

An Orientation on Antimicrobial Resistance

Facilitators Pack 2022

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Keep a look out for:

ACTIVITY SUGGESTION:

Why not try adding an activity into your session, relating back to the topic.

**KEY
POINT**

A key take-away from each section.

Facilitators Orientation on AMR

AMR IN BRIEF

For many years, medical and veterinary professionals have been using medicines called antimicrobials. Antimicrobial medicines have saved the lives of many humans and animals because they kill microbes which cause infections.

However, in recent years antimicrobials have become less effective against some infections. This is very worrying as it means we cannot cure infections as quickly; people and animals are becoming ill for longer and may even die from a common infection if we cannot cure it. So why is this happening?

It is happening because the microbes that cause infections are becoming resistant to (no longer respond to) antimicrobial medicines. This is known as Antimicrobial Resistance (AMR) or drug resistance.

AMR is a process that allows microbes (including bacteria, viruses, fungi, and parasites) to resist (avoid) antimicrobial medicines. It might seem like a complex and scientific problem but hopefully this pack will help you understand the process in detail and feel confident to explain it to (other) young people.

A key point to remember is that microbes are alive! This means they are always trying to stay alive, and that they can change over time in the same way people and animals can change over generations.

Some of these changes allow microbes to survive/avoid antimicrobial medicines, when this happens, we say that the microbe has become resistant to the medicine, or more powerful than the medicine.

Antimicrobial medicines will no longer work on a resistant microbe this means that infections caused by that microbe are more difficult to cure. This is a big problem for human and animal health as we will explore.

USING THIS MANUAL

This pack gives teachers/educators and facilitators a background about antimicrobial resistance (AMR). It will support them to deliver teaching and activities on the topic of AMR to young people in schools or informal educational settings. The pack begins with

an overview of AMR, an introduction to microbes and medicines. It then leads on to more details about how AMR develops, the problems that AMR causes for human and animal health, and how these may impact on our daily lives. This pack should be used alongside the resource

pack which includes a series of activities to guide informative and interactive learning opportunities on the topic of AMR. Modifications are suggested based on time available, age group of young people, and facilitators confidence with the material.

ACTIVITY SUGGESTIONS FOR FACILITATORS PRIOR TO USING THIS PACK

There is a reflective diary at the end of this section to help you think about AMR in your life, and the lives of your students/young people. It may be helpful to read through this pack and complete the reflective diary on your own first before you deliver any of the planned activities. However, when working with older or more capable students you may wish to read this pack together and discuss the information as a group.



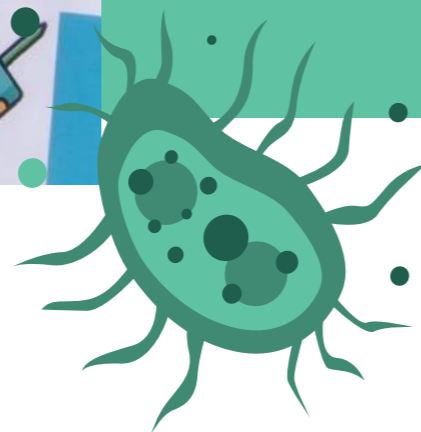
Community members seek medical advice at their local pharmacy.
Image Credit: Tricia Taormina



Image Credit: HERDi



Community members consider how AMR may occur in their lives
Image Credit: HERDi



Background to AMR

LET'S START WITH MICROBES

Microbes are tiny living things; most microbes are too small to see with our eyes (we need a microscope to see them). There are millions of different types of microbes which can be categorized into many different groups. Four of the most common groups of microbes are bacteria, viruses, parasites, and fungi.

One of the most important concepts students need to understand around AMR is the fact that microbes are alive! This means they are always trying to stay alive, and that they can change over time in the same way people and animals can change over generations.

Microbes live in all sorts of places including water, soil, and inside human and animal bodies. Microbes can move from animal to human bodies, from human to animal bodies and from human or animal bodies into the environment.

Often microbes don't cause any problems to the bodies they live in, some microbes can have helpful functions such as aiding digestion of food. However, certain types of microbes can make humans and animals very ill.

Contents of Facilitator's Pack

KEY THEMES

- AMR in brief.
- Let's start with microbes.
- Introduction to Medicines
- What are Antimicrobials?
- What is Antimicrobial Resistance?
- Causes of AMR?
- Why AMR is a problem?
- But there is hope!

FACILITATOR PREPARATIONS

Before using this facilitator pack and the associated resources, teachers and facilitators may want to refresh their basic biology knowledge. The pack discusses topics on microbes, medicines, infections, human, animal, and environmental health. It also covers topics such as health-seeking behaviors, use of medicines and engagement with health professionals. These topics could be new to students.

Speaking to a science or health teacher can help you to feel more confident to deliver the material within this pack. However, we have tried to make it as simple as possible. We strongly recommend reading the entire facilitator pack before delivering any sessions with students.

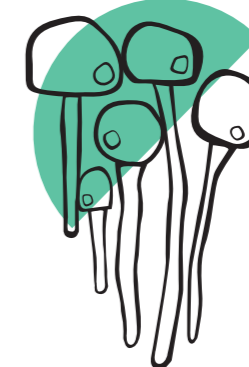
BACTERIA



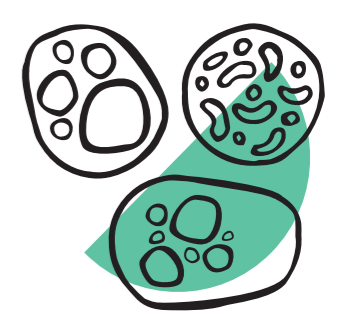
VIRUS



FUNGUS



PARASITE



FACTS TO SHARE WITH STUDENTS

- Microorganisms or microbes are tiny living things that are found all around us and are too small to be seen by the naked eye.
- The most common types are bacteria, viruses, parasites, and fungi.
- Microbes can live in water, soil, and in the air.
- Human and animal bodies are home to millions of microbes.
- Some microbes are important to our health (for example some bacteria can help us digest our food such as probiotics).
- But other microbes are responsible for illnesses such as pneumonia, malaria etc. which can make us very ill.

KEY POINT

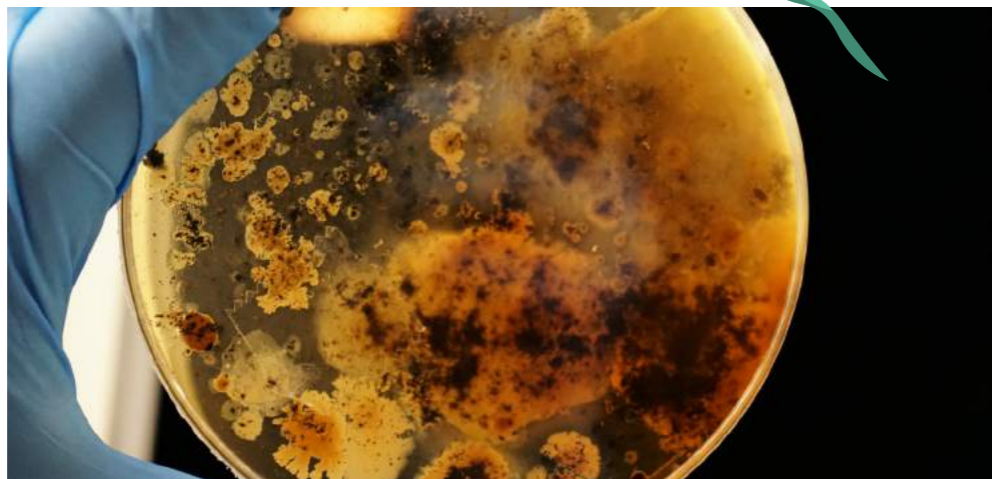
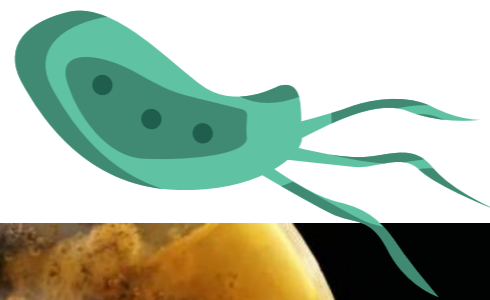
Microbes are tiny living things; they are all individual. This means some microbes help keep us healthy whilst some can cause illnesses.

WHAT HAPPENS WHEN MICROBES MAKE US ILL?

- When people and animals become ill with an infection caused by a microbe, they may need medicines to help get better.
- People and animals might not always need a medicine to get better.
- For example: if you have a minor headache or cough you may just need to rest, stay clean, warm, well hydrated and eat healthy foods.
- However, if the illness gets worse you should seek advice from a healthcare professional as you/ your animal might need medicine.
- The type of medicine needed will depend on the type of microbe infecting the person or animal. This is because microbes can affect some animals and people more than others.
- Humans and animals which are already ill or weak are more at risk of serious illnesses from microbial infections.
- For example: very old or young individuals are usually most at risk of serious illnesses from microbial infections because their bodies are weaker.
- Different microbes cause different types of illnesses.
- This means the type of treatment and medicine needed will be different depending on the type of microbe causing the illness, and the age and health of the person or animal who is ill.

ACTIVITY SUGGESTION:

Refer to the Resource Pack (Activity 2) and use microbe character cards to help understand different types of microbes.



Microbe (bacteria) growing in a laboratory experiment.

An Introduction To Medicines

When people and animals become ill, we want them to get better as soon as possible. Sometimes rest, clean water and healthy food can help people and animals to get better. But often people and animals may need to take medicines.

Medicines include all different types of drugs which treat lots of different illnesses and injuries. It is important for students to understand that not all medicines will treat all illnesses. Rather, specific medicines are needed to treat specific illnesses. For example, if you have a headache, you may take a paracetamol/headache tablet. However, if you have a bacterial infection you may need to take an antibiotic medicine. These are very different types of medicines.

FACTS TO SHARE WITH STUDENTS

- There are many types of medicines. These are available in different sizes, shapes and packs.
- Medicines can be available in tablets, powders and liquid forms.
- Generally, the medicines are prescribed by doctors/vets/Health professionals.
- Doctors/vets/Health professionals will consider the nature of the illness/ infection and decide which medicine, how much of it, and how often you need to take it.
- There are some types of medicines that can be bought and sold directly (over the counter-OTC) even if they are not prescribed by a professional. Examples include Paracetamol.
- However, when buying such medicines, it is important to understand how much to take, what illness/infections they treat, and how long to take the medication for (you can find this information on the back of the packet).

KEY POINT

Medicines help to treat different kinds of illnesses, but each medicine is specific to specific illnesses.

ANTIMICROBIALS



What Are Antimicrobials?

Antimicrobials are a group of medicines that are used to cure illnesses caused by microbes such as bacteria, viruses, parasites and fungi. Antimicrobials damage, kill or stop the growth of the microbes. The word antimicrobial literally translates as: medicines working against microbes

- Antibiotics such as amoxicillin work against bacterial infections.
- Antivirals against viral infections like COVID-19 or flu.
- Antifungals work against fungal infections like terbinafine for nail infections
- Antiparasitic treatments such as ivermectin work against parasites such tapeworms.

Antimicrobials include lots of different types of medicines including antibiotics, antifungals, antivirals and antiparasitic treatments. Each of these types works against a different type of microbe, for example:

ACTIVITY SUGGESTION:

The Microbe Character Cards activity 3 may be good to use at this point when you are working with students.



FACTS TO SHARE WITH STUDENTS

- Antimicrobials are used to treat infections in humans, animals and plants caused by different microbes (such as bacteria, fungi, virus, parasites)
- Antimicrobials help us to feel better because they damage, kill or stop the growth of the microbes
- BUT... antimicrobials are specific medicines; each will only treat certain types of illnesses caused by certain microbes.
- This means that the type of antimicrobial used depends on the type of microbe causing the illness. It is important to use the right type of antimicrobial otherwise the illness will not be treated.

Antimicrobials are medicines which treat illnesses caused by microbes

KEY POINT

How to use Antimicrobials

- Like all medicines antimicrobials need to be taken carefully and based on the advice of a health professional (vet or doctor).
- People and animals need to take the right antimicrobial, in the right amount (dosage) and for the right amount of time to get better.
- Because it takes time for traces of antimicrobials to pass through our bodies, people should avoid eating the meat, milk, eggs etc. of animals on antimicrobial treatments. (see Withdrawal Period notes in box)
- Taking the wrong type of antimicrobial, or the wrong amount, for too long or short periods of time can make the illness more severe and lead to the problem of antimicrobial resistance (AMR).

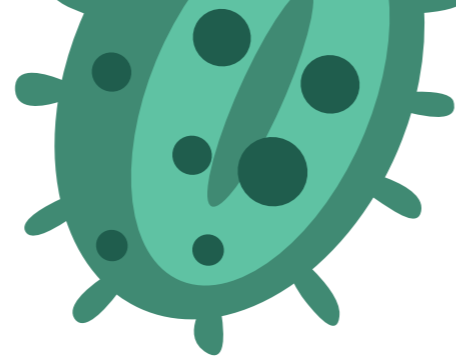
KEY POINT

Antimicrobials must be carefully matched to the right infection (or microbe) and taken in the right amount, for the right amount of time both in the case of human and animal.

WITHDRAWAL PERIODS

When an animal is given antimicrobials by a vet, the vet will tell you how long the “withdrawal period” for the antimicrobial is.

- Withdrawal period refers to the amount of time it takes for traces of the antimicrobial to safely pass out of the animals’ body.
- It is really important that people do not consume meat, milk, eggs during this withdrawal period.
- If meat, milk, eggs etc are consumed during the withdrawal period they may contain antimicrobials which can then pass into the humans or other animals who eat the meat/milk/eggs etc.



Antimicrobial Resistance

WHAT IS ANTIMICROBIAL RESISTANCE?

Antimicrobial Resistance (AMR) is a process that happens to microbes (bacteria, viruses, fungi, and parasites). For students this can seem like a complicated process, but the key thing to remember is that microbes are alive! This means they are always trying to stay alive, and that they can change over time in the same way people and animals can change over generations.

Some of these changes allow microbes to survive (fight off) antimicrobial medicines, when this happens, we say that the microbe has become resistant. Antimicrobial medicines will no longer work on the resistant microbe, and these microbes can multiply to produce more resistant microbes in the environment. This is a big problem for human and animal health as we will discuss in the next section.

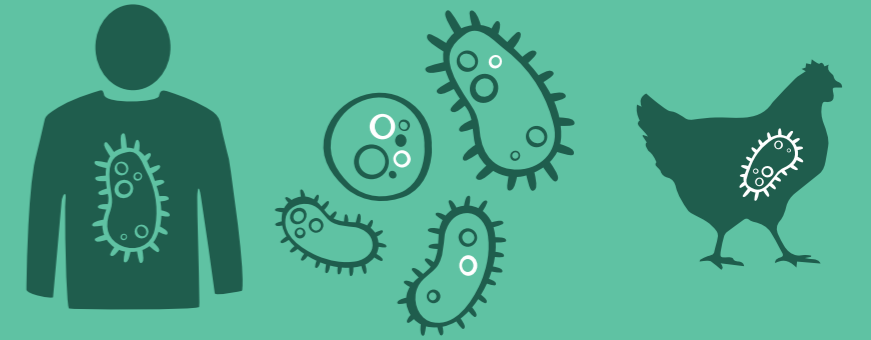
KEY POINT Antimicrobial resistance (AMR) is also called drug-resistance. It is a process through which microbes change to avoid the effects of antimicrobial medicines.

- AMR occurs when changes in bacteria, viruses, fungi, and parasites mean that they no longer respond to the antimicrobial medicines.
- AMR can happen naturally, just by chance, this is because microbes are always changing.
- In Biology this process of changing is known as mutation.
- Some of these changes (mutations) allow microbes to survive antimicrobial medicines, when this happens, we say that the microbe has become resistant.
- Example of mutations leading to resistance (See images)
- Microbe develops a protective coat to prevent the antimicrobial drug attacking it.
- Microbe produces chemicals which disable the antimicrobia

1

Human and animal bodies are home to many microbes, this is completely natural.

Some microbes keep us healthy but some can make us sick.



2

If a microbe is making us sick, health professionals may use antimicrobial medicines to kill the microbes and help people/animals get better.



3

There are many different antimicrobial medicines.

To get better people and animals need to take the right medicine for the right amount of time, in the right amount (dose).



4

If people or animals take the wrong medicine, or dose, microbes can learn to survive the medicine. This is called **ANTIMICROBIAL RESISTANCE (AMR)**

We say the microbe is **resistant** to the medicine

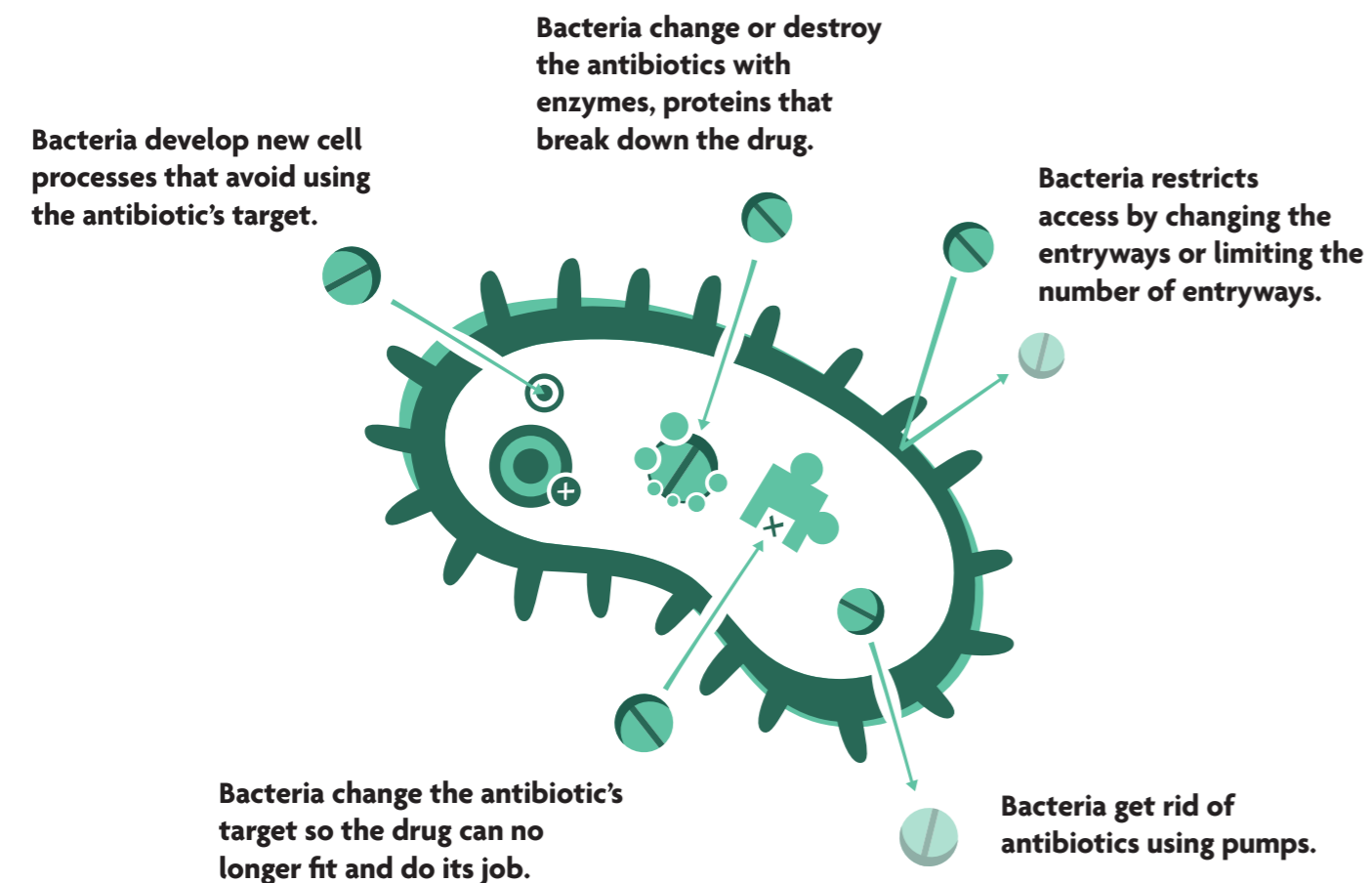


WHAT MAKES MICROBES CHANGE (MUTATE?)

- The changes which lead to AMR can happen much faster when a microbe is exposed to situations that could be harmful to it, these situations force the microbe to change.
- Extreme heat, pollution, and use of antimicrobial medicines can all speed up the way a microbe changes (mutates) because the microbe is trying to find ways to survive these threats.
- Antimicrobial medicines are a big threat to microbes, the medicine is designed to kill the microbe and so the microbe will try find ways to fight against the antimicrobial medicine.
- Mutations (changes) in microbes happen much faster if an antimicrobial medicine is used inappropriately.

HOW MICROBES FIGHT BACK AGAINST ANTIMICROBIAL MEDICINES

This example shows how bacteria fight back/resist antibiotic medicines. Other microbes fight back against other antimicrobial medicines in similar ways. These defences are called resistance mechanism. Only the microbes, not people and animals, become resistant to antimicrobials.



WHAT DO WE MEAN BY 'INAPPROPRIATE USE OF MEDICINES' AND HOW CAN THIS LEAD TO AMR?

We know that antimicrobials are essential medicines in human and animal health. However, to treat illness and infections, antimicrobial medicines must be used properly. This means using the right medicine to treat a specific infection and following the advice of health professionals on how to use the medicines. 'Inappropriate' use means not using antimicrobials in a safe way.

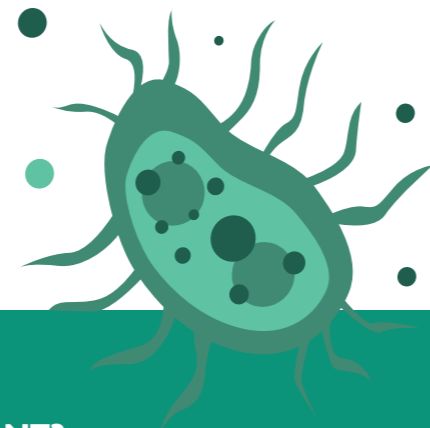
- If an antimicrobial treatment is not used for the right amount of time some microbes will survive the treatment, these are now resistant microbes.
- If the wrong type of antimicrobial medicine is used it will not kill the microbe but trigger it to change/mutate which could allow the microbe to become resistant.
- Sometimes animal feed contains antimicrobials, this can encourage AMR because the antimicrobials in the feed will threaten the microbes within the animals' body allowing them to change and become resistant.
- Although many farmers believe that antimicrobials can help their animals grow faster there is not much evidence to support this in the long term.
- What we do know is that antimicrobials in feed can lead to AMR. For this reason, in many countries like the UK, USA and parts of Europe it is illegal to put antimicrobials into animal feed.
- It is safer to feed animals nutritious food and only treat them with antimicrobial if they become ill, and if a vet advises antimicrobial treatment.
- Animals that are well-fed, clean, and healthy will grow well.

KEY POINT

The more an antimicrobial is used, the more likely microbes are to find ways of changing to avoid the antimicrobials' effects. This process is called antimicrobial resistance

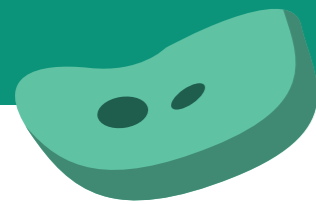
KEY FACTS FOR STUDENTS

- The more an antimicrobial medicine is used, the more microbes will try to find a way to survive the medicine and become resistant. Remember microbes are alive!
- Antimicrobials only kill certain microbes, but they may still threaten other microbes within the human and animal's body, and cause them to change and develop resistance
- This means it is important to only use the correct antimicrobial medicines to treat the correct microbes.
- Doctors, vets, and other qualified health professionals can advise us on which antimicrobial medicines to use, and the right amount of time and the right quantities (dose) in which to use them.
- Not following this guidance can mean that instead of killing the microbe, the antimicrobial just causes the microbe to change and find ways to avoid the medicine and become resistant.



WHAT HAPPENS WHEN A MICROBE HAS BECOME RESISTANT?

- When a microbe has become resistant it can be much harder to treat. This is because it can avoid antimicrobial medicines and continue to make people and animals sick.
- People and animals who catch a resistant infection may be ill for longer and they may need different types of medicines.
- Resistant infections can be more expensive to treat because people and animals may need different types of medicines and need to take the medicines for longer.
- Unfortunately, some resistant infections can avoid nearly all our medicines, this means people and animals can die.
- AMR and drug resistant infections were responsible for 1.3million human deaths in 2019!

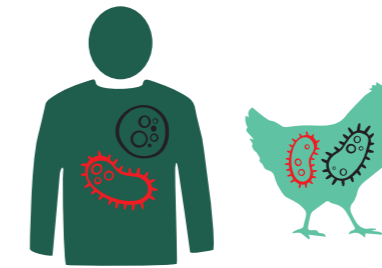


HOW DO RESISTANT MICROBES AND INFECTIONS SPREAD?

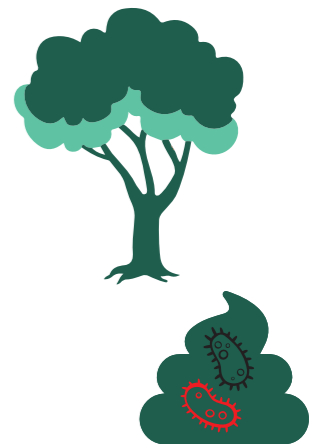
- Remember all microbes are alive! They can live inside human and animal bodies, and in soil, and water. This is the same for resistant microbes
- Resistant microbes can be passed out of human and animal bodies in our faeces, they can then move around in soil and water and infect other people and animals.
- Dirty water is one way of spreading infections, including resistant microbes.
- When rain washes human and animal waste into rivers and wells we can spread resistant infections.
- Human and animal waste often reaches our soils, this means resistant microbes can pass into the soil and into plants that humans and animal then eat.
- Resistant infections can also be spread through eating infected food products including crops but also meat, eggs and milk.
- Humans and animals can catch resistant infections from each other through close contact. Therefore it is important to wash your hands after handling animals or being in crowded places.
- Movement of resistant microbes allows AMR to spread, and for resistant microbes to infect other people and animals.

How Microbes Move Around Our Environment

1. Lots of different microbes naturally live inside human and animal bodies, this could include resistance microbes.



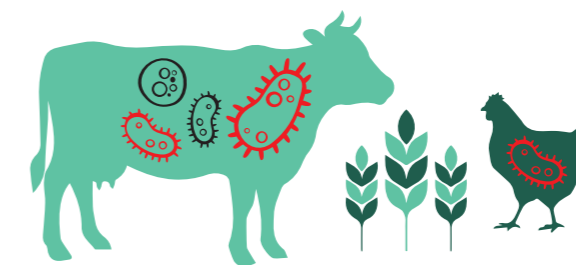
2. All microbes can pass out of our bodies in our waste and reach the environment.



4. This means that our food products such as eggs, milk, meat, and crops will contain microbes and some of these microbes could be resistant.



If people and animals eat food products containing microbes, the microbes will pass into their bodies.



3. All microbes in the environment can move into animals and plants.

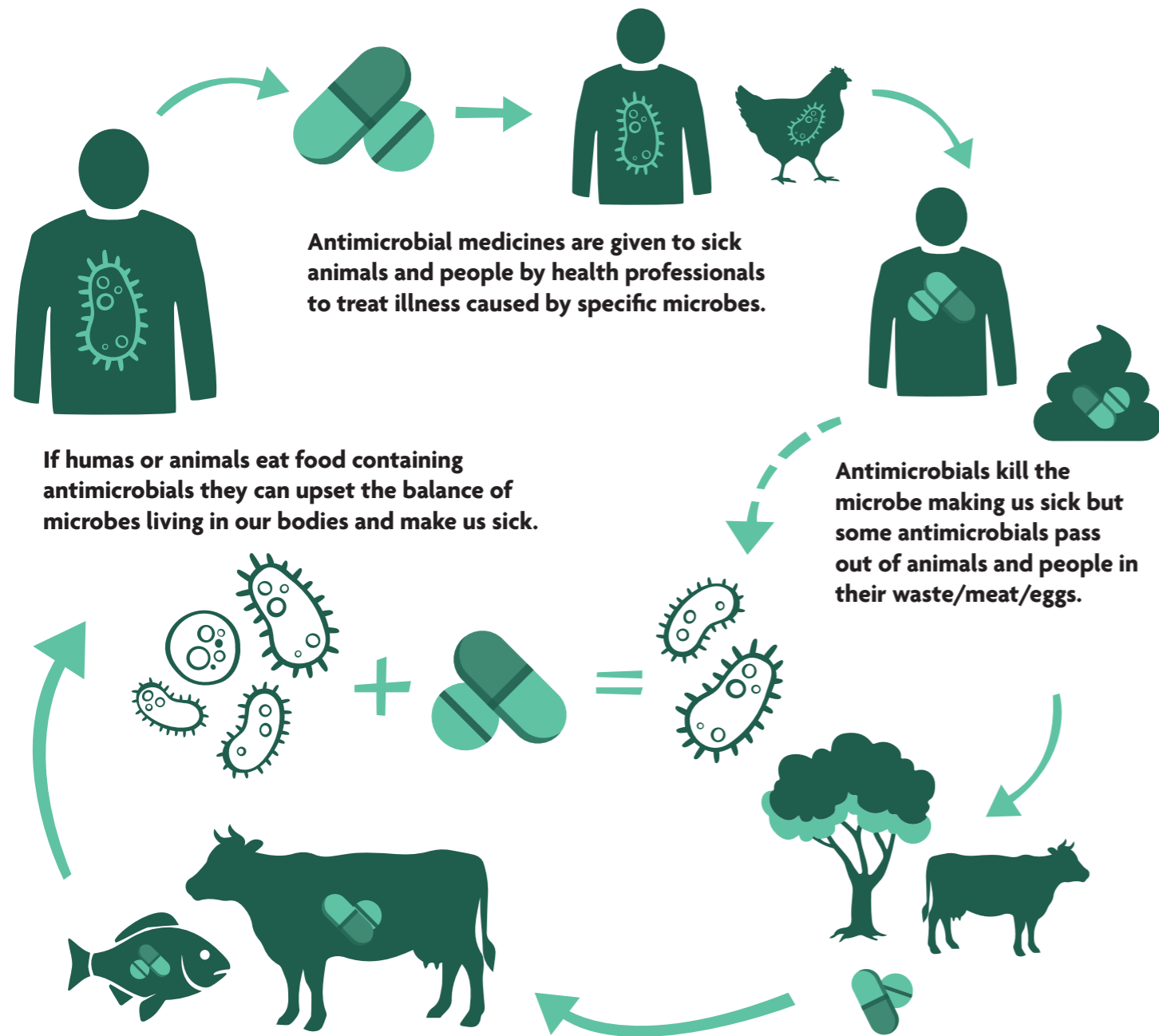
Microbes naturally move around between bodies and environments. Remember, not all microbes are harmful, but some are. Resistant microbes are particularly harmful, and we need to make sure we minimise their 'transmission' or movement from people to animals, animals to people and into the

environment. We can reduce this risk of spreading and catching microbial infections including resistant infections by breaking this transmission through simple behaviours like washing our hands and being careful about where we source water and food (see p22).

How Antimicrobials Move Around Our Environment

ANTIMICROBIALS MEDICINES CAN MOVE FROM PEOPLE TO ANIMALS, AND THE ENVIRONMENT

- It is not just microbes which can move around. Antimicrobial drugs can pass through human and animal bodies too.
- This can allow antimicrobials to reach our environment and to move from humans to animals, animals to humans, and into our environment.



FACTS TO SHARE WITH STUDENTS

- It is important to avoid consuming the meat, milk and eggs of animals whilst they are on antimicrobial treatments.
- This is because antimicrobials could pass from the milk, meat or eggs into the body of the person eating them. The antimicrobial could then cause the microbes in this person's body to change and become resistant. These resistant microbes could then cause serious illness in the person.
- It is also important to stop antimicrobials getting into our natural environment (rivers, soil etc.).
- This is because the antimicrobial could cause microbes in the soil or river to change and become resistant.
- The resistant microbe can then infect humans and animals who drink water from the that river or eat food grown in that soil.
- These resistant microbes could then cause serious illness in humans or animals.
- Animal feed which contains antimicrobials can easily get into the soil and water.
- Animal and human waste can reach the soil and water if it is not properly disposed of.



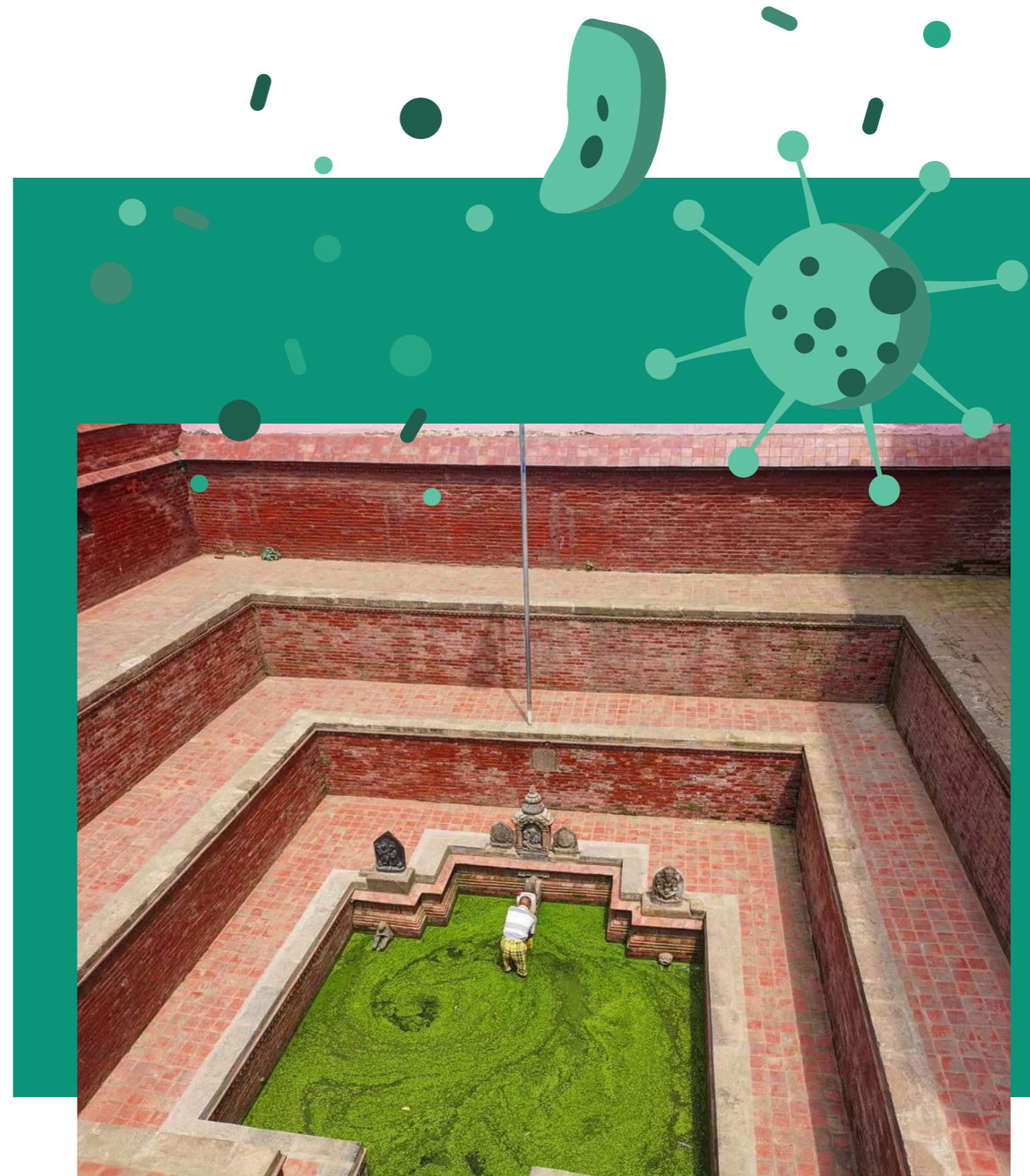
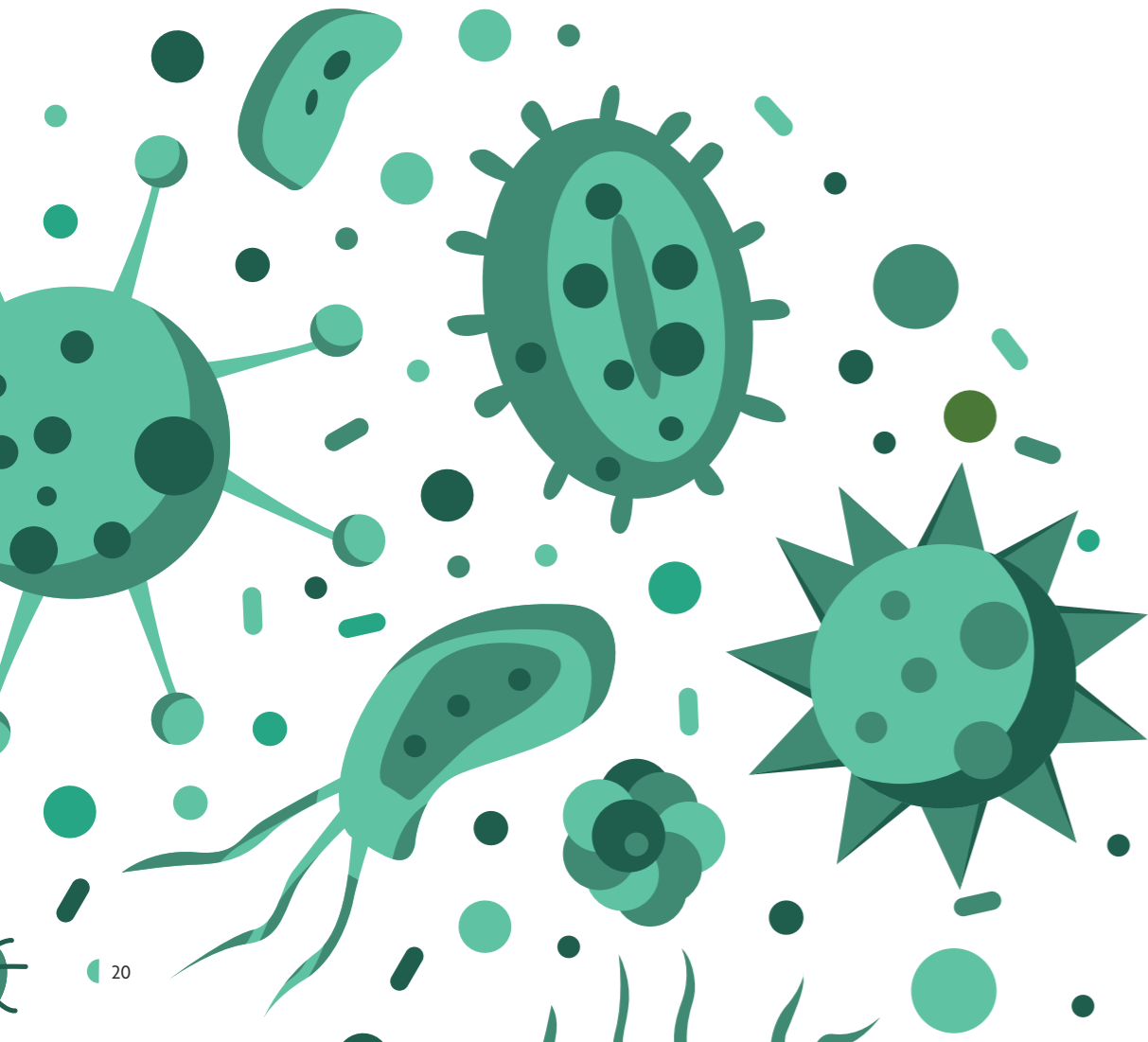
Farmers administer medication to their chicken flock.
Image Credit: Nichola Jones

Other Key Points Around AMR

- AMR can also be called drug-resistance or just resistance.
- People and animals do not become resistant, it is the microbes living inside them that becomes resistant to antimicrobial drugs
- When microbes become resistant antimicrobial medicines will not treat that microbe any more
- Because resistant microbes are alive, they can move from people to animals, animals to people and into the environment, this can cause widespread illnesses and further exaggerate AMR.
- Because antimicrobial traces can pass through the humans and animals in which they were originally used for treatment, they can reach microbes in the environment, other humans, and animal bodies (see page 18).

KEY POINT

It is the microbe which becomes resistant to the treatment. Humans and animals do not become resistant.



Dirty water is one of the biggest drivers of infection across the world, microbes in water may also be drug resistant allowing AMR to develop and spread.

Why is AMR a problem?

AMR is a huge problem across the world. If more microbes develop resistance, more of our antimicrobial drugs that are currently working against antimicrobials will become useless and common infections will become much more difficult to treat.

This means people and animals could be ill for longer and need more expensive treatments. Animals and people could die from what we currently think of as minor illnesses and infections if antimicrobials cannot stop the infection from becoming serious.

AMR could harm our food supplies if we rely on healthy animals as a source of meat or other food products. If we cannot treat resistant infections in food-producing animals we may see reductions in the availability of meat, milk, and egg products. This could have an impact on human nutrition too because animal products are a health source of protein.

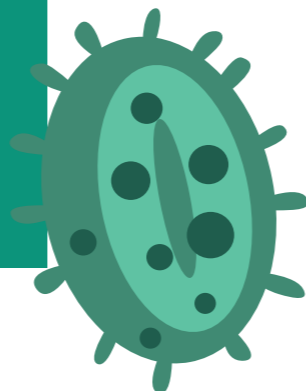
There is also a risk to the success of operations such as caesarean sections and joint replacement surgery. Medical and veterinary surgeons will often use antimicrobials to kill any microbes which have got into the body during surgery, this will not work if microbes are resistant, and this means many common surgical procedures could become very risky. This could cost our health and veterinary systems a lot of money as they try to find new ways of keeping people and animals safe during operations.

As you can see, AMR has a huge impact on human and animal health. It could cost a lot of money, and this is the same in countries across the world. Even rich countries like the USA are struggling to keep up with AMR. Resistant microbes can also move across the world, ill people and animals may travel between countries and spread infections. Water also moves microbes between countries meaning resistant microbes could reach new countries.

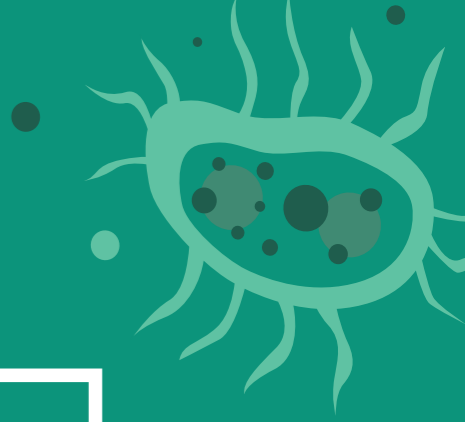
AMR IS A VERY BIG PROBLEM.

In this section we need to make sure that students understand why AMR is a problem both now and, in the future, both locally and globally. However, although it is a big problem with serious

health concerns for people and animals, we don't want the students to lose hope. The next section discusses action we can all take to limit AMR and keep ourselves, our families, and animals safe.



Causes Of Antimicrobial Resistance



Irrational use of antimicrobials
(overuse and misuse, see page 9 & 14)



Patients not completing a full dose because they feel better

Self-medicating with our health professional's guidance



Poor infection prevention and control mechanism



Lack of hygiene and poor sanitation

KEY FACTS FOR STUDENTS

- When microbes become resistant the usual antimicrobial treatment will no longer work to treat the illness/infections they cause
- This means that treating an illness/infection can:
 - ◇ Take a longer time; this can cost a lot in terms of health care expenses and reduced earnings.
 - ◇ Require advanced or more expensive drugs which may not be possible more people on low incomes to afford.
 - ◇ Result in reduced yields from food producing animals (because of the illness itself and the longer time on antimicrobial treatment).
- ◇ May even result in death if the illnesses/infection is resistant to all available antimicrobial treatments.
- AMR presents long-term risks for our health
 - ◇ If antimicrobial medicines no longer work properly, then infections caused by common microbes could become very dangerous and even cause deaths.
 - ◇ Medical and veterinary surgeons often use antimicrobials to treat infections during operations/surgery – this will become much riskier as more microbes become resistant to antimicrobials.

KEY POINT

When a microbe develops resistance, our usual medicines (antimicrobials) will no longer work.

- Across the world AMR/drug resistance causes over 1.3 million human deaths every year! That is more than HIV/AIDs or malaria.
- Many more people and animals suffer from long periods of illness as their bodies battle drug resistant infections.
- AMR can also be very harmful to animals. Animal illnesses caused by resistant microbes are also more difficult to treat meaning the animal can be ill for longer and may die.
- If AMR develops in microbes in our environment (soil and water) they can spread very quickly, potentially infecting many people and animals.
- Travel between different areas, or even countries can allow AMR to spread very quickly.
 - ◇ This is especially the case if people and animals travel when they are ill.

KEY POINT

AMR is a huge problem across the world, it causes 1.3 million human deaths every year!

ACTIVITY SUGGESTION:

This may be a good point at which to use the CARAN case study films, especially with older students.

But There is Hope!

The last section included quite a lot of worrying information about the risks of AMR. However, there are many simple actions we can all take to minimise the risk of AMR in our own lives and protect the health of our families, animals, and wider communities. Again, it is important to remind students that AMR happens to microbes. If we can minimise our risk of catching a microbial infection (through good hygiene) we also minimise our risk of catching a resistant infection.

We also need to be careful how we use antimicrobial medicines, they should only be used when we know we need them. This means following the advice of health care professionals who will tell us which antimicrobial, how much and for how long to use. These instructions will be different depending on the microbe causing our infection, they may also be different for people and animals depending on their age and other health conditions.

REDUCING INFECTION

- AMR is a problem for everybody in the world no matter how rich or poor you are.
- We can all take steps to minimise our risk of AMR.
- One of the most important things we can do is to keep ourselves and our animals clean and healthy, this reduces the risk of infection in the first place. And not getting infection would mean you will not require any form of treatment
- Maintaining good hygiene: washing hands regularly, drinking clean water, eating healthy food, keeping homes and animal shelters clean are key steps to minimise the risks of microbial infections.
- It is especially important to wash hands before, during and after preparing food, before eating, after handling animals or animal waste, after going to the toilet, after cleaning babies before breastfeeding and after touching the garbage.
- ◇ These are key situations which may allow microbes to spread from person to person, animal to animal, humans to animals, or animal to humans. Good hygiene can prevent this spread.

KEY POINT

AMR is everybody's problem, and we can all do something about it by staying clean and healthy and avoiding getting any form of infection.

MANAGING ILLNESSES

If people or animals become unwell it is important to keep the ill individuals clean, warm, well-fed, and hydrated with clean water. This will help the individual to fight the infection and get better more quickly.

- ◊ If a person is ill, keep the home as clean as possible. Wash the items they have touched regularly.
- ◊ If an animal is ill, keep their housing as clean as possible. Always wash your hands after interacting with the animal.

If it is possible, try to keep the ill animal or person in a safe space, avoid visitors and keep ill animals away from other animals or people. This will prevent the infection spreading.

- ◊ This may mean taking a day off work or school (ill people).
- ◊ You may need to separate an ill animal from its herd or flock.
- ◊ Limit the number of people who interact with ill animals or people.
- ◊ People and animals should not travel when they are ill.

If people or animals are ill, seek advice from trained health professionals who will be able to advise on appropriate treatment.

- ◊ Treatment will depend on the type of illness.

- ◊ This treatment may be an antimicrobial medicine, but it may be a different type of medicine.
- ◊ The health professional may also ask to take blood or urine samples from the ill individual before prescribing a treatment, this is an important step as it allows the health professional to find out what type of microbe is causing the illness and then decide on the type of medicine to give
- ◊ Be patient with the health professional, they may want to ask a lot of questions before deciding which medicine to give you.

Do not buy antimicrobials without firstly talking to a health professional.

- ◊ You may need an alternative medicine.
- ◊ Don't be tempted to ask for the same medicine you used to treat a previous infection; it may not work this time if a different microbe is causing the illness.
- ◊ Therefore, it is important to discuss human and animal illnesses with a health professional

KEY POINT

Do not buy antimicrobials without seeking the advice of a healthcare professional.

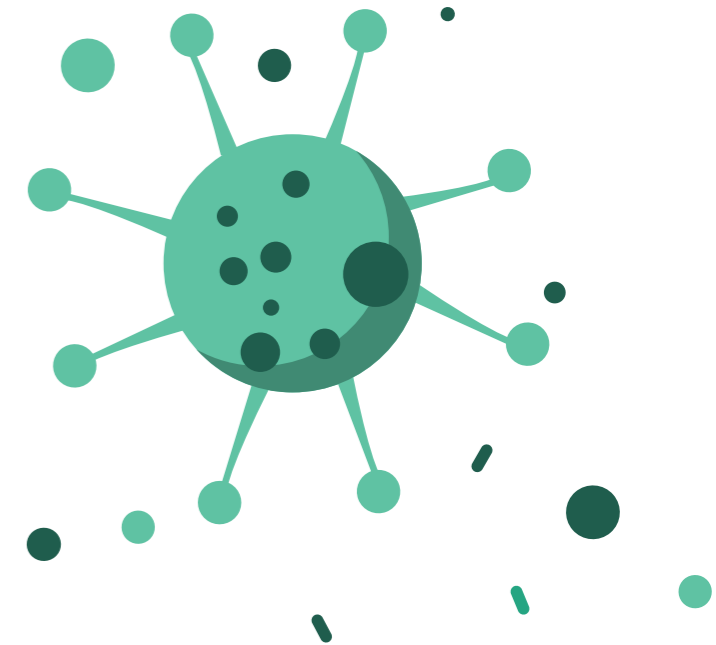
Using Antimicrobials Safely

- If an antimicrobial is prescribed, be sure to listen to the instructions from your Doctor/Vet/Healthcare professional.
- Keep the packet and/or leaflets that come with the antimicrobial, you may need to read it again later.
- Do not share antimicrobials with other people or with animals.
- When an antimicrobial is prescribed you have exactly the right amount, this means there should be no leftovers.
- Keep taking the antimicrobial even if you feel better, or if your animal looks better. The full dose must be completed to make sure the microbe is fully destroyed.

KEY POINT

Always follow the guidance of trained health professionals when using antimicrobial drugs.

- If you are still worried about a person or animals' health, go back to your health professional for more advice.
- Do not eat the meat, milk, eggs or other products from animals who are ill or on antimicrobial treatments.
- Do not add antimicrobials to animal feed. This will not keep your animals healthier; it may cause AMR to develop and make future microbial infections in your animals more difficult to treat.

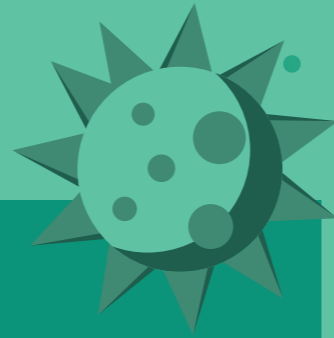


ACTIVITY SUGGESTION:

Now may be a good time to work on the reflective diary exercise and discuss this with your students.

Reflective Diary

You may find it useful to complete this diary yourself before working with the students. Alternatively, if you are working with older students, you can complete the diary together after working through this facilitator manual. Try to be as honest as possible with the students. AMR is a very complicated topic and many of us are only just learning about safe ways to minimise AMR in our daily lives.



Discussion Point	Responses
Did you know about AMR before reading this?	
What did you know about AMR before reading this?	
What did you know about AMR before reading this?	
What are the key messages you have taken from this resource pack?	

Do you think you will change any of your behaviours after reading this?	
Do you feel confident in sharing this information with your students/friends/family?	
Do you feel confident in sharing this information with your students/friends/family?	
Do you remember the last time you used antimicrobial medicines? Do you think you used them safely?	
Can you think of any AMR risks within you/your family/your community's lifestyle?	
Which other actors (government, health professionals, pharmaceutical companies etc.) do you think should be helping to spread knowledge on AMR?	
If you could tell the world one thing to minimise AMR what would it be and why?	

Teachers and researchers from HERD International plan the content of this pack.



An Orientation on Antimicrobial Resistance

Facilitators Pack 2022

This resource pack was co-created by students, teachers and community members in Chandragiri municipality, Nepal alongside researchers at HERD International and the University of Leeds.

