

Foodborne Disease Outbreaks

APPENDIX B: CRITERIA FOR CONFIRMATION OF FOODBORNE OUTBREAKS

The Centers for Disease Control and Prevention has established criteria for confirming the etiology when a foodborne outbreak has been identified. These criteria can be found in the following table and at

http://www.cdc.gov/outbreaknet/references_resources/guide_confirming_diagnosis.html

Table 1: Guidelines for Confirmation of Foodborne Disease Outbreaks

***Tests Available at WA State Public Health Laboratories are indicated by an asterisk**

Etiologic agent	Confirmation Criteria
Bacterial	
1. <i>Bacillus cereus</i>	
a. Vomiting toxin	*Isolation of organism from stool of two or more ill persons and not from stool of control patients <u>OR</u> *Isolation of 10 ⁵ organisms/g from epidemiologically implicated food, provided specimen is properly handled
b. Diarrheal toxin	*Isolation of organism from stool of two or more ill persons and not from stool of control patients <u>OR</u> *Isolation of 10 ⁵ organisms/g from epidemiologically implicated food, provided specimen is properly handled
2. <i>Brucella</i>	*Two or more ill persons and isolation of organism in culture of blood or bone marrow <u>OR</u> Greater than fourfold increase in standard agglutination titer (SAT) over several wks, or single SAT 1:160 in person who has compatible clinical symptoms and history of exposure
3. <i>Campylobacter jejuni/coli</i>	*Isolation of organism from clinical specimens from two or more ill persons <u>OR</u> Isolation of organism from epidemiologically implicated food
4. <i>Clostridium botulinum</i>	*Detection of botulinum toxin in serum, stool, gastric contents, or implicated food <u>OR</u> *Isolation of organism from stool or intestine
5. <i>Clostridium perfringens</i>	*Isolation of 10 ⁶ organisms/g from stool of two or more ill persons, provided specimens are properly handled. <u>OR</u> Demonstration of enterotoxin in the stool of two or more ill persons <u>OR</u> *Isolation of 10 ⁵ organisms/g from epidemiologically implicated food, provided specimen is properly handled
6. <i>Escherichia coli</i>	

- a. **Enterohemorrhagic (*E. coli* O157:H7 and others)** *Isolation of *E. coli* O157:H7 or other Shiga-like toxin-producing *E. coli* from clinical specimen from two or more ill persons
OR
*Isolation of *E. coli* O157:H7 or other Shiga-like toxin-producing *E. coli* from epidemiologically implicated food
- b. **Enterotoxigenic (ETEC)** Isolation of organism of same serotype, demonstrated to produce heat-stable (ST) and/or heat-labile (LT) enterotoxin, from stool of two or more ill persons
- c. **Enteropathogenic (EPEC)** Isolation of organism of same enteropathogenic serotype from stool of two or more ill persons
- d. **Enteroinvasive (EIEC)** Isolation of same enteroinvasive serotype from stool of two or more ill persons
- 7. *Listeria monocytogenes***
 - a. **Invasive disease** Isolation of organism from normally sterile site
 - b. **Diarrheal disease** Isolation of organism of same serotype from stool of two or more ill persons exposed to food that is epidemiologically implicated or from which organism of same serotype has been isolated
- 8. Nontyphoidal *Salmonella*** *Isolation of organism of same serotype from clinical specimens from two or more ill persons
OR
*Isolation of organism from epidemiologically implicated food
- 9. *Salmonella* Typhi** *Isolation of organism from clinical specimens from two or more ill persons
OR
*Isolation of organism from epidemiologically implicated food
- 10. *Shigella* spp.** *Isolation of organism of same serotype from clinical specimens from two or more ill persons
OR
*Isolation of organism from epidemiologically implicated food
- 11. *Staphylococcus aureus*** Isolation of organism of same phage type from stool or vomitus of two or more ill persons
OR
*Detection of enterotoxin in epidemiologically implicated food
OR
*Isolation of 10⁵ organisms/g from epidemiologically implicated food, provided specimen is properly handled
- 12. *Streptococcus*, group A** Isolation of organism of same M- or T-type from throats of two or more ill persons
OR
Isolation of organism of same M- or T-type from epidemiologically implicated food
- 13. *Vibrio cholerae***
 - a. **O1 or O139** *Isolation of toxigenic organism from stool or vomitus of two or more ill persons
OR
Significant rise in vibriocidal, bacterial-agglutinating, or antitoxin antibodies in acute- and early convalescent-phase sera among persons not recently immunized
OR
*Isolation of toxigenic organism from epidemiologically implicated food
 - b. **non-O1 and non-O139** *Isolation of organism of same serotype from stool of two or more ill persons

- 14. *Vibrio parahaemolyticus* Isolation of Kanagawa-positive organism from stool of two or more ill persons
OR
Isolation of 10⁵ Kanagawa-positive organisms/g from epidemiologically implicated food, provided specimen is properly handled
- 15. *Yersinia enterocolitica* *Isolation of organism from clinical specimen from two or more ill persons
OR
Isolation of pathogenic strain of organism from epidemiologically implicated food

Chemicals

1. Marine toxins

- a. **Ciguatoxin** Demonstration of ciguatoxin in epidemiologically implicated fish
OR
Clinical syndrome among persons who have eaten a type of fish previously associated with ciguatera fish poisoning (e.g., snapper, grouper, or barracuda)
- b. **Scombroid toxin (histamine)** Demonstration of histamine in epidemiologically implicated fish
OR
Clinical syndrome among persons who have eaten a type of fish previously associated with histamine fish poisoning (e.g., mahi-mahi or fish of order Scomboidei)
- c. **Paralytic or neurotoxic shellfish poison** *Detection of toxin in epidemiologically implicated food
OR
Detection of large numbers of shellfish-poisoning-associated species of dinoflagellates in water from which epidemiologically implicated mollusks are gathered
- d. **Puffer fish, tetrodotoxin** Demonstration of tetrodotoxin in epidemiologically implicated fish
OR
Clinical syndrome among persons who have eaten puffer fish

2. Heavy metals (Antimony, Cadmium, Copper, Iron, Tin, Zinc) *Demonstration of high concentration of metal in epidemiologically implicated food

3. Monosodium glutamate (MSG) Clinical syndrome among persons who have eaten food containing MSG (e.g., usually 1.5 g MSG)

4. Mushroom toxins

- a. **Shorter-acting toxins (Muscimol, Muscarine, Psilocybin, *Coprinus artrementaris*, Ibotenic acid)** Clinical syndrome among persons who have eaten mushroom identified as toxic type
OR
Demonstration of toxin in epidemiologically implicated mushroom or food containing mushroom
- b. **Longer-acting toxins (e.g., *Amanita* spp.)** Clinical syndrome among persons who have eaten mushroom identified as toxic type
OR
Demonstration of toxin in epidemiologically implicated mushroom or food containing mushrooms

Parasitic	
1. <i>Cryptosporidium</i> spp.	*Demonstration of oocysts in stool or in small-bowel biopsy of two or more ill persons <u>OR</u> Demonstration of organism in epidemiologically implicated food
2. <i>Cyclospora cayetanensis</i>	*Demonstration of the parasite by microscopy or molecular methods in stool or in intestinal aspirate or biopsy specimens from two or more ill persons <u>OR</u> Demonstration of the parasite in epidemiologically implicated food
3. <i>Giardia intestinalis</i>	*Demonstration of the parasite in stool or small-bowel biopsy specimen of two or more ill persons
4. <i>Trichinella</i> spp.	Two or more ill persons and positive serologic test or demonstration of larvae in muscle biopsy <u>OR</u> *Demonstration of larvae in epidemiologically implicated meat
Viral	
1. Hepatitis A	Detection of immunoglobulin M antibody to hepatitis A virus (IgM anti-HAV) in serum from two or more persons who consumed epidemiologically implicated food
2. Norovirus (NoV)	*Detection of viral RNA in at least two bulk stool or vomitus specimens by real-time or conventional reverse transcriptase-polymerase chain reaction (RT-PCR) <u>OR</u> Visualization of viruses (NoV) with characteristic morphology by electron microscopy in at least two or more bulk stool or vomitus specimens <u>OR</u> Two or more stools positive by commercial enzyme immunoassay (EIA)
3. Astrovirus	Detection of viral RNA in at least two bulk stool or vomitus specimens by real-time or conventional reverse transcriptase-polymerase chain reaction (RT-PCR) <u>OR</u> Visualization of viruses (NoV) with characteristic morphology by electron microscopy in at least two or more bulk stool or vomitus specimens <u>OR</u> Two or more stools positive by commercial enzyme immunoassay (EIA)