Emergence and spread of antibiotic-resistant bacteria
Selection of antibiotic-resistant bacteria

Population of mainly susceptible bacteria

Susceptible

Resistant
Selection of antibiotic-resistant bacteria

- Pre-existing resistant bacteria
- Population of mainly susceptible bacteria
- Susceptible
- Resistant
Selection of antibiotic-resistant bacteria

Antibiotic treatment

Population of mainly susceptible bacteria

Susceptible
Resistant
Selection of antibiotic-resistant bacteria

Antibiotic treatment

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Susceptible
Resistant
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Population of mainly resistant bacteria

Susceptible
Resistant
Selection of antibiotic-resistant bacteria

Antibiotic treatment

Population of mainly susceptible bacteria

Population of mainly resistant bacteria
Selection of antibiotic-resistant bacteria

Antibiotic treatment

Population of mainly susceptible bacteria

Population of mainly resistant bacteria
At the site of infection

Antibiotic treatment

- Treatment failure

Selection of resistant bacteria in the body
Selection of resistant bacteria in the body

At the site of infection

Antibiotic treatment

- Treatment failure
- Colonization
- Spread

In the normal flora

Antibiotic treatment

Susceptible
Resistant
How does antibiotic resistance spread?

Antibiotic resistance is the ability of bacteria to combat the action of one or more antibiotics. Humans and animals do not become resistant to antibiotic treatments, but bacteria carried by humans and animals can.

1. Animals may be treated with antibiotics and they can therefore carry antibiotic-resistant bacteria. Vegetables may be contaminated with antibiotic-resistant bacteria from animal manure used as fertiliser. Antibiotic-resistant bacteria can spread to humans through food and direct contact with animals.

2. Humans sometimes receive antibiotics prescribed to treat infections. However, bacteria develop resistance to antibiotics as a natural, adaptive reaction. Antibiotic-resistant bacteria can then spread from the treated patient to other persons.

3. Humans may receive antibiotics in hospitals and then carry antibiotic-resistant bacteria. These can spread to other patients via unclean hands or contaminated objects. Patients who might be carrying antibiotic-resistant bacteria will ultimately be sent home, and can spread these resistant bacteria to other persons.

4. Travellers requiring hospital care while visiting a country with a high prevalence of antibiotic resistance may return with antibiotic-resistant bacteria. Even if not in contact with healthcare, travellers may carry and import resistant bacteria acquired from food or the environment during travel.

5. In animal farming
6. In the community
7. In healthcare facilities
8. Through travel

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Thank you for listening!