

Water based diseases : Protozoal infections

Disease and Transmission	Microbial Agent	Sources of Agent in Water Supply	General Symptoms
<u>Amoebiasis</u> (hand-to-mouth)	Protozoan (<i>Entamoeba histolytica</i>) (Cyst-like appearance)	<u>Sewage, non-treated drinking water, flies</u> in water supply	Abdominal discomfort, <u>fatigue</u> , weight loss, <u>diarrhoea</u> , <u>bloating</u> , <u>fever</u>
<u>Cryptosporidiosis</u> (oral)	Protozoan (<i>Cryptosporidium parvum</i>)	Collects on water filters and membranes that cannot be <u>disinfected</u> , <u>animal manure</u> , seasonal <u>runoff</u> of water.	<u>Flu-like symptoms</u> , watery diarrhea, loss of appetite, substantial loss of weight, <u>bloating</u> , increased gas, <u>nausea</u>
<u>Cyclosporiasis</u>	Protozoan parasite (<i>Cyclospora cayentanensis</i>)	<u>Sewage, non-treated drinking water</u>	<u>cramps</u> , nausea, <u>vomiting</u> , muscle aches, fever, and fatigue
<u>Giardiasis</u> (fecal-oral) (hand-to-mouth)	Protozoan (<i>Giardia lamblia</i>) Most common intestinal parasite	Untreated water, poor disinfection, pipe breaks, leaks, <u>groundwater</u> contamination, <u>campgrounds</u> where humans and wildlife use same source of water. <u>Beavers</u> and <u>muskrats</u> create <u>ponds</u> that act as <u>reservoirs</u> for Giardia.	Diarrhea, abdominal discomfort, <u>bloating</u> , and <u>flatulence</u>
<u>Microsporidiosis</u>	Protozoan phylum (<i>Microsporidia</i>), but closely related to <u>fungi</u>	<u>Encephalitozoon intestinalis</u> has been detected in <u>groundwater</u> , the origin of drinking water ^[5]	Diarrhea and <u>wasting</u> in <u>immunocompromised</u> individuals..

Parasitic infections (Kingdom Animalia)

Disease and species	Microbial Agent	Sources of Agent in Water Supply	General Symptoms
<u>Schistosomiasis</u> (immersion)	Members of the genus <u>Schistosoma</u>	Fresh water contaminated with certain types of snails that carry <u>schistosomes</u>	Blood in urine (depending on the type of infection), rash or itchy skin. Fever, chills, cough and muscle aches
<u>Dracunculiasis</u> (Guinea Worm Disease)	<u>Dracunculus medinensis</u>	Stagnant water containing larvae, generally in parasitised Copepoda	Allergic reaction, <u>urticaria</u> rash, nausea, vomiting, diarrhea, asthmatic attack.
<u>Taeniasis</u>	Tapeworms of the genus <u>Taenia</u>	Drinking water contaminated with eggs	Intestinal disturbances, neurologic manifestations, loss of weight, <u>cysticercosis</u>
<u>Fasciolopsiasis</u>	<u>Fasciolopsis buski</u>	Drinking water contaminated with encysted metacercaria	GIT disturbance, diarrhea, liver enlargement, cholangitis, cholecystitis, obstructive jaundice.
<u>Hymenolepiasis</u> (Dwarf Tapeworm Infection)	<u>Hymenolepis nana</u>	Drinking water contaminated with eggs	Abdominal pain, severe weight loss, itching around the anus, nervous manifestation
<u>Echinococcosis</u> (Hydatid disease)	<u>Echinococcus granulosus</u>	Drinking water contaminated with feces (usually <u>canid</u>) containing eggs	Liver enlargement, hydatid cysts press on <u>bile duct</u> and blood vessels; if cysts rupture they can cause <u>anaphylactic shock</u>
<u>coenurosis</u>	multiceps multiceps	contaminated drinking water with eggs	increases <u>intracranial tension</u>
<u>Ascariasis</u>	<u>Ascaris lumbricoides</u>	Drinking water contaminated with feces (usually <u>canid</u>) containing eggs	Mostly, disease is asymptomatic or accompanied by <u>inflammation</u> , fever, and diarrhea. Severe cases involve <u>Löffler's syndrome</u> in lungs, nausea, vomiting, <u>malnutrition</u> , and <u>underdevelopment</u> .
<u>Enterobiasis</u>	<u>Enterobius vermicularis</u>	Drinking water contaminated with eggs	Peri-anal itch, nervous irritability, hyperactivity and <u>insomnia</u>

Bacterial infections

Disease and Transmission	Microbial Agent	Sources of Agent in Water Supply	General Symptoms
<u>Botulism</u>	<u><i>Clostridium botulinum</i></u>	Bacteria can enter an open wound from contaminated water sources. Can enter the gastrointestinal tract by consuming contaminated <u>drinking water</u> or (more commonly) food	Dry mouth, <u>blurred</u> and/or <u>double vision</u> , difficulty swallowing, muscle weakness, difficulty breathing, slurred speech, <u>vomiting</u> and sometimes <u>diarrhea</u> . Death is usually caused by <u>respiratory failure</u> .
<u>Campylobacteriosis</u>	Most commonly caused by <u><i>Campylobacter jejuni</i></u>	Drinking water contaminated with <u>feces</u>	Produces <u>dysentery</u> like symptoms along with a <u>high fever</u> . Usually lasts 2–10 days.
<u>Cholera</u>	Spread by the bacterium <u><i>Vibrio cholerae</i></u>	Drinking water contaminated with the bacterium	In severe forms it is known to be one of the most rapidly fatal illnesses known. Symptoms include very watery diarrhea, <u>nausea</u> , <u>cramps</u> , <u>nosebleed</u> , rapid <u>pulse</u> , vomiting, and <u>hypovolemic shock</u> (in severe cases), at which point death can occur in 12–18 hours.
<u><i>E. coli</i> Infection</u>	Certain strains of <u><i>Escherichia coli</i></u> (commonly <i>E. coli</i>)	Water contaminated with the bacteria	Mostly diarrhea. Can cause death in <u>immunocompromised</u> individuals, the very young, and the elderly due to <u>dehydration</u> from prolonged illness.
<u><i>M. marinum</i> infection</u>	<u><i>Mycobacterium marinum</i></u>	Naturally occurs in water, most cases from exposure in <u>swimming pools</u> or more frequently <u>aquariums</u> ; rare infection since it mostly infects <u>immunocompromised</u> individuals	Symptoms include <u>lesions</u> typically located on the elbows, knees, and feet (from <u>swimming pools</u>) or lesions on the hands (<u>aquariums</u>). Lesions may be painless or painful.

Dysentery	Caused by a number of species in the genera Shigella and Salmonella with the most common being Shigella dysenteriae	Water contaminated with the bacterium	Frequent passage of feces with blood and/or mucus and in some cases vomiting of blood.
Legionellosis (two distinct forms: Legionnaires' disease and Pontiac fever)	Caused by bacteria belonging to genus Legionella (90% of cases caused by Legionella pneumophila)	Contaminated water: the organism thrives in warm aquatic environments.	Pontiac fever produces milder symptoms resembling acute influenza without pneumonia . Legionnaires' disease has severe symptoms such as fever , chills , pneumonia (with cough that sometimes produces sputum), ataxia , anorexia , muscle aches, malaise and occasionally diarrhea and vomiting
Leptospirosis	Caused by bacterium of genus Leptospira	Water contaminated by the animal urine carrying the bacteria	Begins with flu-like symptoms then resolves. The second phase then occurs involving meningitis , liver damage (causes jaundice), and renal failure
Otitis Externa (swimmer's ear)	Caused by a number of bacterial and fungal species.	Swimming in water contaminated by the responsible pathogens	Ear canal swells causing pain and tenderness to the touch
Salmonellosis	Caused by many bacteria of genus Salmonella	Drinking water contaminated with the bacteria. More common as a food borne illness .	Symptoms include diarrhea , fever , vomiting, and abdominal cramps
Typhoid fever	Salmonella typhi	Ingestion of water contaminated with feces of an infected person	Characterized by sustained fever up to 40°C (104°F), profuse sweating , diarrhea may occur. Symptoms progress to delirium and the spleen and liver enlarge if untreated. In this case it can last up to four weeks and cause death. Some people with typhoid fever develop a rash called "rose spots" which are small red spots on the abdomen and chest.
Vibrio Illness	Vibrio vulnificus ,	Can enter wounds from	Symptoms include

<p><u>Vibrio alginolyticus</u>, and <u>Vibrio parahaemolyticus</u></p>	<p>contaminated water. Also got by drinking contaminated water or eating undercooked <u>oysters</u>.</p>	<p>Abdominal tenderness, Agitation, Bloody stools, Chills, Confusion, Difficulty paying attention (attention deficit), Delirium, Fluctuation mood, Hallucination, Nosebleeds, Severe fatigue, slow, sluggish, lethargic feeling, weakness.</p>
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Viral infections

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<p><u>SARS</u> (Severe Acute Respiratory Syndrome)</p>	<p><u>Coronavirus</u></p>	<p>Manifests itself in improperly treated water</p>	<p>Symptoms include <u>fever</u>, <u>myalgia</u>, <u>lethargy</u>, <u>gastrointestinal</u> symptoms, <u>cough</u>, and sore throat</p>
<p><u>Hepatitis A</u></p>	<p>Hepatitis A virus (HAV)</p>	<p>Can manifest itself in water (and food)</p>	<p>Symptoms are only <u>acute</u> (no <u>chronic</u> stage to the virus) and include <u>Fatigue</u>, fever, abdominal pain, nausea, diarrhea, weight loss, itching, <u>jaundice</u> and <u>depression</u>.</p> <p>90-95% of patients show no symptoms, 4-8% have minor symptoms (comparatively) with <u>delirium</u>, <u>headache</u>, <u>fever</u>, and occasional <u>seizures</u>, and <u>spastic paralysis</u>, 1% have symptoms of non-paralytic <u>aseptic meningitis</u>. The rest have serious symptoms resulting in <u>paralysis</u> or death</p>
<p><u>Poliomyelitis</u> (Polio)</p>	<p><u>Poliovirus</u></p>	<p>Enters water through the <u>feces</u> of infected individuals</p>	<p>BK virus produces a mild <u>respiratory infection</u> and can infect the <u>kidneys</u> of <u>immunosuppressed transplant</u> patients. JC virus infects the <u>respiratory system</u>, kidneys or can cause <u>progressive multifocal leukoencephalopathy</u> in the <u>brain</u> (which is fatal).</p>
<p><u>Polyomavirus infection</u></p>	<p>Two of <u>Polyomavirus</u>: <u>JC virus</u> and <u>BK virus</u></p>	<p>Very widespread, can manifest itself in water, ~80% of the population has <u>antibodies</u> to Polyomavirus</p>	<p>BK virus produces a mild <u>respiratory infection</u> and can infect the <u>kidneys</u> of <u>immunosuppressed transplant</u> patients. JC virus infects the <u>respiratory system</u>, kidneys or can cause <u>progressive multifocal leukoencephalopathy</u> in the <u>brain</u> (which is fatal).</p>