See link for applications/forms for a copy of the application and instructions.

The Division of Quality Assurance, Bureau of Information and Operational Support certifies nursing facilities for participation in the Medicare and Medicaid programs.

#### INSPECTIONS/SURVEYS

The Division of Quality Assurance, Bureau of Long Term Care Quality is responsible for conducting on-site inspections/surveys of nursing homes/facilities for compliance with state and federal rules and regulations and to ensure the quality of care and quality of life of the residents. Each nursing home/facility in Ohio receives at least one unannounced inspection/survey during a 9 to 15 month inspection/survey cycle. During these surveys, all aspects of care and services are evaluated based on state and federal laws and rules. Information regarding the quality of care is available on the Centers for Medicare and Medicaid Services <a href="Mursing Home Compare">Nursing Home Compare</a> website and the Department of Aging's <a href="Long Term Care Consumer Guide">Long Term Care Consumer Guide</a>.

#### ENFORCEMENT

The Bureau of Regulatory Compliance enforces state licensing laws and rules and federal certification requirements for participation in the Medicare and Medicaid programs. The purpose is to protect the quality of care and quality of life of nursing home residents and to ensure prompt corrective action when facilities are not in compliance with regulatory requirements through imposition of remedies, such as civil monetary penalties, denial of payment, state monitoring, directed in-service training, termination of provider agreements and/or licensure revocation.

#### COMPLAINTS

Investigation of a complaint in a nursing home/facility is completed by surveyors after receiving the written documentation from the Ohio Department of Health complaint unit located in Columbus, Ohio. The toll free number for registering complaints is 1-800-342-0553. The complainant may choose to be anonymous.

<u>Health Care Provider and Services:</u> To obtain real-time information, generate, print and download reports regarding health care providers that are licensed and/or Medicare/Medicaid certified by the Ohio Department of Health.

# Why do we report outbreaks to Quality?

• NHSN facilities must agree to report to state health authorities those outbreaks that are identified in their facility by the surveillance system and about which they are contacted by CDC. Failure to comply with these requirements will result in withdrawal from the NHSN.

It's the law!

# Why do we report outbreaks to Quality?

- Self-reporting is looked upon more favorably than complaints (facility-reported incident rather than complaint)
- To the facility's benefit if complaints are received
- It's the right thing to do!

#### Ohio Department of Health Division of Quality Assurance **Bureau of Long Term Care Quality** Ashtabula Lucas Fulton Williams Ottawa Geauga Cuyahoga Erie Trumbull Wood Defiance Henry Sandusky Lorain Huron ortage Seneca Paulding Mahoning Putnam Hancock h Wyandot Crawford Wayne Stark Van Wert Columbiana Richland Allen Hardin Marion Auglaize Holmes Mercer Morrow Knox Tuscarawas Logan Shelby Harrison Union Coshocton Delaware Darke Champaign Licking Guernsey Miami Belmont Muskingum Franklin Clark Madison Montgomery Noble Monroe Preble Fairfield Perry Greene Morgan Pickaway Fayette Hocking Washington Butler Warren Clinton Athens Ross Vinton Hamilton Highland Meigs Pike Jackson Brown Adams Scioto Gallia Lawrence Eastern Region Western Region Carol Todd, R.N., Karen Gingery, R.D., L.D. Regional Manager Regional Manager Office No. - (330) 643-1300 Office No. - (419) 245-2840

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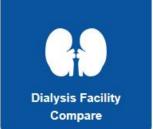
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A federal government website managed by the Centers for Medicare & Medicaid Services 7500 Security Boulevard, Baltimore, MD 21244



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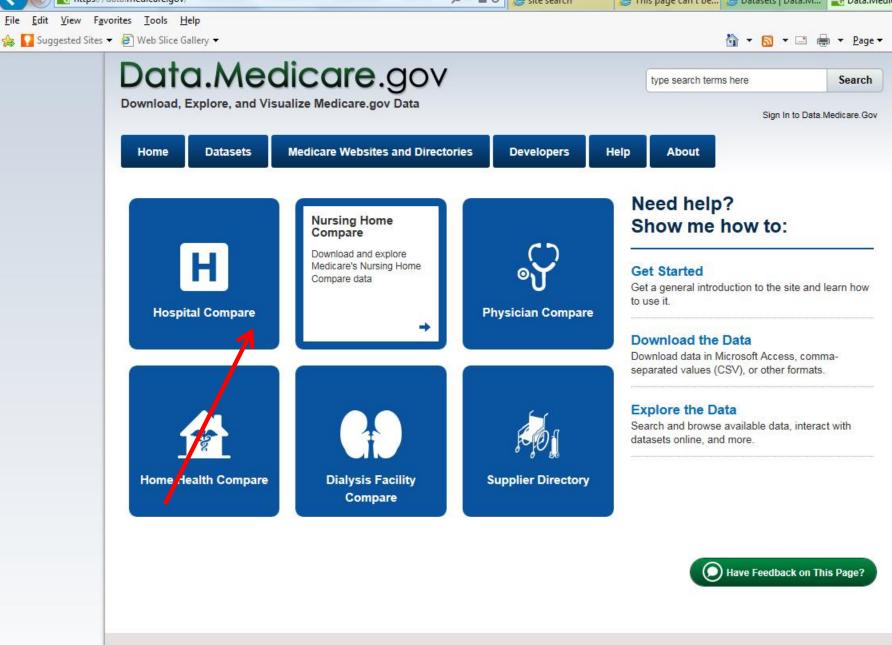
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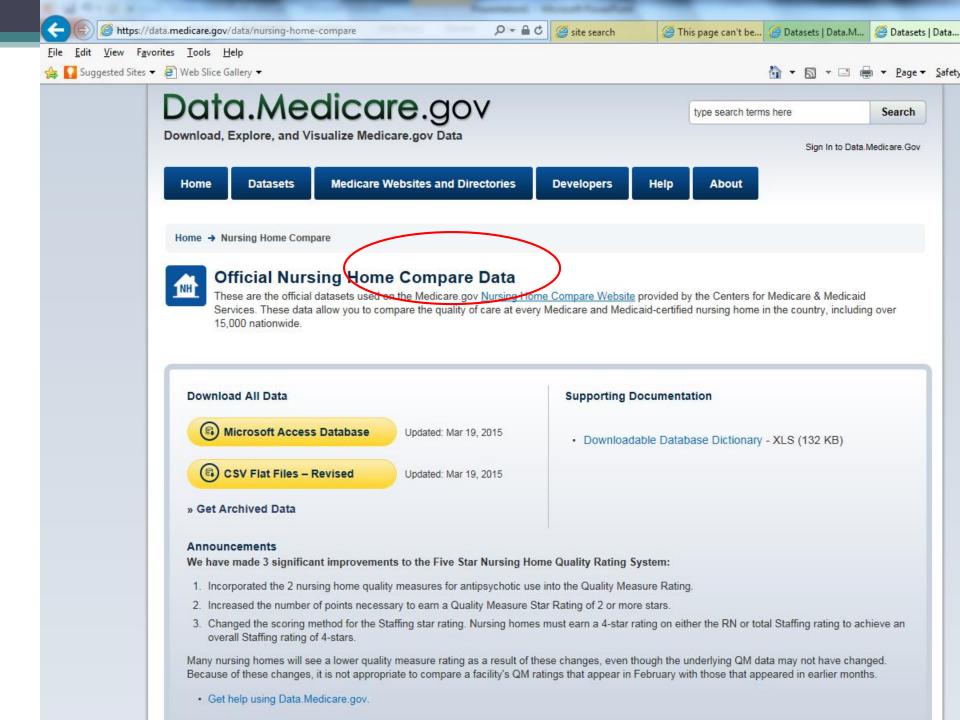
CMS Contact Info

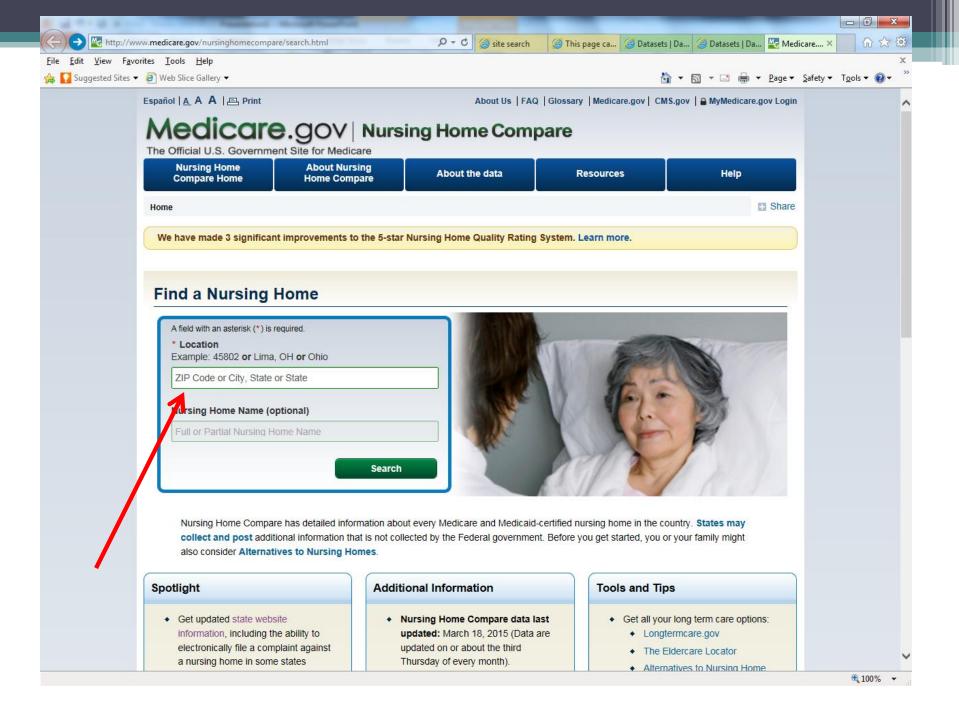
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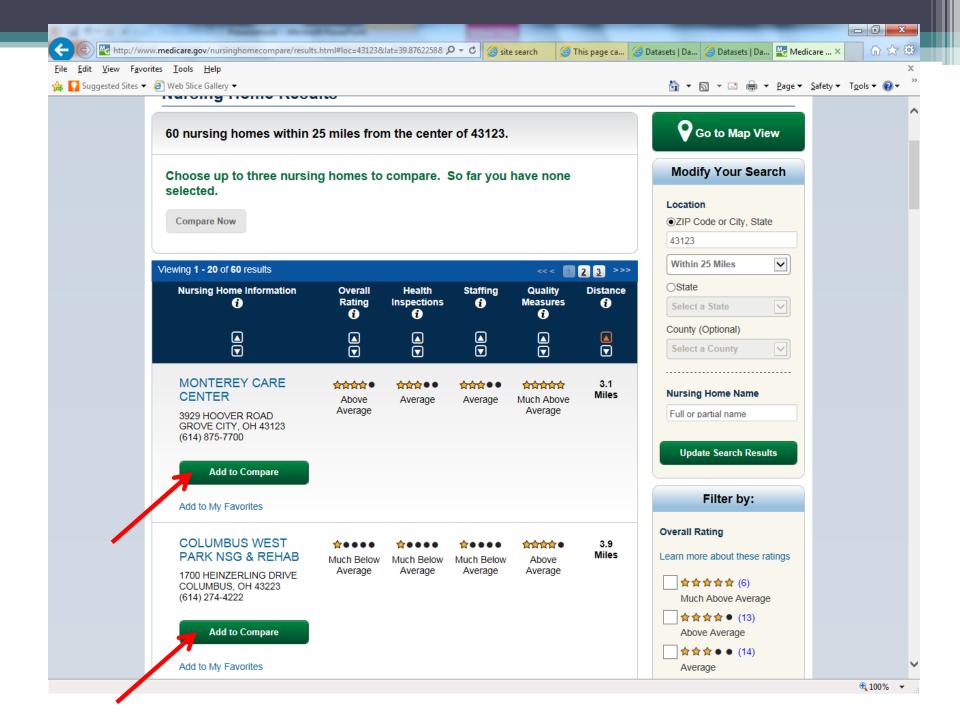


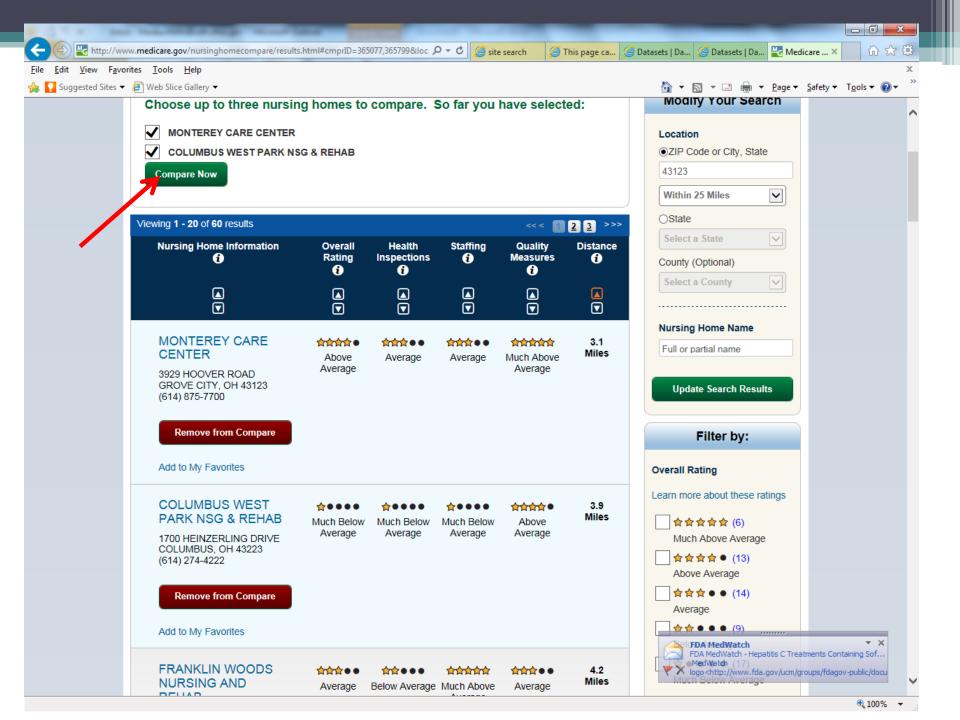


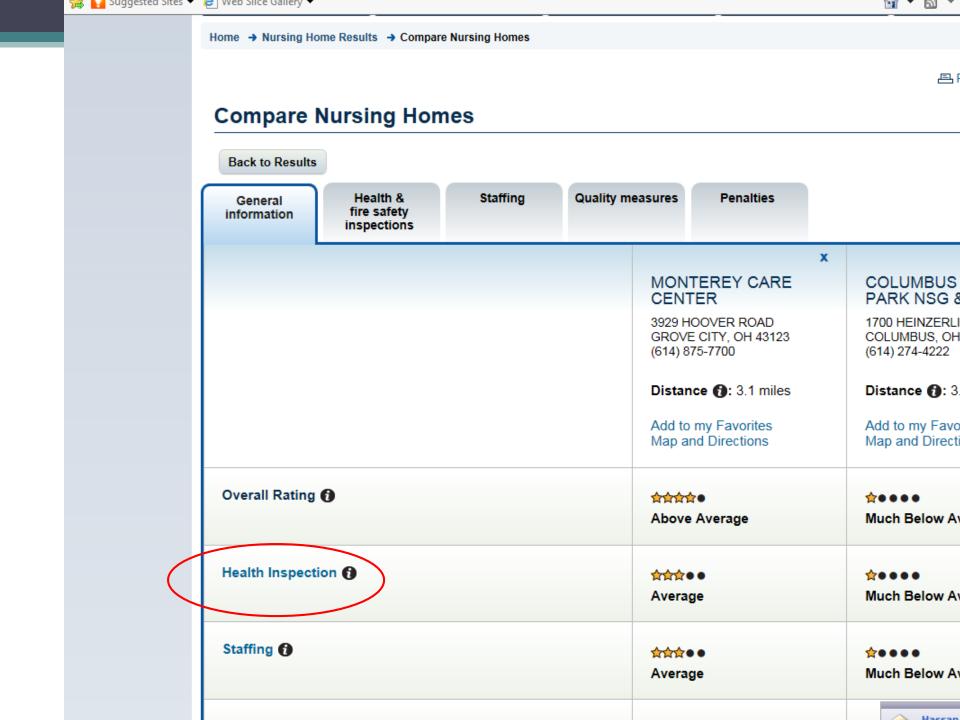
Medicare.gov











inspections		
	х	
	MONTEREY CARE CENTER	COLUMBUS WEST PARK NSG & REHA
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	Distance 1: 3.1 miles	Distance 1: 3.9 miles
	Add to my Favorites Map and Directions	Add to my Favorites Map and Directions
•	最最最单	☆•••
	Above Average	Much Below Average
on 🐧	☆☆☆●●	☆●●●
	Average	Much Below Average
Health Deficiencies for this nursing home	3	17
of Health Deficiencies in Ohio	4.7	4.7
dard Health Inspection	11/20/2014	01/23/2014
n Details	Health Inspection Details	Health Inspection Details
laints	3	3
	Health Deficiencies for this nursing home  of Health Deficiencies in Ohio  dard Health Inspection	MONTEREY CARE CENTER 3929 HOOVER ROAD GROVE CITY, OH 43123 (614) 875-7700 Distance ①: 3.1 miles Add to my Favorites Map and Directions  Above Average  Above Average  Health Deficiencies for this nursing home 3 of Health Deficiencies in Ohio 4.7 dard Health Inspection  Health Inspection Details

### Resources

- Laboratory
- Subject matter experts
- Additional help
- Training/Education
- Looked upon favorably
  - Division of Quality
  - The public
- Outbreak report/documentation
- Identify strengths/address weaknesses
- Prevent future outbreaks

# Wishing you the best with all your hats!





