

### Diarrhoea

Diarrhoea is the passage of loose or liquid stools more frequently than is normal for the individual. It is primarily a symptom of gastrointestinal infection. Depending on the type of infection, the diarrhea may be watery (for example in cholera) or passed with blood (in dysentery, for example).

Diarrhea is caused by a variety of micro organisms including viruses, bacteria and protozoan. Excreta is the main cause of childhood diarrheal diseases. Water contaminated with human faeces, for example from municipal sewage, septic tanks and latrines, is of special concern. Animal faeces also contain microorganisms that can cause diarrhoea.

One gram of faeces can contain: 1 00 00 000 viruses, 10 00 000 bacteria, 1000 parasite cysts and 100 parasite eggs.

Key measures to reduce the number of cases of diarrhoea include:

- Access to safe drinking water
- Improved sanitation
- Good personal especially washing hands with soap and food hygiene
- Health education about how infections spread

### Cholera

Cholera outbreaks can occur sporadically in any part of the world where water supplies, sanitation, food safety and hygiene practices are inadequate. Overcrowded communities with poor sanitation and unsafe drinking-water supplies are most frequently affected.

Cholera is an acute infection of the intestine, which begins suddenly with painless watery diarrhea, nausea and vomiting. Most people who become infected have very mild diarrhea or symptom-free infection. Malnourished people in particular experience more severe symptoms. Severe cholera cases present with profuse diarrhea and vomiting. Severe, untreated cholera can lead to rapid dehydration and death. If untreated, 50% of people with severe cholera will die, but prompt and adequate treatment reduces this to less than 1% of cases.

To prevent the spread of cholera, the following four interventions are essential:

- Provision of adequate safe drinking-water
- Proper personal hygiene
- Proper food hygiene
- Hygienic disposal of human excreta

### Intestinal worms

People become infected with intestinal parasitic worms (also known as helminths) through contact with soil that has been contaminated with human faeces from an infected person, or by eating contaminated food.

Intestinal worms infect about 10 per cent of the population in the developing world and, depending upon the severity of the infection, lead to malnutrition, anaemia or retarded growth. Children are particularly susceptible and typically have the largest number of worms. About 400 million school-age children are infected by roundworm, whipworm and/or hookworm. In fact, roundworm and whipworm alone are estimated to affect one-quarter of the world's population.

## Schistosomiasis

Schistosomiasis is a water-based disease which is considered the second most important parasitic infection after malaria in terms of public health and economic impact. The signs following infection are rashes or itchy skin. Two months after infection, fever, chills, cough and muscle aches may occur, as the parasites mature. Untreated infections can result in blood in urine and stools, and enlarged liver and spleen. In children there is a negative impact in terms of growth, nutritional status and cognitive development. Chronic infection leads to diseases of the liver, kidneys and bladder. Occasionally, the nervous system is affected causing seizures, paralysis or spinal cord inflammation.

Improved sanitation and potable water minimizes contamination of and reduces contact with fresh water, thus limiting transmission. Environmental modification preventing snail vectors and limiting human water contact offers long-term control of schistosomiasis. Health education is a fundamental component that ensures community participation in control interventions.

## Trachoma

Trachoma is an infection of the eyes that may result in blindness after repeated re-infections. It is the world's leading cause of preventable blindness and occurs where people live in overcrowded conditions with limited access to water and health care. Trachoma spreads easily from person to person and is frequently passed from child to child and from child to mother within the family. Infection usually first occurs in childhood but people do not become blind until adulthood. The disease progresses over years as repeated infections cause scarring on the inside of the eyelid, earning it the name of the "quiet disease". The eyelashes eventually turn in. This causes rubbing on the cornea at the front of the eye. The cornea becomes scarred, leading to severe vision loss and eventually blindness.

Through the discharge from an infected child's eyes, trachoma is passed on by hands, on clothing, or by flies that land on the face of the infected child.

Primary interventions advocated for preventing trachoma infection include improved sanitation, reduction of fly breeding sites and increased facial cleanliness (with clean water) among children at risk of disease. Good personal and environmental hygiene has been proven to be successful in combating trachoma. Encouraging the washing of children's faces, improved access to water and proper disposal of human and animal waste has been shown to decrease the number of trachoma infections in communities.

## Typhoid

Typhoid and paratyphoid fevers are infections caused by bacteria which are transmitted from faeces through ingestion. Clean water, hygiene and good sanitation prevent the spread of typhoid and paratyphoid. Contaminated water is one of the pathways of transmission of the disease.

Typhoid fever is a bacterial infection of the intestinal tract and bloodstream. Symptoms can be mild or severe and include sustained fever as high as 39°-40° C, malaise, anorexia, headache, constipation or diarrhea, rose-coloured spots on the chest area and enlarged spleen and liver. Most people show symptoms one to three weeks after exposure. Paratyphoid fever has similar symptoms to typhoid fever but is generally a milder disease.

Public health interventions to prevent typhoid and paratyphoid include:

- Health education about personal hygiene, especially regarding hand-washing after toilet use and before food preparation
- provision of a safe water supply
- proper sanitation systems
- excluding disease carriers from food handling

## Hepatitis

Hepatitis, a broad term for inflammation of the liver, has a number of infectious and non-infectious causes. Two of the viruses that cause hepatitis (hepatitis A and E) can be transmitted through water and food; hygiene is therefore important in their control.

Among the infectious causes, hepatitis A and hepatitis E are associated with inadequate water supplies and poor sanitation and hygiene, leading to infection and inflammation of the liver. Hepatitis A and E viruses, while unrelated to one another, are both transmitted via the faecal oral route, most often through contaminated water and from person to person. Hepatitis A could also be transmitted via food contaminated by infected food-handlers, uncooked food, or foods handled after cooking.

## Ascariasis

Ascariasis is an infection of the small intestine caused by a large roundworm. The eggs of the worm are found in soil contaminated by human faeces or in uncooked food contaminated by soil containing eggs of the worm. A person becomes infected after accidentally swallowing the eggs. The eggs hatch into larvae within the person's intestine. The larvae penetrate the intestine wall and reach the lungs through the blood stream. They eventually get back to the throat and are swallowed. In the intestines, the larvae develop into adult worms. The female adult worm, which can grow to over 30cm in length, lays eggs that are then passed into the faeces. If soil is polluted with human or animal faeces containing eggs, the cycle begins again. Eggs develop in the soil and become infective after two to three weeks, but can remain infective for several months or years.

Children are infected more often than adults, the most common age group being three to eight years. The infection is likely to be more serious if nutrition is poor. They often become infected after putting their hands to their mouths after playing in contaminated soil. Eating uncooked food grown in contaminated soil or irrigated with inadequately treated wastewater is another frequent avenue of infection.

The first sign may be the passage of a live worm, usually in the faeces. In a severe infection, intestinal blockage may cause abdominal pain, particularly in children. People may also experience cough, wheezing and difficulty in breathing, or fever.

The availability of water for use in personal hygiene as well as proper disposal of human faeces will also reduce the number of cases. Where wastewater is used for irrigation, waste stabilization ponds and some other technologies are effective in decreasing transmission.

Some useful websites:

[http://www.who.int/water\\_sanitation\\_health/en/](http://www.who.int/water_sanitation_health/en/)

<http://esa.un.org/iys/>

<http://www.wsscc.org/>

<http://www.unicef.org/wes/>

<http://www.unwater.org/flashindex.html>

<http://www.unchs.org/categories.asp?catid=270>

<http://www.sulabhinternational.org/>

<http://www.worldtoilet.org/>

