Contagious diseases and their effect on human kind

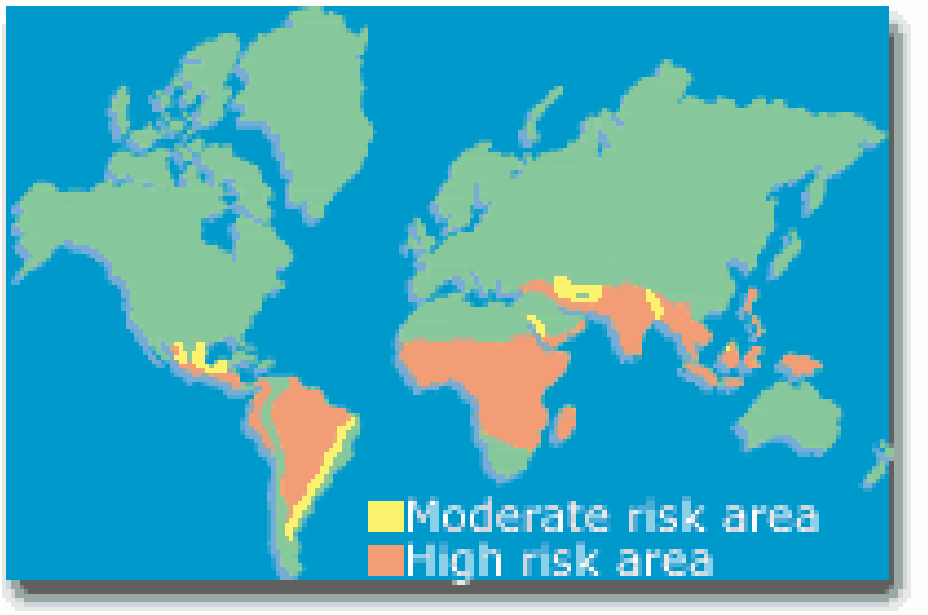
Contagious diseases are caused by pathogens which can pass from one person to another, many are spread by vectors which can carry disease without being affected themselves. Pathogens include viruses, protozoa, fungi, bacteria, parasites and worms. Contagious diseases can be transmitted by a number of methods. Direct contact can transmit a disease, this can occur by sexual intercourse in the case of syphilis or transmission through other surfaces like damp floors in the cause of athlete's foot. Another way disease is spread is via food, water or a vector. Bacteria such as Salmonella can affect chicken which has not been cooked properly and cholera can be transmitted through dirty water. An example of a disease carried by a vector is typhoid. Finally, diseases can be transmitted through blood, as in the case of AIDs.

Cholera is an example of a contagious diseases caused by the bacteria *Vibrio cholerae*. The most common cause of cholera is by someone eating food or drinking water that has been contaminated with the bacteria. After a disaster, this is a very real danger, since regular, clean water and food supplies are often unavailable in developing countries. The disease can be spread even further by infected people using already dirty water sources to clean themselves or dispose of waste as the bacteria can thrive in human faeces. The diarrhoea and vomiting brought on by the infection quickly leaves the body without enough fluid. This occurs as the bacteria breed in human intestines and secrete toxins which stimulate adenyl cyclase in epithelial cells. The following dehydration from diarrhoea and shock can kill a person within hours. The commonest cause of death among children under five in the developing world is diarrhoea. Cholera can be mild or even without symptoms, but a severe case can lead to death without immediate treatment. This is often the case in developing countries where they don't have the medical infer structure to deal with the disease or the money to buy the necessary antibiotics.

Tuberculosis is another contagious disease caused by bacteria. The bacteria *Mycobacterium tuberculosis* is spread by droplets contain the pathogen when the sufferer coughs or sneezes. When people inhale the disease it begins to attack their lungs and lesions occur in the alveoli so gaseous exchange is not as efficient. Inflammation of the lings occurs and intense coughing can lea to bleeding. In order to prevent TB mass screening, Sputum testing and skin testing is need to detect the disease. As with cholera, developing countries do not have the facilities to carry out these tests and most people can't afford the cure of antibiotics like streptomycin. Hour by hour, year by year, tuberculosis extracts its terrible toll on humankind. Worldwide, a person is newly infected with TB every second, and overall nearly two billion people have been exposed to TB bacterium. During the 1990s, bright hopes that the disease would be vanquished by 2025 were extinguished as a variety of medical and social factors helped TB surge back to its familiar position among major causes of death.
Around 1985, cases of TB began to rise in the United States. Several interrelated forces drove the resurgence, including increases in prison populations, homelessness, and injection drug use, as well as crowded housing and increases in populations of long -term care facilities. Along with increased immigration of people from countries where TB is endemic, these forces provided ideal conditions for TB transmi ssion.

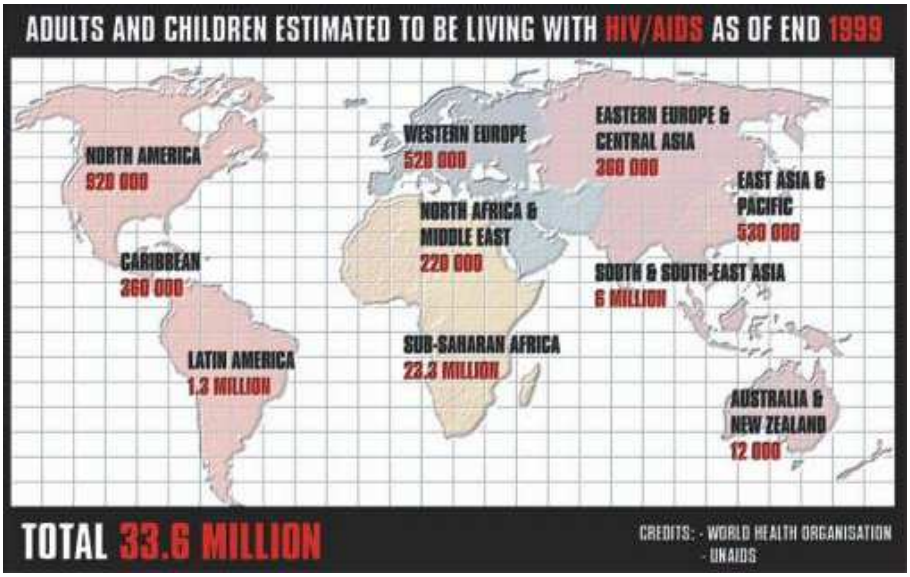
Malaria is an example of a contagious disease caused by *Plasmodium,* protozoa. The female *Anopheles* mosquito is the vector that carries the disease. When the mosquito feeds on a mammal suffering from Malaria it digests the red blood cells which release then malarial parasites. The parasites burrow into the insects stomach wall where they breed by mitosis and move into the salivary glands. The parasite is then passed on to another mammal when the mosquito feeds again. Once inside the body the parasite sporozoites invade the liver and release merozoites. Each merozoites infects red bloods cells and multiply until the red blood cells burst. At this point the symptoms of fever, exhaustion and aching occur.

The map below shows the global spread of Malaria with the worst affected areas in tropical third world counties.



Malaria kills more than 1.5 million people each year which is approximately one death every 20 seconds. It is firmly rooted in 103 countries and in the UK there were between 1500 and 2300 cases of malaria between 1883 and 1993.

Acquired Immune Deficiency Syndrome or AIDS is an example of a contagious disease caused by a retrovirus which can make DNA with its own RNA. The AIDS virus is transmitted by the exchange of body fluids and the transfusion of contaminated blood. This often occurs with the practice of unsafe safe or blood transfusions.



The above diagram shows the growing pandemic of AIDS.
HIV destroys the T4 helper cells which leaves the body susceptible to opportunist infections. In countries where there are little primary health care people succumb more to infections as they do not have the money for appropriate drugs. Another problem is that some religions and cultures do not believe in the practice of safe sex. An example of this is the statement the Vatican published earlier this year condemning the use of condoms. In catholic developing countries where Aids is a huge problem the situation can only get worse when safe sex is not practiced.

Another pandemic was Spanish Influenza of 1918-1919 which killed more people than World War I, at somewhere between 20 and 40 million people. It has been cited as the most devastating epidemic in recorded world history. More people died of influenza in a single year than in four-years of the Black Death Bubonic Plague from 1347 to 1351. Known as "Spanish Flu" or "La Grippe" the influenza of 1918 -1919 was a global disaster. The effect of the influenza epidemic was so severe that the average life span in the US was depressed by 10 years. The influenza virus had a profound virulence, with a mortality rate at 2.5% compared to the previous influenza epidemics, which were less than 0.1%. The death rate for 15 to 34-year-olds of influenza and pneumonia were 20 times higher in 1918 than in previous years.