I. Diseases typified by vomiting after a short incubation period with little or no fever

Agent	Incubation period Usual (and Range)	Symptoms* (Partial list)	Pathophysiology	Characteristic foods	Specimens
A. *Staphylococcus aureus*	2-4 hours (1-6 hours)	N, C, V; D, F may be present	preformed enterotoxin	sliced/chopped ham and meats, custards, cream fillings	**Food:** enterotoxin assay (FDA), culture for quantitation and phage typing of staph, gram stain **Handlers:** culture nares, skin, skin lesions, and phage type staph **Cases:** culture stool and vomitus, phage type staph
B. Bacillus cereus	2-4 hours (1-6 hours)	N, V, D	? preformed enterotoxin	fried rice	**Food:** culture for quantitation **Cases:** stool culture
C. Heavy Metals 1. cadmium 2. copper 3. tin 4. zinc	5-15 minutes (1-60 minutes)	N, V, C, D		foods and beverages prepared/ stored/cooked in containers coated/ lined/contaminated with offending metal	Toxicologic analysis of food container, vomitus, stomach contents, urine, blood, feces

*B = bloody stools, C = cramps, D = diarrhea, F = fever, H = headache, N = nausea, V = vomiting, EM = electron microscopy, ELISA = enzyme-linked immunosorbent assay

II. Diseases typified by diarrhea after a moderate to long incubation period, often with fever

Agent	Incubation period Usual (and Range)	Symptoms* (Partial list)	Pathophysiology	Characteristic foods	Specimens
A. *Clostridium perfringens*	12 hours (8-16 hours)	C, D (V, F rare)	enterotoxin formed *in vivo*	meat, poultry	**Food:** enterotoxin assay done as research procedure by FDA, culture for quantitation and serotyping **Cases:** culture feces for quantitation and serotyping of *C. perfringens*; test for enterotoxin in stool **Controls:** culture feces for quantitation and serotyping of *C. perfringens*
B. *Salmonella* (non-typhoid)	12-36 hours (6-72 hours)	D, C, F, V, H septicemia or enteric fever	tissue invasion	poultry, eggs, raw milk, meat (cross-contamination important)	**Food:** culture with serotyping **Cases:** stool culture with serotyping **Handlers:** stool culture with serotyping as a secondary consideration
C. *Vibrio parahaemolyticus*	12 hours (2-48 hours)	C, D N, V, F, H, B	tissue invasion, ? enterotoxin	seafood	**Food:** culture on TCBS, serotype, Kanagawa test **Cases:** stool cultures on TCBS, serotype, Kanagawa test

*B = bloody stools, C = cramps, D = diarrhea, F = fever, H = headache, N = nausea, V = vomiting, EM = electron microscopy, ELISA = enzyme-linked immunosorbent assay

II. Diseases typified by diarrhea after a moderate to long incubation period, often with fever, continued

Agent	Incubation period Usual (and Range)	Symptoms* (Partial list)	Pathophysiology	Characteristic foods	Specimens
D. *Escherichia coli* enterotoxigenic	16-48 hours	D, C	enterotoxin	uncooked vegetables, salads, water, cheese	**Food:** culture and serotype **Cases:** stool cultures; serotype and entero-toxin production, invasiveness assay
Escherichia coli enteroinvasive	16-48 hours	C, D, F, H	tissue invasion	same	**Controls:** stool cultures; serotype & enterotoxin prod-uction. Look for common serotype in food & cases not found in controls; DNA probes
Escherichia coli enterohemorrhagic (E coli O157:H7 and others)	48-96 hours	B, C, D, H, F infrequent	cytotoxin	beef, raw milk, water	stool cultures on MacConkeys sorbitol; serotype
E. *Bacillus cereus*	8-16 hours	C, D	? enterotoxin	custards, cereals, puddings, sauces, meat loaf	**Food:** culture **Cases:** stool cultures
F. *Shigella*	24-48 hours	C, F, D B, H, N, V	tissue invasion	foods contaminated by infected food-handler; usually not foodborne	**Food:** culture and serotype **Cases:** stool culture & serotype **Handlers:** stool culture & serotype
G. *Yersinia enterocolitica*	3 to 5 days (usual) range unclear	F, D, C, V, H	tissue invasion, ? enterotoxin	pork products, foods contaminated by infected human or animal	**Food:** culture **Cases:** stool, blood cultures, serology **Handlers:** stool cultures

*B = bloody stools, C = cramps, D = diarrhea, F = fever, H = headache, N = nausea, V = vomiting, EM = electron microscopy, ELISA = enzyme-linked immunosorbent assay

II. Diseases typified by diarrhea after a moderate to long incubation period, often with fever, continued

Agent	Incubation period Usual (and Range)	Symptoms* (Partial list)	Pathophysiology	Characteristic foods	Specimens
H. *Vibrio cholerae* O1	24-72 hours	D, V	enterotoxin formed *in vivo*	shellfish, water or foods contaminated by infected person or obtained from contaminated environmental source	**Food:** culture on TCBS, serotype **Cases:** stool cultures on TCBS, serotype Send all isolates to CDC for confirmation and toxin assay.
I. *Vibrio cholerae* non-O1	16-72 hours	D, V	enterotoxin formed *in vivo?* tissue invasion	shellfish	**Food:** culture on TCBS, serotype **Cases:** stool cultures on TCBS, serotype
J. *Campylobacter jejuni*	3-5 days	C, D, B, F	unknown	raw milk, poultry, water	**Food:** culture on selective media (5%0_2, 42°C) **Cases:** culture on selective media (5%0_2, 42°C), serology
K. Parvovirus-like agents (Norwalk, Hawaii, Colorado, cockle agents)	16-48 hours	N, V, C, D	unknown	shellfish, water	Stool for immune EM and serology by special arrangement
L. Rotavirus	16-48 hours	N, V, C, D	unknown	foodborne transmission not well documented	**Cases:** stool examination by EM or ELISA; serology

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III. Botulism

Agent	Incubation period Usual (and Range)	Symptoms* (Partial list)	Pathophysiology	Characteristic foods	Specimens
Clostridium botulinum	12-72 hours	V, D Descending paralysis	preformed toxin	improperly canned or preserved foods that provide anaer-obic conditions	**Food:** toxin assay **Cases:** serum and feces for toxin assay by CDC or State Lab; stool culture for *C. botulinum*

IV. Diseases most readily diagnosed from the history of eating a particular type of food

A. Poisonous mushrooms	Variable	Variable		Wild mushrooms	**Food:** speciation by mycetologist
B. Other poisonous plants	Variable	Variable		Wild plant	**Cases:** vomitus, blood, urine **Food:** speciation by botanist; feces may sometimes be helpful in confirmation
C. Scombroid fish poisoning	5 minutes-1 hour	N, C, D, H, flushing, urticaria	histamine	Mishandled fish (i.e., tuna)	**Food:** Histamine levels
Ciguatera poisoning	1-6 hours	D, N, V, paresthesias, reversal of temperature sensation	ciguatoxin	Large ocean fish (i.e., barracuda, snapper)	**Food:** Stick test for ciguatoxin (not widely available)
D. Other poisonous food sources	Variable	Variable	Variable		

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