

**HANS ROSLING:** Welcome to the fourth week of this course in global health. It is about infections and environment. So about two things. About the germs, also known as bugs or microbes, that cause the infections. And about the means of transmission that makes the germ pass from one person to the next. We will cover both how to prevent the passage of germs from one person to another, and how to cure a person that has been infected by a germ. Prevention and cure.

There are many types of germs. The main ones are viruses, bacteria, and parasites. Prevention is to stop the transmission, and there are so many different means of transmission. Influenza is a virus, and when you cough it's transmitted through the air. HIV is also a virus, but it's not transmitted through the air. You can only get HIV infection through sexual intercourse or by injecting an infected person's blood into your own blood stream.

Cholera. That is a bacteria. And it has a so-called fecal oral transmission. That's a nice way of saying that you get sick if you drink or eat food that has been contaminated by another person's still lukewarm feces. Tuberculosis is also bacteria, and it is transmitted you just like the influenza virus, through the air when an infected person coughs.

And finally, malaria. A very important disease. That is a parasite, it's caused by a parasite, it's like a more advanced organism than the bacteria, but still very small germ. And you get infected by a mosquito that carries the parasite from one person to the next. We call these insects that can transmit parasites or viruses for vectors.

So it's pretty complex, isn't it? On one hand, many types of germs. And on the other hand, many different types of transmissions.

And there is yet another basic principle you need to understand, the susceptibility of each person. For example, an undernourished child is more likely to get infected and to develop a severe infection because the body cannot fight the germs. And many infections can then afterwards provide immunity, so you only have the infection once, like measles. You're not susceptible any longer. And even more important, vaccines can provide immunity so you are not susceptible even in the first place to get the infection.

Infections can be successfully prevented, therefore, in two completely different ways. On the one hand, susceptibility can be decreased by vaccines or by giving vitamin A to a

malnourished child. We talked about that in week three. But this week we will talk about the other way of preventing infections, by stopping the means of transmission.

This is done by changing the environment in which people live and the most successful way of changing the environment, we call bluntly and clearly, hygiene. What's so great about hygiene to stop the means of transmission in that way is that you stop the spread of so many different diseases at the same time.

Behind this door are three of the main advancement of public health when it comes to improved hygiene. Look. Toilet. Clean, running water. And best of all, industrially produced soap for hand washing. This is what made all the difference for the stopping the spread of many of the infectious diseases.

The main breakthrough in hygiene happened in the year 1854. That year, John Snow found out that Cholera in London was caused by contamination of drinking water. Or simply, that stool, feces from an infected person has passed into the drinking water of another person, and thus Cholera kept spreading in London.

Last week you learned about diarrhea, pneumonia, and malaria. Diseases that kill thousands of children worldwide every day, especially in low income countries. This week, you will learn about two of the biggest infectious diseases in the world, tuberculosis and HIV/AIDS. Diseases that are also common in middle income countries, or even in high income countries throughout the world.

Tuberculosis has also been a well-known disease for thousands of years. But we have still not conquered it. HIV/AIDS, on the other hand, has only been with us for some decades. And we didn't even know that it existed before 1981. I remember the first report.

You will learn now how it has been possible to stop the ever increasing number of HIV infections per year. And it's flattening out and even going down. And we will tell you what it takes to finally bring the HIV epidemic under control.

Finally, we look at the status of the most wonderful of all drugs, antibiotics. We will discuss the much debated resistance to antibiotics, and we will also explain how the poorest populations in this world still lack the access to the lifesaving antibiotics. At the same time resistance and lack of access. By understanding the enormous challenge of antibiotics, you will have taken the first step to grasp the global pharmaceutical policy.

