# Foodborne Pathogens- Viruses

| Organism | Onset* | Duration | Infective Dose | Symptoms** | Implicated Foods | Reservoir | Controls | Survival | Cases/yr | Fatality Rate | Susceptible Population | Laboratory Testing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hepatitis A | 28-30 days (15-50 days) | 1-2 weeks, occas. months | low - <100 infectious particles | f, ac, anorexia, weakness, jaundice, sometimes v and d | raw, undercooked shellfish;sandwiches, salads, frozen strawberries, ready-to-eat foods | humans | hygienic food handling, cook shellfish thoroughly | resistant to extremes of pH, stable at freezing temps, somewhat heat resistant- protected by flesh of seafood | est. ~ 80,000; 4,100 due to food | 0.30% | everyone, severity increases with age,lifelong immunity, vaccine available | Increase in ALT, bilirubin. Positive IgM antibodies against hepatitis A virus, paired sera |
| Norovirus (previously known as Norwalk-like virus or SRSV) | 24-48 hrs (10-50 hrs) | < 60 hrs | low | n,v,d,ac,mild f, h (adults tend to have more diarrhea, children more vomiting) | raw, undercooked shellfish;sandwiches, salads, ready-to-eat foods | humans | hygienic food handling, cook shellfish thoroughly; drinking and recreational water | resistant to extremes of pH, stable at freezing temps, somewhat heat resistant- protected by flesh of seafood | est 9,200,000 due to food | rare | everyone, immunity appears to be short-lived | Clinical diagnosis, negative bacterial cultures, >fourfold increase in antibody titers of Norovirus antibodies, acute and convalescent, special viral assays in reference lab. Stool is negative for WBCs. |
| Rotavirus | 24-72 hrs | 4-6 days | | d, v, f | raw or mishandled foods | humans | sanitation | | est 39,000 due to food | rare | infants and children | Identification of virus in stool via immunoassay. |

# Foodborne Pathogens- Parasites

| Organism | Onset | Duration | Infective Dose | Symptoms** | Implicated Foods | Reservoir | Controls | Survival | Cases/yr | Fatality Rate | Susceptible Population | Laboratory Testing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cryptosporidium parvum | 7 days average (2-28 days) | 5-14 days (days to weeks) | | ac, d-watery,+/- f and v, most severe in immunocompromised | Contaminated water supply, vegetables, fruits, unpasteurized milk. | animals, humans, can spread person to person | general sanitaion, thorough cooking | resistant to chlorine levels found in drinking water and swimming pools | 30,000 | rare | | Must be specifically requested. May need to examine water or food. |
| Cyclospora cayetanensis | 7-10 days (1-11 days) | May be protracted (weeks to months) | 10-100 cysts | Fatigue, protracted diarrhea, often relapsing. | Imported berries, contaminated water, lettuce, basil | human, not spread person to person | cooking or freezing, probably susceptible to drying | resistant to chlorine levels found in drinking water and swimming pools | 14,600 | 0 | | Request specific examination of the stool for *Cyclospora.* May need to examne water or food. |
| Entamoeba histolytica | 2-3 days to 1-4 weeks | Months | | Bloody d, ac | water, raw or mishandled food. | human | general sanitaion, thorough cooking | | | | | Examination of stool for cysts and parasites – at least 3 samples. Serology for long-term infections. |
| Giardia intestinalis | 7-10 days (1-4 weeks) | Weeks | | Acute or chronic diarrhea, flatulence, bloating. | Drinking water, other food sources. | animals, humans, can spread person to person | general sanitaion, thorough cooking | resistant to chlorine levels found in drinking water and swimming pools | 200,000 | rare | | Examination for ova and parasites – at least 3 samples. |
| Toxoplasma gondii | 6-10 days | Months | | Generally asymptomatic, 20%: cervical lymphadenopathy and/or a flu-like illness. I<u>mmunocompromised patients:</u> CNS disease, myocarditis, or pneumonitis ; fetal abn's or death | (eg. putting hands in mouth after gardening or cleaning cat litter box); Raw or partly cooked pork, lamb, or venison. | animals | cook meat thoroughly, good hand washing after high risk activities such as gardening, cleaning cat litter | | 113,000 | < 1% | immunocompromised, pregnant women | Isolation of parasites from blood or other body fluids; observation of parasites in patient specimens. Detection of organisms is rare, but serology can be useful. For congenital infection: isolation of T. gondii from placenta, umbilical cord, or infant blood. PCR of white blood cells, CSF, or amniotic fluid (reference laboratory). IgM and IgA serology (reference laboratory). |
| Trichinella spiralis | 1-2 days to 2-8 weeks | Months | | n, v, d, ac followed by f, myalgias, periorbital edema. | Raw or undercooked contaminated meat, usually pork or wild game meat, eg, bear or moose. | animals | cook meat thoroughly, freeze meat appropriately | | 52 | 0 | | Positive serology or demonstration of larvae via muscle biopsy. Increase in eosinophils. |

*Times in parenthesis indicate the extreme ranges of observed onset times. The times out of parenthesis are more typical for the disease.

**d=diarrhea, v=vomiting, n=nausea, f=fever, ac=abdominal cramps,ch=chills, h=headache, tenes=tenesmus,sept=septicemia