TAKING ACTION DURING DISEASE OUTBREAKS

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Acute & Communicable Disease Prevention Program

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Objectives

- Describe the steps in conducting an environmental health assessment
- Describe selected actions and measures to control or prevent further transmission
- Understand who are the stakeholders in taking action
- Describe elements of decision-making when evidence of an outbreak is not conclusive
- List factors that influence taking action on public health recommendations during outbreaks

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Restaurant assessment

- Identify **critical** points where contamination could occur
- Identify behavioral risks or procedures
- Devise effective prevention and control interventions

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	Regulatory Inspection	Outbreak response
When undertaken	Regularly scheduled	In response to specific problem
Time focus	**Today**	**Past**
Focus of effort	Ongoing processes focusing on common problems	Food safety problems related to implicated food during outbreak period
Who initiates	Regulatory agency	Outbreak investigation team

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Describe the implicated food

- What are the raw ingredients
- Chemical characteristics, e.g. pH
- Source of the food item

Polling question

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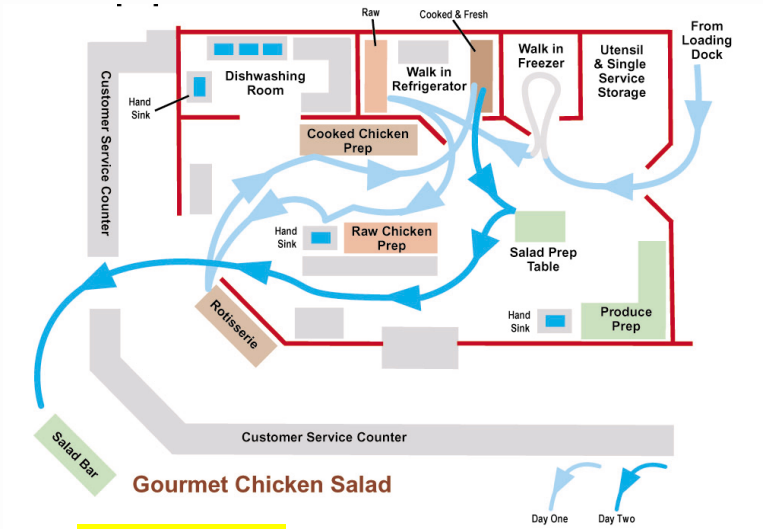

Polling question

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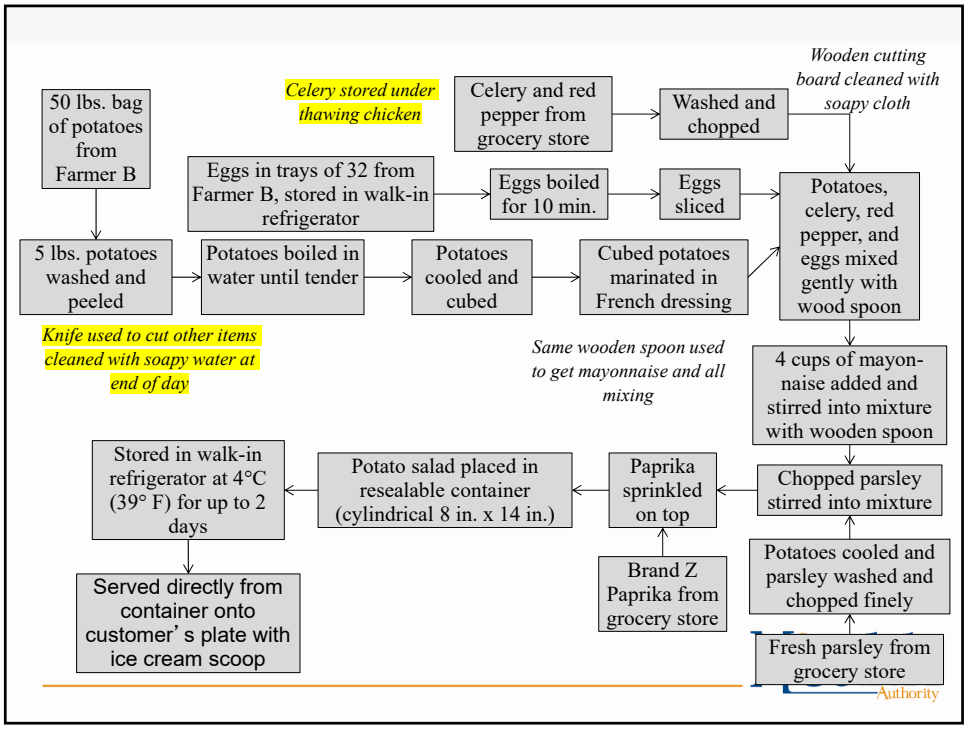

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Take measurements

- Time - how long was food held or stored
- Temperature - to which food was exposed
- Storage conditions - types of containers, location of containers

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Polling question

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Observe procedures

- Cleaning, storage, handling, transport of food
- Temperature history
- Cooking methods
- Hot-holding or refrigeration

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Talk to food handlers and assess situation

- Food handlers often know more than supervisors about what happens routinely
- Level of experience
- Staff turnover
- Knowledgeable supervision

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Collect food specimens if available




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Field Trip

- Take action to eliminate sources of contamination or poor food handling practices
- Set up effective ongoing monitoring of food safety

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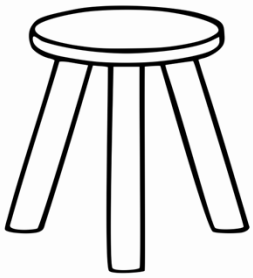
Food trace back or recall



Local, State and Federal partners of various disciplines are involved

"Three-Legged Stool" of investigations

- **Epidemiology**: Determining who, what, when, where, and how
- **Laboratory**: Food, environmental, and clinical samples
- **Environmental Health**
  - Trace-back and trace-forward
  - Clinical, product, and environmental sampling
  - Facility assessments

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Food Safety and Inspection Service

Is part of the U.S. Department of Agriculture responsible for ensuring that the nation's commercial supply of *meat, poultry, and egg products* is safe, wholesome, and correctly labeled and packaged.

- FSIS employs approximately 10,000 total personnel; over 7,500 are field personnel.
- FSIS oversees the production of approximately 100 billion pounds of meat, poultry, and pasteurized egg products.

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About 48 million people in the U.S. (1 in 6) get sick, 128,000 are hospitalized, and 3,000 die each year from foodborne diseases, according to recent data from the Centers for Disease Control and Prevention. This is a significant public health burden that is largely preventable.

The FDA Food Safety Modernization Act (FSMA) is transforming the nation's food safety system by shifting the focus from responding to foodborne illness to preventing it. Congress enacted FSMA in response to dramatic changes in the global food system and in our understanding of foodborne illness and its consequences, including the realization that preventable foodborne illness is both a significant public health problem and a threat to the economic well-being of the food system.

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Local Doc notifies LHD of 5 cases of diarrhea--3 bloody

- No common food items
- Active case finding
- O157 tests negative
- *Shigella* identified and sent to PHL for serotyping
- Additional Latino children with bloody diarrhea identified

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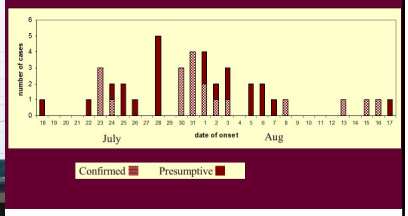
Fountain Associated Cases by Onset date



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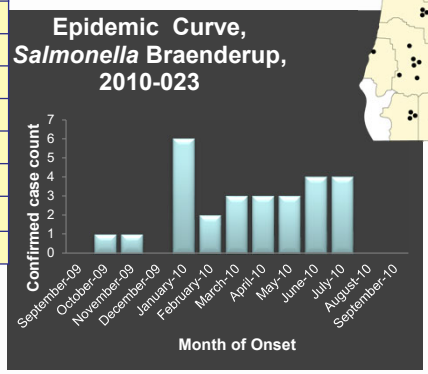
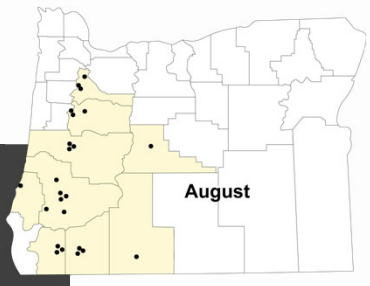
Salmonella Braenderup investigation

15	F	10/21/09
81	F	11/5/09
4	M	1/16/10
26	M	1/12/10
1	M	1/17/10
2	M	1/18/10
17	M	1/10/10
22	F	1/31/10
16	F	2/13/10
10	F	2/13/10
85	M	Unknown
5	F	3/8/10





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Compare hypothesis with established facts

- 100% of cases consumed milk
- OR of 5.8 for milk consumption (case-control)
- Median age = 13 (range 1–88)
- Locally distributed product along I-5
- Not asked of all cases, but Brand Q Dairy cited 3 times
- Brand Q served by 7 of 8 schools
- Matching environmental samples for *S.* Braenderup

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OPHD, LHD, and ODA visit facility

- Walk-through during operations
- 132 environmental specimens collected: convenience sample
  - Raw milk receiving, pasteurization
  - Filler room, Cold holding room
  - Crate conveyor & washing system

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Results, 8/14: 5 positives

- 1 crate (of 2 swabbed)
- 3 sites on crate conveyor system
- 1 floor drain

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Implement control and prevention measures

- Plant closed for cleaning
- ODA, OPHD, LHD collect 230 more samples
- Media coverage emphasizes container contamination

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Gizmodo

Deadly Superbug Yeast Sickens Patients at Oregon Hospital

Dec 29, 2021 — Three people at the hospital have contracted the hardy fungus known as **Candida** auris, which is often resistant to multiple drugs.

FOX 5 New York

Oregon hospital reports rare, fungal outbreak

Health officials said the first-ever Candida auris case found in Oregon was detected at the hospital Dec. 11 and confirmed Dec.

Oregon's first *C. auris* isolate from culture collected 12/11/21 in a hospitalized patient

Candida auris
source: CDC

Oregon Live

Oregon records 1st cases of rare, serious fungal infection Candida auris in 3 Salem patients

Since 2013, more than 1,150 clinical cases of Candida auris have been identified in the United States. No cases of the fungus identified in...

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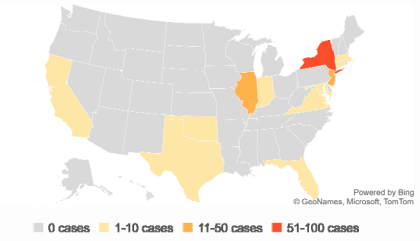
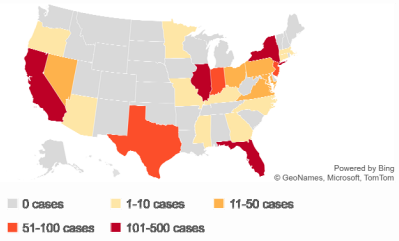
With first OR cases last year,
can spread of *Candida auris* be prevented in our state?

Reported clinical cases of *Candida auris*, 2017



Reported clinical cases of *Candida auris*, 2021



Source: CDC

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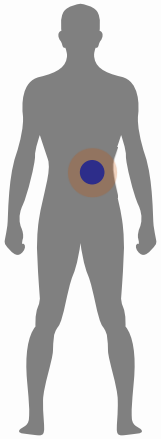
12/13/21: Public Health notified and begins investigation

- *C. auris* isolated from wound
- Admitted to hospital for one month
- Contact precautions except for six days
- Stayed in ICU and two inpatient units
- History of international healthcare



Polling Question

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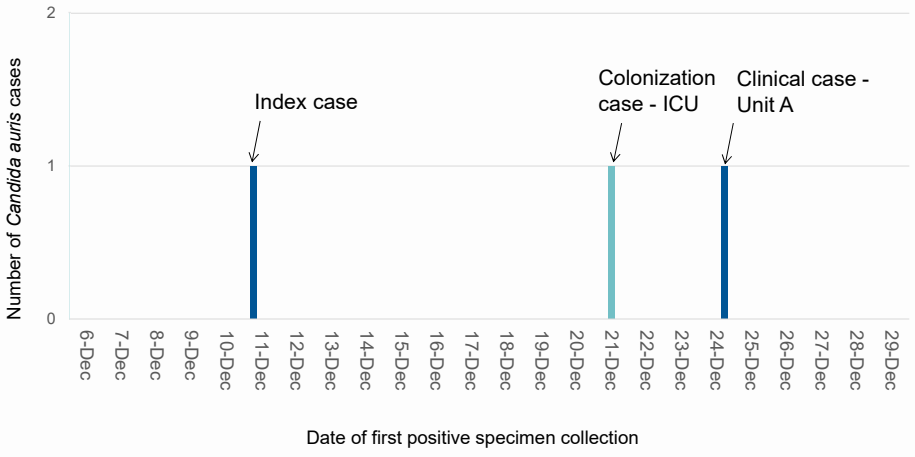
Two additional cases were detected on two different units where the index patient received care



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Screening was also offered to patients at 30 other facilities

1 hospital

22 long-term care facilities

7 congregate care settings

46 discharged patients identified who had been on same units as index case

Screening offered to these patients and their roommates

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OHA proposed minimum screening recommendation:

Hospitals should screen all patients for *C. auris* who have had an overnight stay in a healthcare facility outside of Oregon in the previous one year

Rationale:

- *C. auris* is becoming increasingly common in the U.S.
- Some states (CA, IL, FL, NY) see 100+ cases annually
- Some of these states have demonstrated transmission within their long-term care facilities or hospitals

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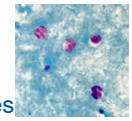
Cryptosporidium



- Parasitic infection of both humans and animals
  - Some species thought not to cause human illnes
  - Forms oocysts – tolerant to chlorine disinfection and increases survival time.
- Leading cause of waterborne illness (drinking and recreational)
  - Symptoms include watery diarrhea, abdominal pain/cramps, nausea, vomiting, fever, weight loss lasting 1-2 weeks in healthy persons
  - Intermittent illness – recommend three separate stool specimens on different days to rule out infection
  - Illness begins 2-10 days after exposure (average 7)
  - Some people are asymptomatic
  - Routine stool culture does NOT include Crypto testing – must be requested
- Reportable nationally – routine interview and education
  - No bathing in communal facilties – 2 weeks

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The beginning

- 10/27 report of 2 year old twins in Multnomah –
  - 10/31 routine interview identified SWIMBABES exposure
- Multnomah staff called Clackamas county to inform of risk
- Clackamas county case in 1 year old – no recreational water exposure.
  - Call back identified slightly symptomatic sibling taking lessons at SWIMBABES
- Consultation with State Health – certainly a concern and potentially an outbreak
- Visit to facility

Email list of children and families who are members

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Action plan

- EH to facility- recommended plan of action
  - Hyper chlorinate pool
  - Voluntary closure of pool until next session
  - Email all members to do online survey for illness
    - Unknown to LHD facility emailed their own members before survey
- Cyanuric acid level could not be lowered enough so it was decided to drain the pool.
  - Since they drained the pool they did not hyper chlorinate – repeat visit – recommended this be done.

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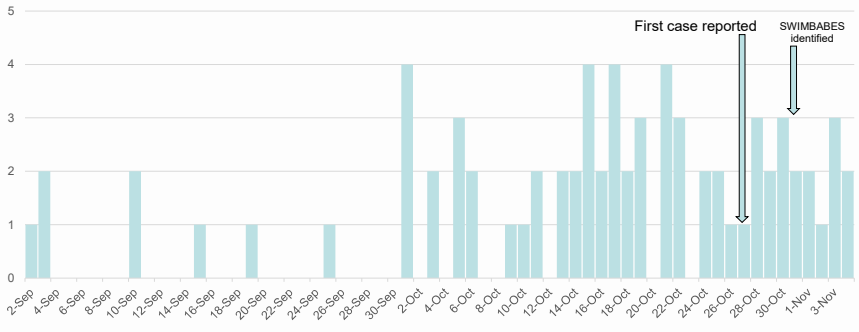
Epidemic curve of presumptive cases from Survey data



Polling Question

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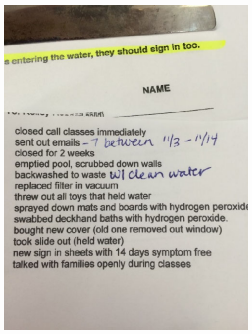
Site visit



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Filtration/Disinfection system

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Childcare attendance

- Art 4 Life (after care at Abernethy) and 1 day at Citykids
- Atlas Immersion Academy
- BeLoved Montessori
- Bright Minds Christian Day School, Oregon City
- Building Blocks Preschool, Happy Valley, OR
- Busy Bee Preschool, SE 76th and SE Duke, 97206
- Cardboard castles. Milwaukie Oregon
- Caterpillar clubhouse
- Childroots Fremont Center, Portland
- Christ Church Preschool, Lake Oswego, OR
- Club Sport Kids World
- Creative minds learning center Broadway
- Creative Minds, Happy Valley
- Discoveryland, Portland
- Early Years Children's Center
- Frog song Montessori
- Goddard School in Happy Valley
- Happy Valley Childrens Garden 87th and Foster
- Hillsview Montessori Damascus, OR
- International leadership academy
- KinderCare West Linn
- LeAnn Saludares, Clackamas OR
- L'Etoile, Portland
- Little Hands Garden School, Hawthorne
- Little Village Montessori and Llewellyn elementary
- Loving hearts preschool
- Milwaukie Montessori,
- St. YMCA
- North Clackamas C.A.R.E. at Happy Valley Elementary
- Oak grove daycare and preschool
- PDXED School (NE Portland)
- Peake Academy, lake Oswego
- Pequeñas manos- Beaverton
- Pleasant Valley Springs, Carus Oregon
- Portland Preschool SE 71st Ave 97215
- Private
- Providence Wee Care
- Roots and Wings preschool, Westmoreland
- Stepping Stone-Highland
- Stringer Nike Daycare
- Sunshine Learning Center
- The International School
- Ts for Tots, West Linn
- Tumbleweed Preschool Portland Oregon
- Uno Dos Tres Academy
- Vermont Hills Family Life Center-VA Campus
- Violet garden preschool, Portland
- We Village Happy Valley
- West hills learning center
- Yolanda Gordon - Milwaukie, OR
- Yu Miao preschool

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Other locations members had been swimming

- 10/10/2016 Jefferson apartment (lake oawego)
- 24 hr fitness, Mount Scott, my friend pool.
- Arizona Biltmore resort
- SHARC-Sunriver,
- Best Western, Lakeview
- Black Butte Ranch, Sisters, OR—
- Cannon Beach - Hallmark Hotel
- Cherry wood village pool
- Clackamas Aquatic
- Columbia Pool,
- Conestoga pool in Beaverton
- Country Inn and Suites billings Montana
- Crescent Bar Condos, WA 9/2/16 & 9/3/16
- Crooked river ranch
- Holiday in express Everett, WA
- Dishman Pool
- Disneyland Marriott splash pad 10/24-10/25/16
- East Portland community center
- Family pool, all summer
- Farber Swim School Pool
- Grant Park Pool
- Jamison Square August 2016
- Great Wolfe Lodge
- Happy Valley park splash pad –
- Hilton hotel in Portland, Maine
- Hotel in Laguna Beach CA
- James E Moore pool aspen Colorado
- Jim Parsley Community Center Pool
- Kahneetah
- Kennedy school.
- Lego land California
- Lolo hot springs Montana October 1st
- Marriott Residence inn, Alburquerque, NM
- Holiday Inn Express, Missoula, MT
- Mexico 10/5-10, Portland Public Pool (82nd), Hawaii
- Molalla Splash Pad
- Mount Scott community pool
- Comfort Inn and Suites, Helena, Montana
- Quality Inn,
- Southwest Community Center,
- L A Fitness in Atlanta GA,
- Best Western, Hood River
- Hilton, Eugene
- Essex Park Splash Pad
- Lake Merwin Pool
- Creston
- Wilson
- Mt Hood RV park
- North Clackamas
- Oregon City Pool
- Two Pools out of state in Georgia
- Osborn Aquatic Center
- Patterson memorial city park
- Red Lion Inn, Lewiston, Idaho
- Taralon pool
- Sherwood YMCA Sept 10
- Splash pad at Irving park all summer
- Sellwood public pool,
- Worldmark Depoe Bay- Sept 2016
- Tahoe Keys in South Lake Tahoe
- Taralon neighborhood pool
- Villa Sport
- West Linn park splash pad
- Willamette Park 8/22
- Wilsonville
- Woodburn

Polling Question

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When the evidence of the source of an outbreak is suggestive but not conclusive, act if:

- the disease is **serious** and potentially fatal
- the population at risk includes those **likely to have poor outcomes** (infants, frail elderly, immunocompromised)
- exposure is suspected to be **ongoing or widespread**
- **control measures** can be implemented with limited economic, legal, or political impact

Polling Question

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Surveillance of outbreaks of waterborne infectious disease: categorizing levels of evidence

Tillett, Louvois, Wall Epidemiol Infect 1998; 120:37-42

- A= pathogen found in water
- B=water quality failure, pathogen not found in water
- C=Analytic association of water an illness
- D=Descriptive epi suggests water is source and excludes other explanations

Level of Evidence

Strong: A+C or A+D or B+C

Probable: B+D or A only

Possible: B only or D only

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Control Measures

- Hand washing by patients and all caregivers
- No food handling while ill
- No working while ill in high-risk settings with vulnerable persons: daycare or direct care
- Careful hygiene when handling items soiled with excreta
- “Cohort” individuals
- Ensure recommended cleaning methods are followed
- Remove items from menu, modify recipes
- Hold a product at the grocery store

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Communicate results of the outbreak investigation to:

- Providers
- Media
- Decision-makers

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Crisis and Emergency Risk Communication (CERC)

Current Hazards
Get Involved
Get Prepared
Media Center

Resources for Partners
Health Alert Network (HAN)
Medical Countermeasures
Crisis and Emergency Risk Communication (CERC)
National Health Security Preparedness Index
Pharmacy and Local Public Health Authority MOU
Public Health Law in Emergencies

Contact Us

During public health emergencies, the Oregon Health Authority's Public Health Division (OHA-PHD) works with local and tribal health authorities to make sure all Oregonians get health and safety information that is timely and accurate. We help develop outreach materials in a variety of formats (websites, social media, print, radio, television) and we provide our partners with training and technical assistance in crisis and emergency risk communication (CERC).

CERC Toolkits

In order to view PDF files in languages other than English, install the free Font Pack for Acrobat Reader.

- Airborne Disease Prevention
- Contact-Droplet Disease Outbreaks
- Extreme Heat
- Fecal Oral Disease Transmission
- Flooding
- Hepatitis A
- Meningococcal Disease

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Educate those who can help control and prevent disease

- Child care workers
- Food handlers
- Administrators of high-risk facilities
- Staff who write policies and procedures
- Nursing home staff
- Event organizers

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Discuss recommended actions

- Solicit and listen well to feedback
- Modify recommended actions, if possible, to make them feasible and acceptable

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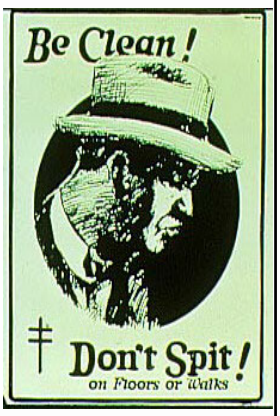
Factors that influence carrying out public health recommendations

- Funding
- Legislation
- Behavioral changes by workers



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Effective action increases if:

Make *timely* reports to decision-makers

-Frequent reporting as outbreak unfolds

-Help decision-makers "own" the investigation

Maintain contact with the *media*

-Press releases as appropriate

-Keep contacts up to date with details

Develop *concrete* and *specific* messages

-Boil water

-Clean up mosquito habitat

-Get a flu shot/immunizations

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Hot wash

- Document what lessons you learned in an after-action report
- Your experience can help others
- Increases local health department credibility

Don't forget to communicate what you learned during the outbreak !!!

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Reconsider your hypothesis?

A Norovirus Outbreak Related to Contaminated Surfaces

Kimberly K. Repp,[1] Trevor P. Hostetler,[1] and William E. Keene[2]

[1]Washington County Department Health and Human Services, Hillsboro; and
[2]Oregon Public Health Division, Portland, Oregon

We investigated an outbreak of norovirus infection affecting 12 of 16 auto dealership employees (75%) subsequent to a staff meeting. Take-out sandwiches initially seemed the likely source, but a cohort study found no association between illness and food consumption. Employees reported seeing a toddler with diarrhea in a dealership restroom shortly before the luncheon. Indistinguishable norovirus was isolated from employees and the child (genotype GII6.C) and from a diaper-changing station in the restroom (genogroup GII). Counterintuitively, this point-source outbreak following a meal was caused by environmental exposures, not food. Environmental exposures should be considered even in routine outbreak investigations.

Figure 2. Photograph of underneath the diaper changing station involved in this outbreak, which had allegedly been cleaned twice by janitorial staff. This level of soiling was consistently viewed in public restroom diaper-changing stations.

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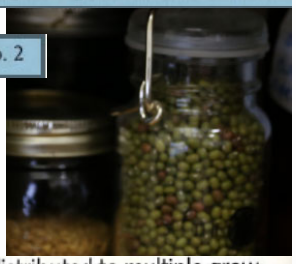
Multinational Outbreak of *Salmonella enterica* Serotype Newport Infections Due to Contaminated Alfalfa Sprouts

JAMA, January 13, 1999—Vol 281, No. 2



Conclusions The SN-contaminated alfalfa seeds were distributed to multiple growers across North America in 1995 and resulted in a protracted international outbreak scattered over many months. Current sprouting methods are inadequate to protect consumers from such events. Alfalfa sprouts may be an elusive but important vehicle for salmonellosis and other enteric infections.

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What Foods Have Been Approved for Irradiation?

FDA has approved a variety of foods for irradiation in the United States including:

- Beef and Pork
- Poultry
- Molluscan Shellfish
- (e.g., oysters, clams, mussels, and scallops)
- Shell Eggs
- Fresh Fruits and Vegetables
- Lettuce and Spinach
- Spices and Seasonings
- Seeds for Sprouting (e.g., for alfalfa sprouts)

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Ground beef outbreak – *E. coli* O157:H7

- Purchase history information was obtained for 4 case-patients
- Of the 5 purchases made by 4 case-patients, 80% (4/5) of the purchases were 85% lean ground beef and 1/5 (20%) was 90% lean ground beef
- Due to lack of information on grinding log records, as well as a company-wide policy of once-a-day cleaning of grinding equipment, trace-back to federal establishments was not possible
- In total, trace-back identified 15 possible ground beef suppliers

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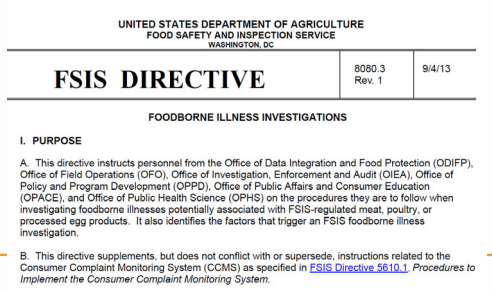
This Directive provides information on:

- Factors that determine the need for an investigation
- Product sampling considerations during an investigation
- Procedures for trace-back and trace-forward activities
- Considerations for determining the epidemiological association between illness and product
- Agency actions based upon investigation findings



UNITED STATES DEPARTMENT OF AGRICULTURE
FOOD SAFETY AND INSPECTION SERVICE
WASHINGTON, DC

FSIS DIRECTIVE | 8080.3 Rev. 1 | 9/4/13

FOODBORNE ILLNESS INVESTIGATIONS

I. PURPOSE

A. This directive instructs personnel from the Office of Data Integration and Food Protection (ODIFP), Office of Field Operations (OFO), Office of Investigation, Enforcement and Audit (OIEA), Office of Policy and Program Development (OPPD), Office of Public Affairs and Consumer Education (OPACE), and Office of Public Health Science (OPHS) on the procedures they are to follow when investigating foodborne illnesses potentially associated with FSIS-regulated meat, poultry, or processed egg products. It also identifies the factors that trigger an FSIS foodborne illness investigation.

B. This directive supplements, but does not conflict with or supersede, instructions related to the Consumer Complaint Monitoring System (CCMS) as specified in FSIS Directive 5610.1, *Procedures to Implement the Consumer Complaint Monitoring System.*

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Federal Register Proposed Rule, published on 7/22/14

Records To Be Kept by Official Establishments and Retail Stores That Grind Raw Beef Products

Amends recordkeeping regulations to specify that all official establishments and retail stores that grind raw beef products for sale in commerce must keep records that:

- Disclose identity and contact information of suppliers of all source materials for each lot of raw ground beef
- Include components and carryover from one lot to next
- Document lot numbers and amount of each component used (pounds)
- Document date and time each lot produced
- Document date and time grinding equipment was cleaned and sanitized

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Urgent Epidemiologic Response Team (UERT)

Call ACDP at (971) 673-1111

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E. coli Case Study continued

On further analysis, only one factor remained statistically significant: drinking beverages from vendors who were supplied by water from well #6.

As part of the environmental investigation, samples of water were tested from well #6, from the distribution pipe to the vendor area, and from the outlet pipe at the vendor area. Although *E. coli* O157 is not often isolated from water supplies, all 3 sites at the fairgrounds yielded *E. coli* O157:*H7*.

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Question 1
What control measures might you recommend for control of this outbreak?

Question 2
a. Who needs to know what you recommend? Why?

b. How will you communicate your findings?

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Oregon Statues and Administrative Rules

5-104.12 Alternative Water Supply.

(B) If approved by the local public health authority, water for single-event temporary food establishments without a public water supply may be obtained from a well that has been tested for coliform bacteria within 60 days prior to the event. The local public health authority may require additional testing or an evaluation of the well and premises as part of the approval process.

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