



Evolution of Water-Borne Diseases and its Preventative Methods

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Description

While accessibility to clean and secure water is an essential need for the continuation of life, water-borne infections remain an important worldwide health concern. Contaminated water sources can harbor a multitude of pathogens, leading to the spread of infectious diseases that affect millions of people around the world.

Responsibility of water-borne diseases

Water-borne diseases are caused by pathogenic microorganisms that contaminate water sources. These diseases pose a substantial burden on public health, particularly in regions with inadequate sanitation, poor hygiene practices, and limited access to clean water. The World Health Organization (WHO) estimates that water-borne diseases are responsible for millions of deaths each year, with the most vulnerable populations being infants, young children, and individuals in low-resource settings.

Common pathogens in water-borne diseases

Some common pathogens include:

Bacteria: Bacterial pathogens are a significant contributor to water-borne diseases. Examples include:

Vibrio cholerae: Causes cholera, characterized by severe diarrhea and dehydration.

Salmonella and shigella species: Responsible for gastroenteritis, typhoid fever, and dysentery.

Escherichia coli (E. coli): Certain strains can cause gastrointestinal infections.

Viruses: Viral infections transmitted through water include:

Rotavirus: A common cause of diarrheal diseases, especially in young children.

Hepatitis A virus: Causes infectious hepatitis, leading to liver inflammation.

Norovirus: Associated with outbreaks of gastroenteritis.

Parasites: Water-borne parasites can cause various diseases

Cryptosporidium and giardia: Protozoan parasites causing gastrointestinal infections.

Schistosoma: Responsible for schistosomiasis, a chronic and debilitating parasitic disease.

Modes of transmission

Water-borne diseases spread through the ingestion of contaminated water or consumption of food prepared with contaminated water. Several modes of transmission contribute to the prevalence of these diseases:

Contaminated water sources: Surface water, such as rivers, lakes, and ponds, can become contaminated with fecal matter containing pathogens. Groundwaters sources may also be at risk if contaminated overflow or water loss.

Inadequate sanitation: Lack of proper sanitation facilities, including the absence of toilets and sewage systems, can lead to the direct release of human and animal waste into water bodies, increasing the risk of contamination.

Poor hygiene practices: Improper hand washing and inadequate hygiene practices, especially in food handling and preparation, contribute to the transmission of water-borne pathogens.

Waterborne vectors: Certain water-borne diseases, such as those caused by parasitic infections such as schistosomiasis, involve intermediate hosts such as snails that thrive in water bodies.

Preventive measures

Preventing water-borne diseases requires a comprehensive technique that addresses water quality, sanitation, and hygiene. Important preventive measures include:

Access to clean water: Ensuring access to safe and clean water is fundamental to preventing water-borne diseases. This involves implementing water treatment processes, promoting water purification methods, and establishing reliable water supply systems.

Sanitation facilities: Proper sanitation infrastructure, including toilets and sewage systems, is essential for preventing the contamination of water sources with human and animal waste. Hygienic disposal of excreta helps break the cycle of water-borne diseases.

Hygiene education: Public awareness and education campaigns play a significant role in promoting hygienic practices. Teaching communities about the importance of hand washing, safe food handling, and proper waste disposal contributes to reducing the risk of water-borne infections.

Water treatment technologies: Implementing water treatment technologies, such as chlorination, filtration, and ultraviolet disinfection, can effectively eliminate or reduce the concentration of water-borne pathogens.

Vector control: In the case of parasitic diseases transmitted by vectors, implementing vector control measures can help to break the

transmission cycle. This may involve controlling snail populations in water bodies to prevent schistosomiasis.