

Glossary

Aerobic: Oxygen requiring; usually refers to a habitat, organism, or process that relies on the presence of oxygen for continued existence, growth, or function.

Amnesic shellfish poisoning (ASP): Impairment or lack of memory caused by the ingestion of shellfish contaminated with the diatom *Pseudo-nitzschia* sp. that has produced the toxin domoic acid. ASP can be a life-threatening syndrome.

Amoeba: Single-celled organism that has no definite form and consists of a mass of protoplasm containing one or more nuclei surrounded by a flexible outer membrane.

Anaerobe: Used to describe a biological habitat or an organism that exists and grows with oxygen.

Antibody: Any of various proteins produced in the blood in response to the presence of an antigen, which it neutralizes, thus producing an immune response.

Antigen: Any substance that is introduced to the body that causes the production of antibodies, e.g. bacteria, chemicals or donated tissue

Assemblage: A particular strain of pathogenic organism (e.g. *Giardia*) characterized by a specific genetic code.

Asymptomatic: Carrying a particular disease, but not showing any symptoms.

Autoinfection: An infection caused by a disease agent that is already present in the body.

Bacteriophages: A virus capable of infecting and destroying bacterial cells.

Campylobacteriosis: An infection of the intestines caused by bacteria of the *Campylobacter* genus. Symptoms include mild to severe diarrhea (often bloody), stomach pain, fever, nausea, and vomiting.

Chitinous: Possessing a tough, protective, shell composed primarily of a nitrogen-containing polysaccharide, forming the principal component of arthropod exoskeletons and the cell walls of certain fungi.

Ciguatera fish poisoning (CFP): Gastrointestinal, neurological, and cardiovascular symptoms associated the ingestion of fish contaminated with toxic dinoflagellates Paralysis and death have been documented, but symptoms are usually less severe although debilitating.

Cilia: Tiny, hair-like projections from a cell.

Ciliate(d) A microscopic single-celled organism that has hair-like projections (cilia) on its surface used for locomotion.

Coccus: Spherical in shape, such as the bacterium *Enterococcus*.

Coliphage A bacterial virus (phage) that uses coliform bacteria as a host.

Colony forming unit (CFU): Measure of viable bacterial cells or clumps of bacterial cells capable of reproducing to form a visible colony

Cryptosporidiosis: An illness of varying severity caused by the microscopic intestinal parasitic protozoan, *Cryptosporidium*. It is a common cause of diarrhea worldwide and is common in AIDS patients.

Cyst: A resting stage of an organism that has a tough outer coating.

Dinoflagellate: Microscopic, (usually) unicellular, flagellated protists, commonly regarded as "algae" (photosynthetic varieties), or protozoans when exhibiting predation and parasitism (e.g. *Pfisteria*).

***E. coli* O157:H7:** A specific serotype of *E. coli* that is responsible for enterohemorrhagic diarrhea

Encyst: The process a cell undergoes to produce a cyst.

Endospore: An asexual spore formed within a bacterial cell.

Endocarditis: Inflammation of the inside lining of the heart chambers and heart valves (endocardium). Symptoms include fever, chills, fatigue, muscle/joint pain and unexplained weight loss.

Enteric: Of or relating to the small intestine.

Epidemiology: The study of populations to determine the frequency and distribution of disease and to measure risks.

Eukaryotic: A type of higher order cell possessing a nucleus and other membrane-bound organelles such as mitochondria, chloroplasts and the Golgi apparatus.

Excystation: Escape from a cyst by an encysted organism.

Fecal coliform: A grouping of coliform bacteria that lives in the intestines of warm-blooded animals. Elevated measurements of these bacteria in surface water may indicate the presence of human and/or animal waste.

Fecal erosion: The wearing down and weathering of feces by water and wind, leading to transport of fecal material from the original site of defecation.

Flagellum: A long, thin, hair-like projection from a cell used for movement.

Flagellate(d): A microscopic, single-celled organism possessing one or more long, hair-like projections (flagellum) used for locomotion.

Gastroenteritis: Inflammation of the mucous membrane of the stomach and intestine causing diarrhea, nausea and vomiting; often referred to as 'stomach flu'.

Geometric mean: A measure of the central tendency of a data set that minimizes the effects of extreme values; calculated by multiplying a series of numbers and taking the nth root where n is the number of numbers in the series.

Giardiasis: An infection of the small intestine caused by a microscopic organism (protozoa), *Giardia lamblia*. Symptoms include abdominal pain, diarrhea, nausea and vomiting.

Harmful algal blooms (HAB): An explosive increase in the density of phytoplankton within an area, specifically those involving toxic or otherwise harmful phytoplankton (dinoflagellates).

Groundwater: Water beneath the earth's surface, often between saturated soil and rock that supplies wells and springs. The upper surface of groundwater is the water table.

Hemolytic uremic syndrome: A disorder that usually occurs when an infection in the digestive system produces toxic substances that destroy red blood cells, may lead to kidney failure. Most common in children and the elderly.

Hemorrhagic colitis: A clinical syndrome manifested by bloody diarrhea and inflammation of the colon, typically the result of infection by hemorrhagic *E. coli* O157:H7.

Hyporheic exchange: The subsurface exchange of water between streams/lakes and groundwater through the hyporheic zone.

Hyporheic zone: A subsurface volume of sediment and porous space adjacent to a stream/lake through which water readily exchanges; a mixing zone between surface water and groundwater.

Immunocompetent: The opposite of immunodeficient; capable of developing an immune response, able to recognize antigens and react by producing antibodies.

Inactivate(d): To cause (as an infective agent) to lose disease-producing capacity

Infectious Dose: The amount of pathogen (measured in number of organisms) required to cause infection in the host.

Intracellular: Existing, occurring, or functioning within a cell (such as intracellular parasites)

Isolate(s) An organism that is isolated from a single source, usually by culturing.

Leptospirosis: Bacterial disease that affects humans and animals caused by bacteria of the genus *Leptospira*. Symptoms include fever, chills, muscle pain, and vomiting. Can lead to kidney failure if left untreated.

Mesophilic: Requiring a warm temperature in which to develop.

Microsporidiosis: Opportunistic disease occurring mainly, but not exclusively, in severely immunocompromised patients. Symptoms are very diverse, varying according to the causal species with diarrhea being the most common.

Motile: Capable of self-propulsion and spontaneous movement.

Nonmotile: Not capable of movement.

Obligate: Biologically essential for survival

Oocyst: The environmentally resistant stages of protozoan, such as *Cryptosporidium*.

Organelle: A structurally discrete component of a cell, analogous to organs, including mitochondria and chloroplasts.

Paralytic shellfish poisoning (PSP): A life-threatening syndrome caused by consumption of contaminated shellfish. The toxins produced are called saxitoxins.

Parasite: An organism that lives in or on and takes its nourishment from another organism.

Pathogen: An agent of disease; including bacteria, protozoans and parasites.

Pathogen of primary concern: As used in this review/module, are microorganisms infectious to humans during clinical trials and real-world scenarios and are known to be shed by livestock and/or transmitted by a waterborne route.

Pathogen of secondary concern: As used in this review/module, are infrequently shed by animals or have rarely been the cause of a waterborne outbreak.

Primary amebic meningoencephalitis: A brain infection that leads to the destruction of brain tissue. Early stages may be similar to bacterial meningitis with rapid onset of fever, nausea, vomiting and a stiff neck. Most infections are fatal.

Pseudopod: Temporary outgrowth used by some microorganisms as an organ of feeding or locomotion.

Salmonellosis: An infection of the intestines caused by the *Salmonella* bacteria, which causes severe diarrhea and death in some cases.

Sepsis: A severe illness in which the bloodstream is overwhelmed by bacteria causing clotting and blockage of blood flow, can lead to tissue and organ death.

Serotype: A group of microorganisms, viruses, or cells classified together based on their cell surface antigens.

Shedding: The releasing of organisms from the host, usually in feces.

Shigella: A group of bacteria that normally inhabits the intestinal tract and causes infantile gastroenteritis, summer diarrhea of childhood, and various forms of dysentery.

Spirillum: A fairly rigid, helically twisted bacterial cell.

Spirochete: Bacteria that appear worm-like, spiral-shaped, and wiggle vigorously when viewed under a microscope.

Sporozoites: A stage in the development oocyst of *Cryptosporidium* that infects intestinal cells.

Symbiont: An organism in a symbiotic relationship; a close and usually obligatory association of two organisms of different species that live together, often to their mutual benefit.

Thermophilic: Requiring high temperature in which to develop.

Trophozoite: The motile feeding stage of a protozoan.

Toxoplasmosis: Disease caused by the protozoan parasite *Toxoplasma gondii*; considered to be the third leading cause of death due to foodborne illness in the US. Symptoms generally mild in non-immunocompromised persons.

Zoonotic: A disease caused by pathogens that are transmitted among animals and humans.