

Foodborne Pathogens Compendium for outbreak investigations - 2010

| Agent | Usual incubation period (range) | Symptom profile | Duration of illness | Period of communicability | Characteristic foods | Criteria for confirmation | Specimen required (and transport requirements) |
|---|---------------------------------|---|---------------------|---|---|--|--|
| Agents characterised by nausea and vomiting, without fever, within 8 hours of eating | | | | | | | |
| <i>Bacillus cereus</i> (pre-formed emetic toxin) | 2-4 hours (1-6 hours) | Sudden onset of severe nausea and vomiting. Diarrhoea may be present. | 6-24 hours. | Not communicable (pre-formed enterotoxin in food) | Improperly refrigerated fried or boiled rice is a common vehicle. Other implicated vehicles include other starchy foods such as cereals and pasta; and vanilla slices and cream. Toxin is heat stable to 126°C for 90 mins. | Isolation of $\geq 10^5$ orgs/gm from implicated food OR isolation of $\geq 10^5$ orgs/gm from stools or vomitus of two or more ill persons OR detection of <i>B. cereus</i> enterotoxin in food or stool/vomitus. | Stool/vomitus samples preferably collected within 3 days of onset of illness. Refrigerate prior to transport. DO NOT FREEZE. Collect 50-150 grams of food. Transport specimens in a cold pack. |
| <i>Staphylococcus aureus</i> | 2-4 hours (1-7 hours) | Sudden onset of nausea, vomiting, abdominal cramps and diarrhoea. In mild cases there may be nausea and vomiting without diarrhoea or cramps. | 24-48 hours | Not communicable (pre-formed toxin in food) | <i>S. aureus</i> competes poorly with other bacteria, therefore seldom causes food poisoning in raw products. <i>S. aureus</i> grow well in cooked foods in which normal flora has been killed or inhibited (eg. cooked, cured or salted meats). Foods high in protein, sugar or salt, or food with moist fillings are particularly susceptible (eg meat and meat products, poultry, dairy products, cream sauces, custards and cream-filled bakery products). Improper temp storage of foods and poor personal hygiene of food handlers are main contributing factors. Staphylococci multiply in food and produce enterotoxin ($>10^5$ orgs/gm of food are required for food to be hazardous). Organism readily killed by cooking; enterotoxin extremely heat resistant. | Isolation of $\geq 10^5$ orgs/gm from implicated food OR detection of staphylococcal enterotoxin in implicated food OR detection of staphylococcal enterotoxin in the stools or vomitus of two or more ill persons OR detection of organism of same pulsovar type from stools or vomitus of two or more ill persons. | Stool or vomitus samples collected during acute phase of illness. Refrigerate prior to transport. DO NOT FREEZE. Collect 50-150 grams of suspected food. Transport specimens in a cold pack. Vomitus is the preferred specimen for detection of enterotoxin. |

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| Agents characterised by abdominal cramps and diarrhoea, without fever, within 24 hours of eating | | | | | | | |
| <i>Bacillus cereus</i> (diarrhoeal toxin) | 10-13 hours (8-16 hours) | Abdominal cramps and diarrhoea; vomiting uncommon. | 12-48 hours. | Not communicable (enterotoxin produced in vivo after ingestion of food) | Meats, casseroles and stews, gravies, fried and boiled rice, potato and other vegetables. Toxin is heat labile at 56°C after 5 mins. | Isolation of $\geq 10^5$ orgs/gm from implicated food OR isolation of $\geq 10^5$ orgs/gm from stools of two or more ill persons OR detection of <i>B. cereus</i> enterotoxin in stools of two or more ill persons. | Stool samples preferably collected within 3 days of onset of illness. Refrigerate prior to transport. DO NOT FREEZE. Collect 50-150 grams of food. Transport specimens in a cold pack. |
| <i>Clostridium perfringens</i> | 10-12 hours (8-24 hours) | Profuse diarrhoea and abdominal cramps (usually no vomiting or fever). | 24-48 hours | Not communicable (enterotoxin produced in vivo after ingestion of food) | Meat products including stews, meat pies, sauces and gravy. Often associated with settings involving large quantities of food, especially meat and poultry dishes which are prepared in advance and allowed to cool slowly or are inadequately refrigerated. Infective dose $>10^5$ vegetative orgs/gm <i>C. perfringens</i> enterotoxin is inactivated by heating for 5 mins at 60°C. | Isolation of $\geq 10^5$ vegetative orgs/gm from stools of two or more ill persons OR isolation of $\geq 10^6$ spores/gm from stools of two or more ill persons OR detection of enterotoxin in stools of two or more ill persons OR isolation of $\geq 10^5$ vegetative orgs/gm in implicated food OR detection of chromosomal cpe gene. PFGE typing can be performed on isolates that were detected in both stools and food. | Stool samples preferably collected within 2 days of onset of illness. Refrigerate prior to transport. DO NOT FREEZE. Collect 50-150 grams of food. Transport specimens in a cold pack (frozen foods or foods held under prolonged refrigeration will reduce viable cell numbers). |

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| Agents characterised by diarrhoea, often with fever, with a moderate to long incubation period | | | | | | | |
| <i>Campylobacter</i> | 2-5 days (1-10 days) | Acute diarrhoea (stools often bloody and mucus), fever, abdominal cramps, vomiting . | Usually 2-5 days (up to 10 days). | May be excreted in faeces for 2-3 weeks, sometimes longer after symptoms resolve. Person-to-person transmission is uncommon. | Raw or undercooked poultry, offal, unpasteurised milk, contaminated untreated water. The organism does not multiply in food or water (the infective dose required to cause illness is usually 10^3 - 10^5 organisms but may be as low as 400-500 organisms). No toxin produced in foods. | Isolation of organism from stools of two or more ill persons OR isolation of organism from epidemiologically implicated food. | Stool samples or a swab of faecal material from stools which is then inserted into transport medium. Refrigerate prior to transport. DO NOT FREEZE. Collect 50-150 grams of food (isolation from food is difficult). Transport specimens in a cold pack. |
| <i>Salmonella spp. (non-typhoidal)</i> | 12-36 hours (8 hours - 10days) | Diarrhoea, fever, abdominal pain, vomiting. | 2-7 days. | Through the course of infection; usually several days to several weeks. A temporary carrier state occasionally continues for months (<1% become chronic carriers). | Eggs, poultry, meat, raw milk and other faecally-contaminated raw foods (eg. fruit and vegetables) and cross-contamination of cooked foods. Infective dose 10^2 to 10^3 orgs/gm food (may be lower for immunocompromised). Toxins are not produced in foods. Inactivation 2-6 mins @60°C or <1min @71°C. Some serotypes are more heat resistant than others, particularly in low water content foods. | Isolation of organism of same serotype, phage type or genotype from stools of two or more ill persons OR isolation of organism from epidemiologically implicated food. | Stool samples preferably collected within 3 days of onset of illness. Refrigerate prior to transport. DO NOT FREEZE stools. Collect 50-150 grams of suspected food and transport in a cold pack (frozen foods keep frozen; other foods refrigerate prior to transport). |
| <i>Shigella spp.</i> | 24-48 hours (12 hours-6 days) | Watery diarrhoea (often bloody and mucoid), fever, abdominal cramps often with vomiting. Mild and asymptomatic infections occur. | 4-7 days | During acute infection; asymptomatic carrier state may develop during convalescence lasting from a few days to several months (usually < one week following appropriate therapy). | Foods contaminated by an infected foodhandler (only significant reservoir is humans). Usually person to person spread or faecal-oral transmission. Infective dose can be low (eg. 10-100 organisms). Rapidly inactivated at temps above 65°C. Shigella is among the most acid-resistant of foodborne pathogens and can survive exposure to pH 2.5-3.0 for 2 hours. Toxins are not produced in foods. | Isolation of organism of same serotype/biotype from stools of two or more ill persons OR isolation of organism from epidemiologically implicated food. PFGE and antibiotic profiling may be useful. | Stool samples preferably collected within 3 days of onset of illness. Refrigerate prior to transport. Collect 50-150 grams of suspected food and transport in a cold pack (frozen foods keep frozen; other foods refrigerate prior to transport). |

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| Agents characterised by diarrhoea, often with fever, with a moderate to long incubation period (continued) | | | | | | | |
| Shiga toxin-producing <i>E. coli</i> (STEC) includes <i>E. coli</i> O157, O111, and other enterohaemorrhagic <i>E. coli</i> (EHEC) | 3-4 days (1-10 days) | Mild to severe diarrhoea (often bloody), abdominal cramps, vomiting (little or no fever) | 5-10 days | 1-3 weeks (toxin produced in vivo) | Mettwurst, salami, undercooked beef, unpasteurised milk, raw fruit & vegetables (eg. sprouts), salads, and untreated water. Infective dose can be low (e.g. 10-100 organisms) Rapidly inactivated at 71°C but thermal resistance may be higher if organism present in foods with high fat content. Survives well in chilled and frozen foods. | Isolation of <i>E. coli</i> O157, O111 or other STEC from stools of two or more ill persons OR detection of shiga toxin in the faeces of two or more ill persons OR detection of the gene (stx1 or stx2) associated with production of shiga toxin by PCR in two or more ill persons OR isolation of STEC from implicated food. | Stool samples preferably collected within 3 days of onset of illness. FREEZE stool samples. Collect 50-150 grams of suspected food. Transport specimens in a cold pack. |
| <i>Vibrio parahaemolyticus</i> | 12-24 hours (4-48 hours) | Watery diarrhoea, abdominal cramps, nausea, vomiting, low-grade fever. | 1-7 days | Not communicable | Naturally contaminated seafood (eg. shellfish and crustaceans) are the major source, either eaten raw or inadequately cooked. Ingestion of 10^5 - 10^7 orgs (Kanagawa +ve strains) is required to cause illness. Organism inactivated at temps above 65°C. Temperature range for growth 5°C- 43°C, Critical Control Point: chill seafood <5°C. | Isolation of (Kanagawa +ve) organism possessing tdh and/or trh genes from stool or vomitus of two or more ill persons OR isolation of $\geq 10^5$ orgs/gm from epidemiologically implicated food. | Stool specimens collected during acute phase of illness. Refrigerate prior to transport. DO NOT FREEZE. Collect 50-150 grams of suspected food (DO NOT FREEZE). Transport specimens in a cold pack. |
| <i>Vibrio cholerae</i> O1 and O139 | 12-72 hours (12 hours-5 days) | Watery diarrhoea often with vomiting; mild or asymptomatic infection can occur | 3-7 days | While still shedding organism (usually only a few days after recovery); carrier state may persist for several mths. (cholera toxin produced in vivo) | Contamination from infected food handlers or contaminated water. Most commonly implicated foods are seafood, including shellfish, fish and crustaceans. Rice, meat, fruits and vegetables have also been reported as vehicles. Acquired overseas. | Isolation of toxigenic organism from stools of two or more ill persons OR isolation of toxigenic organism from epidemiologically implicated food. | Stool samples collected during acute phase of illness. Refrigerate prior to transport. DO NOT FREEZE. Collect 50-150 grams of suspected food. Transport specimens in a cold pack. |
| <i>Vibrio cholerae</i> non-O1 and non-O139 | 12-24 hours (1-5 days) | Watery diarrhoea (milder than O1 and O139 but may be bloody), abdominal cramps and vomiting. | 3-7 days | Several days; usually no long term carriage following infection. | Food usually becomes contaminated through infected food handlers or contact with contaminated water (eg. with untreated sewerage). Foods previously implicated include seafood (eg. oysters), raw fruit and vegetables. Non O1 and non-O139 strains are not uncommon in the marine environment. | Isolation of organism of same serotype from stools of two or more ill persons. | Stool specimens collected during acute phase of illness. Refrigerate prior to transport. DO NOT FREEZE. Collect 50-150 grams of suspected food. Transport specimens in a cold pack. |

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| Agents characterised by diarrhoea, often with fever, with a moderate to long incubation period (continued) | | | | | | | |
| <i>Yersinia enterocolitica</i> | 36-48 hours (1-10days) | Diarrhoea (sometimes bloody), abdominal pain (often severe and mimicking appendicitis), fever, nausea and vomiting. | 2-3 days but sometimes 1-3 weeks | Faecal shedding for as long as symptoms persist, about 2-3 weeks. | Raw or undercooked pork or pork products, contaminated dairy products, contaminated water. Toxins are not produced in foods. Able to multiply at refrigeration temps but not a good competitor with other organisms. Inactivation <1min @71°C. | Isolation of pathogenic serotype from clinical specimen (stool, vomitus, blood) of two or more ill persons OR isolation of pathogenic serotype from epidemiologically implicated food. | Stool specimens collected during acute phase of illness. Refrigerate prior to transport. Collect 50-150 grams of suspected food. Transport specimens in a cold pack. |
| Norovirus and other caliciviruses | 24-48 hours (12-72 hours) | Sudden onset nausea, vomiting, abdominal cramps and diarrhoea. Other symptoms may include headache, myalgia and low grade fever. | 1-3 days | Duration of vomiting and diarrhoea. Excretion of virus in stools may occur for several days after symptoms resolve. High levels of virus may be discharged in vomit. | Shellfish harvested from contaminated waters or other faecally contaminated foods including contamination by an infected foodhandler. Infective dose can be <10 virus particles. | Detection of viral RNA in stools or vomitus of two or more ill persons by reverse transcriptase-polymerase chain reaction (RT-PCR) | Stool/vomit samples preferably collected from the 1st to 7th day of illness however shedding may continue for up to 3 weeks. Refrigerate prior to transport. DO NOT FREEZE. |
| Rotavirus | 24-48 hours (16-72 hours) | Vomiting, watery diarrhoea, malaise, headache, low-grade fever. | 4-8 days | Viral shedding in faeces up to 8 days after onset of illness. | Faecally contaminated foods. Ready-to-eat foods touched by infected food workers (salads, fruits). Mainly transmitted via person-to-person spread and sometimes by food handlers. | Detection of viral RNA in stools of two or more ill persons by reverse transcriptase-polymerase chain reaction (RT-PCR) at FSS OR antigen detection Enzyme Immuno Assay (EIA) available through Royal Brisbane Hospital. | Stool samples preferably collected from the 1st to 4th day of illness are optimal however shedding may continue for up to 3 weeks. Refrigerate prior to transport. DO NOT FREEZE. |
| Other viral agents (Astrovirus, adenoviruses, enteroviruses, parvoviruses) | 24-48 hours (12-72 hours) | Nausea, vomiting, diarrhoea, malaise, abdominal pain, headache, fever. | 2-9 days | Duration of vomiting and diarrhoea. | Shellfish harvested from contaminated waters or other faecally contaminated foods including contamination by an infected foodhandler. | Detection of viral DNA/RNA in stools of two or more ill persons by reverse transcriptase-polymerase chain reaction (RT-PCR) and (PCR) OR antigen detection Enzyme Immuno Assay (EIA) for Adenovirus 40/41 available through Royal Brisbane Hospital. | Stool samples preferably collected from the 1st to 7th day of illness are optimal. Refrigerate prior to transport. DO NOT FREEZE. |

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| Agents characterised by diarrhoea, often with fever, with a moderate to long incubation period (continued) | | | | | | | |
| <i>Cryptosporidium parvum</i> | 1-12 days | Diarrhoea (usually watery) which may be severe, stomach cramps. | 4-21 days | Oocysts may be excreted in stools for several weeks after symptoms resolve. | Contaminated water or food, unpasteurised milk. Infective dose ≥ 10 cysts. | Detection of oocysts of same species or genotype from stools of two or more ill persons OR detection of oocysts from epidemiologically implicated food. (May need to collect 3 stool samples/person) | Stool samples preferably collected within 7 days of onset of illness. Refrigerate prior to transport. DO NOT FREEZE. Collect suspected food or water. Transport specimens in a cold pack. |
| <i>Giardia lamblia</i> | 1-2 weeks | Diarrhoea, abdominal pain, bloating, flatulence. | Days to weeks. | Entire period of infection. | Contaminated water or food. Infective dose 10-100 cysts. | Detection of cysts from stools or duodenal aspirates of two or more ill persons. (May need to collect 3 stool samples/person) | Stool samples preferably collected within 7 days of onset of illness. Refrigerate prior to transport. DO NOT FREEZE. |
| <i>Cyclospora cayetanensis</i> | Usually at least a week (1-14 days) | Diarrhoea (often watery), stomach cramps, nausea, vomiting, fatigue (fever is rare). | If not treated, illness may be remitting and relapsing over weeks to months. | Oocysts are not infectious in freshly excreted stools. They require days to weeks outside the host to sporulate and become infectious. | Most likely to be transmitted by eating contaminated produce imported from a developing country. Implicated foods in overseas outbreaks include strawberries, raspberries, lettuce and basil. | Detection of oocysts in the stools of two or more ill persons. Detection of <i>Cyclospora</i> DNA by PCR on stools and food samples. | Stool samples preferably collected within 7 days of onset of illness. Refrigerate prior to transport. DO NOT FREEZE. |

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| Agents associated with systemic illness | | | | | | | |
| Hepatitis A | 3-4 weeks (15-50 days). | Abrupt onset with fever, malaise, nausea and abdominal discomfort followed by jaundice and dark urine. Asymptomatic infection or mild illness may occur. | 2 weeks to 3 months | Infectious during the incubation period, especially latter half and for 1-2 weeks after onset of symptoms. | Shellfish harvested from contaminated waters, raw produce, contaminated drinking water, raw/uncooked foods that are not reheated after contact with infected food handler. | Detection of IgM anti-hepatitis A virus and total anti -hepatitis A IgG in the serum OR detection of viral RNA in stool by reverse transcriptase-polymerase chain reaction (RT-PCR) from two or more persons who consumed epidemiologically implicated food. Serological tests to exclude other causes of viral hepatitis should be considered. | Serum collected at the onset of illness OR stool samples preferably collected from the 1st to 7th day of illness however shedding may continue for up to 3 weeks. Refrigerate prior to transport. DO NOT FREEZE. |
| Listeria monocytogenes | 9-48 hours for (non-invasive) gastrointestinal symptoms. 4-21 days (range 3 -70 days) for invasive disease. | Fever, muscle aches, nausea or diarrhoea. Pregnant women may have mild flu-like illness and infection can lead to premature delivery or stillbirth. Elderly or immunocompromised patients may have bacteremia or meningitis. Infants infected from their mothers are at risk of sepsis or meningitis. | Variable | Mothers of infected newborns may shed the infectious agent in vaginal discharges and urine for 7 to 10 days. Infected individuals can shed the organisms in their stools for several months. | Outbreaks have been associated with unpasteurised and inadequately pasteurised milk, soft cheese, ready-to-eat deli meats, frankfurts, turkey and chicken products, pate, smoked mussels, contaminated vegetables, salads and fruit salads. Rapidly inactivated at 71°C. No toxins produced in food. Infective dose >10 ³ orgs/gm food. | Isolation of <i>Listeria monocytogenes</i> of the same serotype/genotype from two or more ill persons exposed to epidemiologically implicated food OR from food from which the same serotype/genotype of <i>L. monocytogenes</i> has been isolated. | Stool samples collected during the acute phase of illness. DO NOT FREEZE. Collect 50-150 grams of suspected food and transport in a cold pack |
| Salmonella Typhi Salmonella Paratyphi | Typhoid: 8-15 days (5-35 days); Paratyphoid: 1-10 days | Systemic illness characterised by fever, headache, malaise, chills and myalgia; constipation more common than diarrhoea and vomiting is usually not severe. | Days to weeks | May be excreted in faeces for many weeks after symptoms subside. Chronic carriers occur (10% of untreated cases infectious at 3mths; 2-5% permanent carriers). | Faecal contamination of food and water (humans are sole reservoir of this organism). Important vehicles include raw shellfish, raw fruit and vegetables, contaminated water supplies. Infected foodhandlers are a common source. Enteric fever usually associated with foreign travel. Toxins are not produced in foods. | Isolation of organism from clinical specimen of two or more ill persons OR isolation of organism from epidemiologically implicated food. | Stool samples collected from case to monitor success of treatment / eradication of carrier state. Stool samples from household contacts. Refrigerate prior to transport. DO NOT FREEZE stools. Transport in a cold pack. |

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| Botulism | | | | | | | |
| <i>Clostridium botulinum</i> - children and adults (pre-formed toxin) | 12-36 hours (2 hours - several days) | Vomiting, diarrhoea, blurred vision, diplopia, dysphagia and descending muscle weakness. | Variable (from days to months). | Not communicable (preformed enterotoxin in food). Infant botulism occurs from ingestion of spores in food, germination, colonisation and toxin production in the large intestine. | Home canned foods with a low acid content, improperly canned commercial foods, preserved foods, honey (infants). Other foods implicated in outbreaks include dairy foods, vegetables, fish, meat products and condiments. Relatively high moisture, low salt, low acid (pH>4.6) food that is devoid of oxygen and stored without refrigeration or held warm for extended period of time may be at risk. | Detection of botulinum toxin in stools, gastric contents or blood, OR isolation of organism from stools OR detection of toxin in implicated food. | Stool or blood samples. Suspected food. |
| Agents most readily diagnosed from history of eating a particular type of food | | | | | | | |
| Ciguatera poisoning (Ciguatoxin) | 2-8 hours (1-24 hours) | Nausea, vomiting, diarrhoea, paresthesia of lips, mouth and extremities, reversal of hot and cold sensation. | Days to weeks to months | Not communicable | There are three species of fish, chinaman, red bass and paddle tail, which are considered to be high risk fish and have been prohibited from sale in Australia. Many different warm water ocean fish have been linked with ciguatera poisoning including coral trout, spanish mackerel, dolphin fish, queenfish, red emperor, reef cods, trevally, wrasse and kingfish. | Demonstration of ciguatoxin in epidemiologically implicated fish using HPLC/MS/MS (may take > 1 week to complete) OR similar clinical symptoms in two or more ill persons who have eaten same type of fish. | Collect implicated fish and forward in a cold pack to Geoff Eaglesham or Ian Stewart at QHSS Organics. |
| Histamine poisoning (Scombroid poisoning) | < 1hour (1 minute to 3hours) | Flushing, rash, burning sensation of skin, mouth and throat, dizziness. | 3-6 hours. | Not communicable | Mishandled fish, particularly tuna (including canned), mackerel, bonito, mahi mahi (dolphin fish), salmon. | Demonstration of histamine (>500mg /kg of fish muscle) in epidemiologically implicated fish using capillary electrophoresis or ELISA AND/OR similar clinical symptoms in two or more ill persons who have eaten same type of fish. | Collect implicated fish and forward in a cold pack to QHSS Food Chemistry. |

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| Agents most readily diagnosed from history of eating a particular type of food (continued) | | | | | | | |
| Shellfish toxins: diarrhetic (DSP) neurotoxic (NSP) amnesic (ASP) | Diarrhetic - 30 mins to 3 hours Neurotoxic - usually 3-6 hours Amnesic - usually 3-5 hours | Diarrhetic: Nausea, vomiting, diarrhoea, and abdominal pain accompanied by chills, headache and fever. Neurotoxic: chills, headache, diarrhoea, nausea and vomiting, muscle and joint pain, paraesthesia - reversal of hot and cold sensations, may have difficulty in breathing, talking, swallowing, double vision. Amnesic: vomiting, diarrhoea, abdominal pain, dizziness, hallucinations, confusion, short-term memory loss, seizures. | Hours to several days | Not communicable | A variety of shellfish, primarily mussels, oysters and scallops. | Detection of DSP toxin (Okadaic acid) in suspect shellfish above regulatory limit (0.16 mg/kg) using HPLC/MS AND/OR similar clinical symptoms in two or more ill persons who have eaten shellfish from same source. [QHSS can also test for a variety of other shellfish toxins except brevetoxins] | Collect implicated shellfish and forward to Geoff Eaglesham at QHSS Organics. |
| Shellfish toxins: paralytic shellfish poisoning (PSP) | 30 mins to 3 hours | Tingling sensation or numbness around lips, prickly sensation in fingertips and toes, headache, dizziness, diarrhoea, nausea, vomiting. Extreme cases - muscular paralysis leading to respiratory difficulty and sometimes death. | Days | Not communicable | A variety of shellfish. | Detection of PSP toxin (Saxitoxin) in suspect shellfish above regulatory limit (0.8 mg/kg) using HPLC/fluorescence AND/OR similar clinical symptoms in two or more ill persons who have eaten shellfish from same source. | Collect implicated shellfish and forward to Geoff Eaglesham at QHSS Organics. |
| Heavy metals (antimony, cadmium, copper, iron, tin, zinc) | Usually <1hour (5 mins-8 hrs) | Vomiting with nausea, cramps and diarrhoea, metallic taste | Usually self-limited. | Not communicable | Acidic foods and beverages prepared, stored or cooked in containers coated, lined or contaminated with offending metal. | Conduct heavy metals screen on food items. Detection of high concentration of metallic ion in implicated food. Levels of heavy metals must conform to Food Standards ANZ 1.4.1, 1.4.2, 1.4.3 and 2.6.2 | Collect suspect food and forward to QHSS Food Chemistry. |

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| Agents most readily diagnosed from history of eating a particular type of food (continued) | | | | | | | |
| Poisonous mushrooms | < 2 hours | Vomiting, diarrhoea, drowsiness, confusion, visual disturbances, excessive salivation, irregular pulse, hallucinations. | Usually self-limited. | Not communicable | Wild mushrooms. | Botanical identification of toxic mushroom AND/OR test for toxin in suspect mushrooms AND/OR similar clinical symptoms in two or more ill persons who have eaten mushrooms from same source. | Collect suspect mushrooms (uncooked mushrooms if possible) and forward to QHSS Organics |