
Antibiotic resistant bacteria

Summary

- Antibiotic resistance is a serious public health problem.
 - Some bacteria that are capable of causing serious disease are becoming resistant to most commonly available antibiotics.
 - Antibiotic resistant bacteria can spread from person to person in the community or from patient to patient in hospital.
 - Careful infection control procedures can minimise spread of these bacteria in hospitals.
 - Good personal hygiene can minimise spread of these bacteria in the community.
 - Careful prescribing of antibiotics will minimise the development of more antibiotic resistant strains of bacteria.
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Antibiotic medications are used to kill bacteria, which can cause illness and disease. They have made a major contribution to human health. Many diseases that once killed people can now be treated effectively with antibiotics. However, some bacteria have become resistant to commonly used antibiotics.

Antibiotic resistant bacteria are bacteria that are not controlled or killed by antibiotics. They are able to survive and even multiply in the presence of an antibiotic. Most infection-causing bacteria can become resistant to at least some antibiotics. Bacteria that are resistant to many antibiotics are known as multi-resistant organisms (MRO).

Antibiotic resistance is a serious public health problem. It can be prevented by minimising unnecessary prescribing and overprescribing of antibiotics, the correct use of prescribed antibiotics, and good hygiene and infection control.

Some bacteria are naturally resistant to some antibiotics. For example, benzyl penicillin has very little effect on most organisms found in the human digestive system (gut).

Bacteria resistant to antibiotics

Some bacteria have developed resistance to antibiotics that were once commonly used to treat them. For example, *Staphylococcus aureus* ('golden staph' or MRSA) and *Neisseria gonorrhoeae* (the cause of gonorrhoea) are now almost always resistant to benzyl penicillin. In the past, these infections were usually controlled by penicillin.

The most serious concern with antibiotic resistance is that some bacteria have become resistant to almost all of the easily available antibiotics. These bacteria are able to cause serious disease and this is a major public health problem. Important examples are:

- methicillin-resistant *Staphylococcus aureus* (MRSA)
- vancomycin-resistant *Enterococcus* (VRE)
- multi-drug-resistant *Mycobacterium tuberculosis* (MDR-TB)
- carbapenem-resistant *Enterobacteriaceae* (CRE) gut bacteria

Ways to prevent antibiotic resistance

The most important ways to prevent antibiotic resistance are:

- Minimise unnecessary prescribing and overprescribing of antibiotics. This occurs when people expect doctors to prescribe antibiotics for a viral illness (antibiotics do not work against viruses) or when antibiotics are prescribed for conditions that do not require them.
 - Complete the entire course of any prescribed antibiotic so that it can be fully effective and not breed resistance.
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- Practise good hygiene such as hand-washing and use appropriate infection control procedures.

Transmission of antibiotic resistant bacteria in hospitals

The common ways in which bacteria can be passed from person to person include:

- contact with contaminated hands of hospital staff
- contact with contaminated surfaces such as door handles, over-bed tables and call bells
- contact with contaminated equipment, such as stethoscopes and blood pressure cuffs.

Infection control in hospitals

Standard precautions in hospitals are work practices that provide a basic level of infection control for the care of all people, regardless of their diagnosis or presumed infection status.

These precautions should be followed in all hospitals and healthcare facilities and include:

- good personal hygiene, such as hand washing before and after patient contact and the appropriate use of alcohol-based hand rub solutions
- the use of barrier equipment such as gloves, gowns, masks and goggles
- appropriate handling and disposal of sharps (for example, needles) and clinical waste (waste generated during patient care)
- aseptic (sterile) techniques.

Implementing standard precautions minimises the risk of transmission of infection from person to person, even in high-risk situations.

Additional precautions with antibiotic resistant bacteria

Additional precautions are used when caring for people who are known or suspected to be infected or colonised with highly infectious pathogens (micro-organisms that cause disease).

Micro-organisms may be classed as 'high risk' if:

- their transmission route makes them more contagious – they may be spread through contact or droplets, or may be airborne
- they are caused by antibiotic resistant bacteria
- they are resistant to standard sterilisation procedures.

Additional precautions are tailored to the particular pathogen and route of transmission. Additional precautions may include:

- use of a single room with ensuite facilities or a dedicated toilet
- dedicated care equipment for that person
- restricted movement of the person and their healthcare workers.

Transmission of antibiotic resistant bacteria in the community

Antibiotic resistant bacteria can also be passed from person to person within the community. This is becoming more common.

Ways to prevent transmission of organisms, including antibiotic resistant bacteria, are:

- Wash hands before and after food handling, going to the toilet and changing nappies.
- Cover your nose and mouth when coughing and sneezing.
- Use tissues to blow or wipe your nose.
- Dispose of tissues properly, either in the rubbish or toilet.
- Do not spit.
- Stay at home if you are unwell and cannot manage the normal requirements of your day.

- Do not send children to child care, kindergarten or school if they are unwell.
- If you are prescribed antibiotics, take the entire course – do not stop because you are feeling better.
- If you continue to feel unwell, go back to the doctor.
- Avoid use of products that advertise they contain antibiotics, or are antibacterial or antimicrobial, unless advised to do so by your health professional.

Where to get help

- Your doctor
- Pharmacist
- Community health centre

This page has been produced in consultation with and approved by:

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