



## **Partnering for Change: Link Research to Societal Challenges**

### Video Transcript

#### **Antimicrobial resistance: a wicked challenge**

[Dr. Didier Wernli] Antibiotics are drugs to cure infectious diseases caused by bacteria. Medical doctors prescribe them everyday to cure diseases, treat wounds, or to perform surgeries. In addition, antibiotics are widely used in agriculture to treat and protect animals from infectious diseases.

Antibiotics were discovered in the first part of the 20th century. After their discovery, a rapid diffusion of their use occurred in medical practice and in animal husbandry. The use of antibiotics first increased in high income countries and more slowly also in other parts of the world.

Overall, the introduction and use of antibiotics contributed to the major reduction of morbidity from infectious diseases, to the gain of life expectancy and quality of life in the 20th century.

Today, our society greatly relies on antibiotics. But their benefits should not be taken for granted. Increasingly, bacteria evolved a so-called resistance against antibiotics. This antimicrobial resistance refers to the capacity of certain bacteria to adapt itself to resist the action of antibiotics. In 1945, Alexander Fleming received the Nobel Prize for the discovery of the antibiotic penicillin. Already then, he foresaw the problem of drug resistance.

"There is a danger that the ignorant man may easily underdose himself and by exposing his microbes to non-lethal quantities of the drug make them resistant."

After World War II, more and more antibiotics were discovered. And overall, there was optimism about our capacity to tackle infectious diseases. Little attention was paid to the problem of antibiotic resistance. However, since the end of the 60s, few new classes were put on the market. At the same time, antimicrobial resistance started to spread due to the massive use of antibiotics in human medicine and agriculture.

In the 90s, the situation became more worrying, and some countries, for example in Scandinavia, started to tackle the problem in hospitals. While globalisation facilitated the international spread of antimicrobial resistance, little was done at the international level.



Antibiotic resistance has already far reaching consequences, though what we measure is still limited. First, due to this drug resistance, it has become difficult to treat common diseases, and this directly affects health outcomes such as morbidity and mortality, worldwide.

In addition, antimicrobial resistance increases healthcare costs due to longer hospital stays and loss of productivity. As antibiotics are very essential in contemporary medicine and agriculture, there is a risk for the sustainability of our health and food systems.

The problem concerns all countries around the world. Because antimicrobial resistance spreads through travel, trade, and the environment, no country can solve the problem on its own. As expressed by the WHO: 'antibiotic resistance is one of the biggest threats to global health, food security, and development today'. It is also a formidable challenge of global governance as it requires collaboration between states and between sectors.

Moreover, as the individual use of antibiotics compromise the availability of effective antibiotics for future generations, this is a classical example of the tragedy of the commons. The project we address in this case study is about the role of the UN system and other global stakeholders in this issue. It is about both interdisciplinarity and collaboration with global actors.