



# *Resource Pack on* **AMR**

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# 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 causing many common infections.**

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

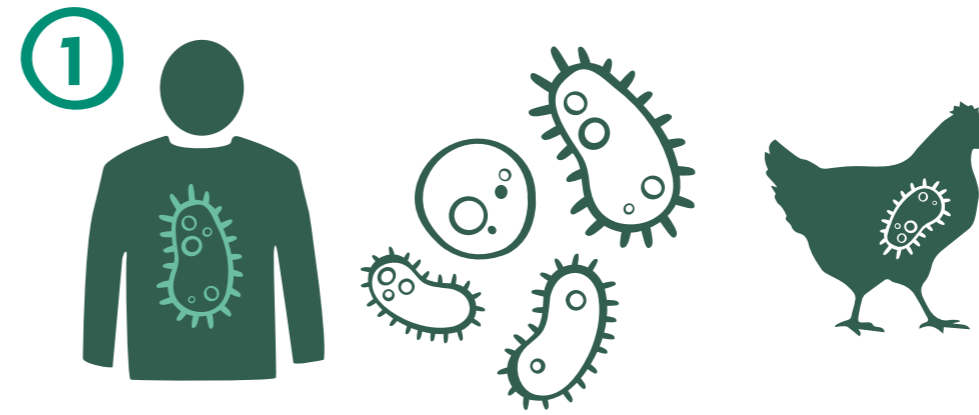
It is happening because the microbes that cause infections are becoming resistant to (no longer respond to) antimicrobial medicines. This is known as Antimicrobial Resistance (AMR) or drug resistance.

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.



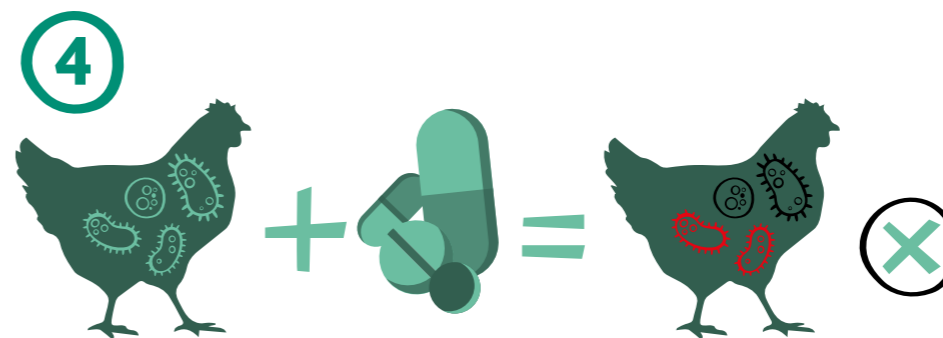
**Human and animal bodies are home to many microbes, this is completely natural. Some microbes keep us healthy but some can make us sick**



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

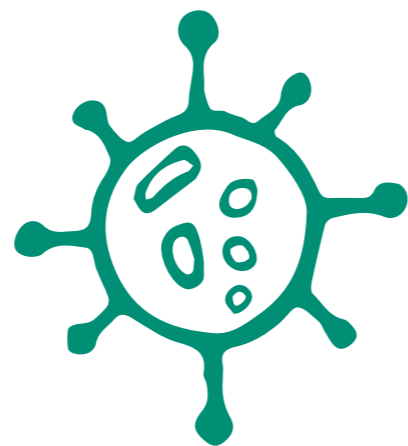


**There are many different antimicrobial medicines. To get better people and animals need to take the right medicine for the right amount of time, in the right amount (dose).**



**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.**

**AMR can make people and animals sicker for longer, require more expensive treatment or even die. Always follow the advice of a health professional when using antimicrobial medicines.**



## Using This Pack

**Most people are unfamiliar with the topic of AMR. They might not understand how medicines work or understand that microbes cause infections and illnesses. Because of this we need to think about AMR through very familiar and relatable examples. This pack contains a series of activities to help understand AMR. It is a good idea to do activities in their numbered order. This will help students learn in stages so they can develop their understanding slowly.**

### Activity 1

'Priming' activity to get students and yourselves as facilitators to think about the problem of AMR in your own lives.

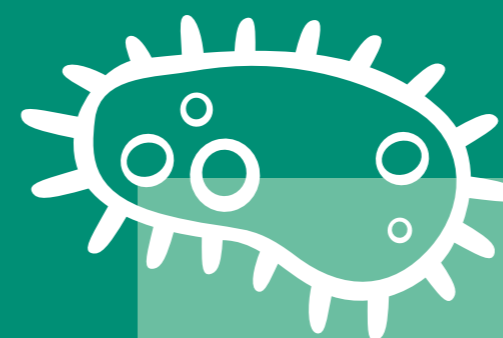
### Activities 2 – 6

Games using the microbe cards which accompany this pack. Students can work through these activities alone, in pairs or in groups. An important part of these

activities is that students have time to share what they have learned with the wider group, this allows students to learn from each other.

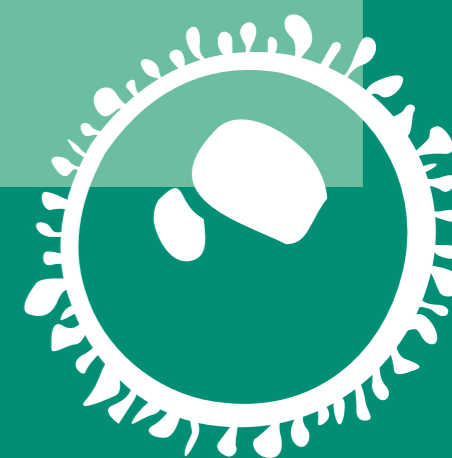
### Activities 7 – 9

Advanced activities which can be used with older students and may be shared as homework for after the session.



## Resources List

- Activity 1: How to introduce AMR to students
- Activities 2-6: Microbe Character Cards
- Activity 7: AMR case study from the CARAN project
- Activity 8: Reflective Diary
- Activity 9: AMR Investigation Exercise

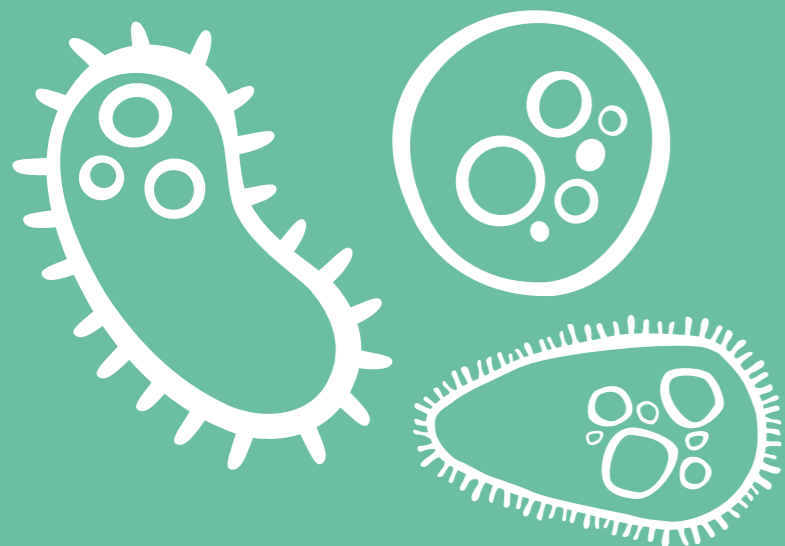


## ACTIVITY 1

# How To Introduce AMR

## What You Will Learn

- Discuss different illnesses and different ways of feeling better.
- There are many types of medicines and remedies to treat illnesses.
- Health professionals give us important guidance on how to use medicines.
- Not following health professional's advice can mean we feel ill for longer.



## What To Do

Ask your group these questions:

1. How many of us have become ill recently?
2. Do you remember any incidents of consulting with a doctor or purchasing medicines?

After sharing experiences, ask questions:

- What caused that disease/illness/infection?
- What did you do? Where did you go?
- Did the medicine work? If not, why?
- What were the instructions you received?
- Did you follow the instructions from a medical professional?
- What type of medicines do you think they were?
- Is there anything you could have done better?

**This discussion should get you to think about what happens when you are sick. What causes you to feel unwell and what do you do about it? Who within your community helps you to treat illnesses and do you get different information from different groups of people?**

## Facilitator's Note:

This activity gets you thinking about the problem of AMR in your own lives. A teacher/facilitator should ask the questions and allow the other people to discuss answers as a group.

If your group are struggling with these questions, you may use the following example to explain a typical pattern of illness and treatment.

**Example: A year ago, Ram had a severe cough for weeks. He was trying home remedies and then bought some medicines from the pharmacy suggested by his friends and family members. This didn't work and his health condition deteriorated. After three weeks, he decided to consult a doctor. He was diagnosed with tuberculosis and was prescribed medicine for three months. Ram was already feeling better after two months so he discontinued the medicine. This only made him sick again and he had to take another strong medicine to cure the disease.**

After sharing the example, allow your group time to reflect on what happened.

- What is your opinion on what Ram did when he was sick? If not, what was wrong?
- What did it lead to? What do you think Ram should have done?
- Where should have Ram visited after he had cough? Why?

**Key discussion points from example:** Encourage your group to think about Ram's decision to use home remedies. This was likely a good idea to start with but if his cough was lasting more than 3 weeks it was important to go see a doctor. Ram was told he had tuberculosis and given specific medicine by the Doctor; he should have finished all the medicine. Stopping before the medicine was finished made him feel worse because the tuberculosis was not completely treated. Because the tuberculosis had got used to the first medicine, it became resistant. Ram then had to have stronger medicine to treat the tuberculosis. This likely cost Ram more money than if he had finished the original medicine as the Doctor suggested.

**How to build on learnings from this activity:** This activity should give you a chance to think about how illness affects you and what decisions you make to get better. After this exercise it may be a good point to look at the microbe character cards to help you understand that there are many different microbes which can make people and animals feel unwell.

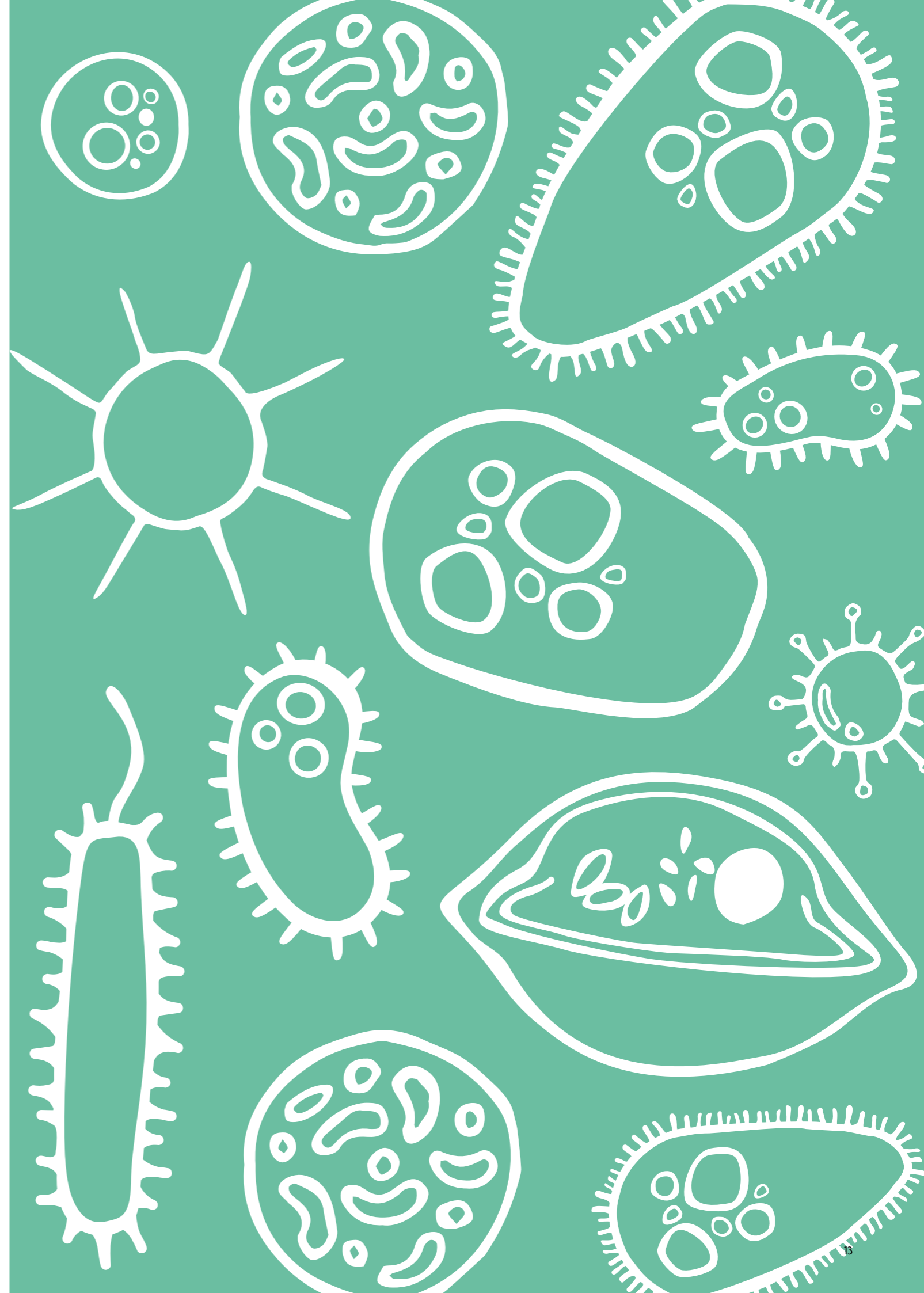
## ACTIVITIES 2 - 6

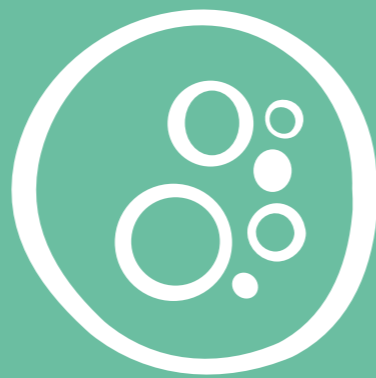
### Facilitator's Note:

The following activities can be done either alone, in pairs or as a group.

**There are notes below each activity which provide more information to help you understand that microbes are living things which cause many types of illnesses. The latter activities allow you to realize that we need different medicines to treat illnesses caused by different microbes, and that misuse of medicines can lead to AMR. The final activities look at how using medicines properly is important to cure illness and stop antimicrobial resistance (AMR) from happening.**

**Ideally these activities should be done in order. They can be split across different sessions but activities 2-4 work well if they are played together in the same session. Students will need to do activities 2-4 before moving on to the next activities.**



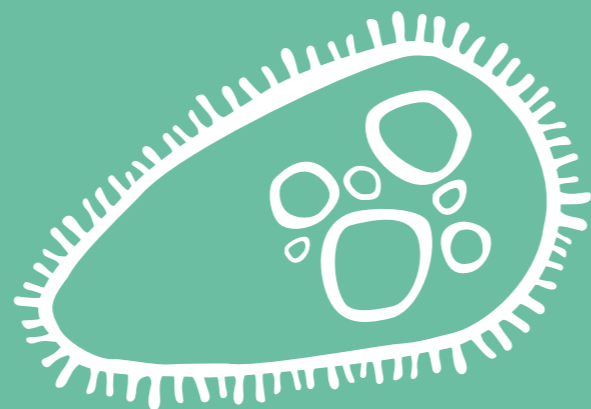
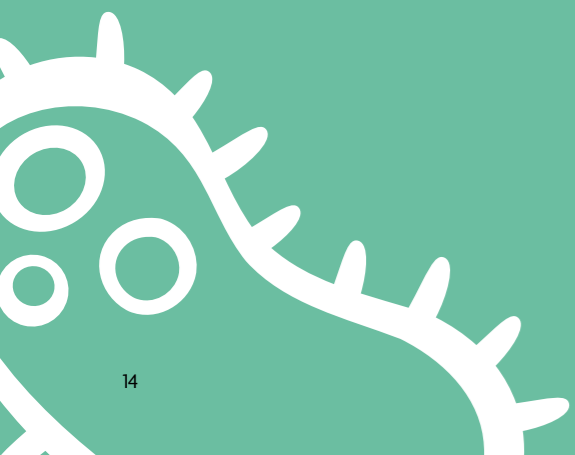


# Microbe Character Cards

These cards show different types of microbes and the medicines we can use to treat them. The cards will help you to learn about how each microbe behaves and why certain medicines or treatments will not work on certain microbes.

## What You Will Learn

- Microbes are alive!
- There are many different types of microbes
- Microbes can cause illness (but not always)
- Antimicrobial medicines can help treat illnesses caused by microbes
- Antimicrobial medicines must be carefully matched to the microbe
- Using the wrong medicine can make the microbe stronger so that it become resistant to the medicine, or more powerful than the medicine.





## ACTIVITY 2

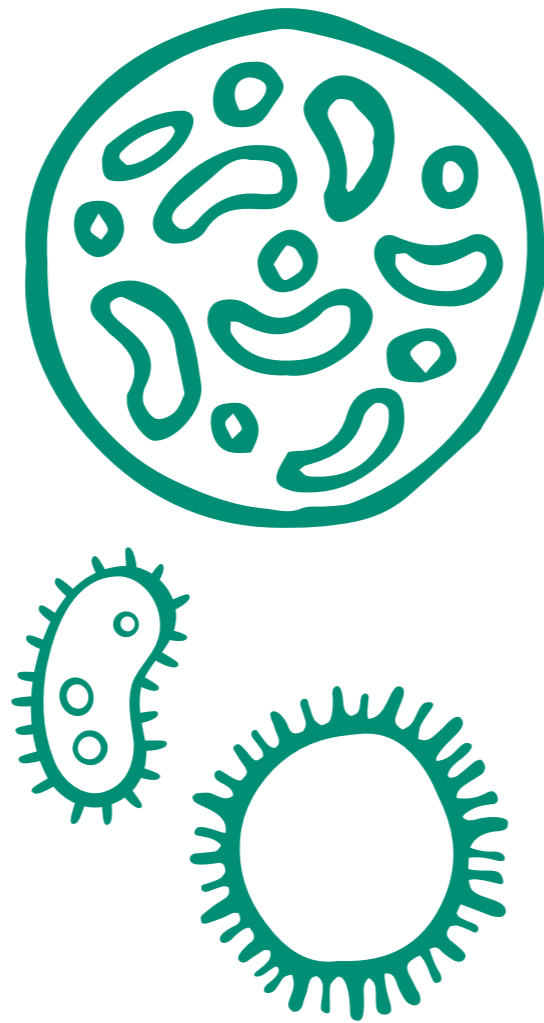
# Getting to Know The Microbes

Using ONLY the microbe cards

### What To Do

Look at the pictures of the different types of microbes (bacteria, virus, fungi, parasite).

- What differences do you see?
- Does the card give you more information about how different these microbes are?
- Can you draw the differences between these microbes?  
You could even create your own microbe!





### Facilitator's Note:

This activity can be done either alone, in pairs or as a group depending on the age and confidence of the students.

Students should be able to see differences in how the microbes look from the pictures. Bacteria are rod-shaped, fungi look long and feathery, viruses look like little spaceships, parasites look like little eggs and worms. The descriptions on the cards also give an idea of how big each microbe is. Viruses are much, much smaller than all other microbes.

Students could either draw the microbe or could use modelling clay or could use any other medium to make their own microbe using the information on the cards. This activity allows students to understand the different types of microbes.

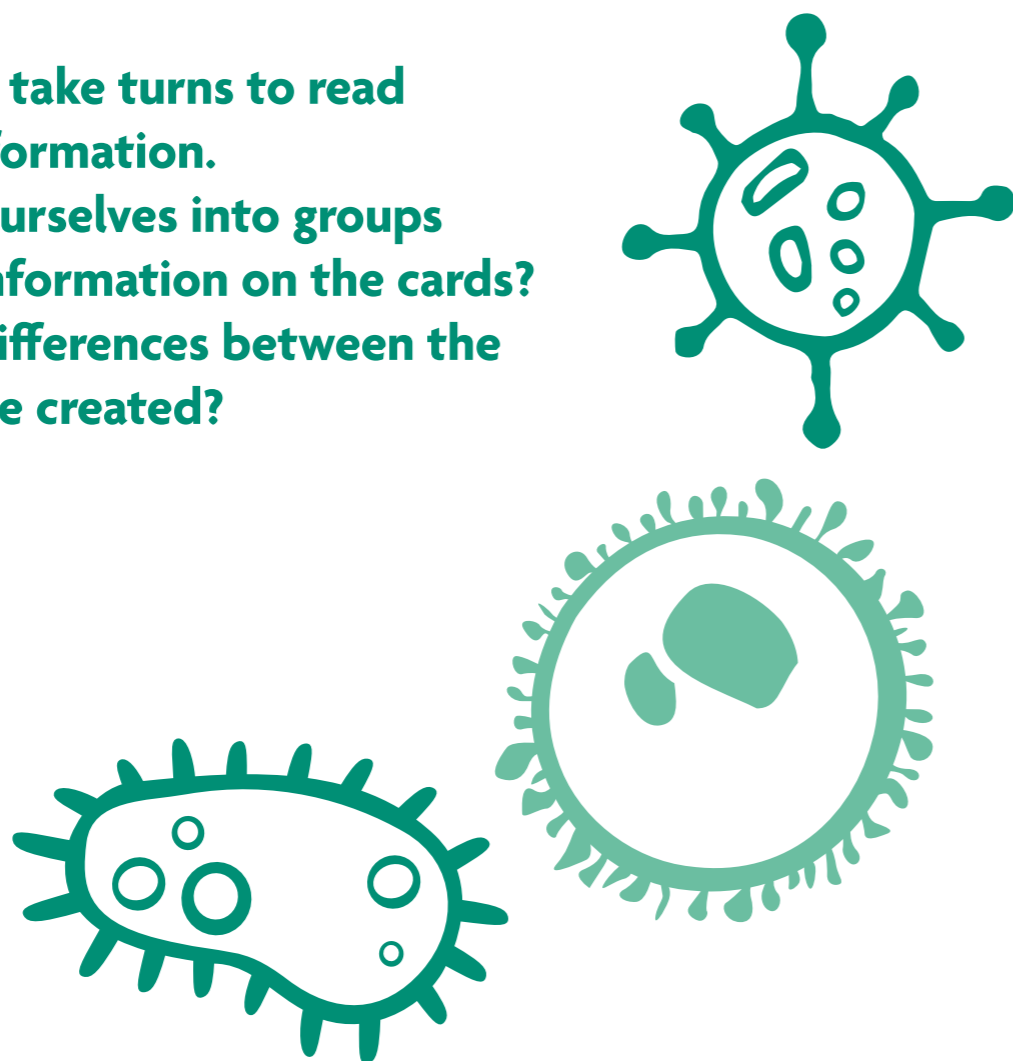
## ACTIVITY 3

# Organizing Microbes

Using ONLY the microbe cards

### What To Do

- Pick a card and take turns to read through the information.
- Can you put yourselves into groups based on the information on the cards?
- What are the differences between the groups you have created?

Detailed description: This block features a collage of seven microbe cards arranged in a grid. The cards are: Bifidobacterial (yellow background), E-Coli (blue background), Salmonella (green background), Tuberculosis (TB) (red background), Bacillus (pink background), Influenza (flu illness) (dark blue background), and COVID-19 (grey background). Each card includes a title, type (Microbe or Virus), theme (Bacteria or Virus), and a list of characteristics. A large, semi-transparent green box with white text is overlaid in the center, containing the 'Facilitator's Note'.

**Facilitator's Note:**

Encourage students to look at all the information on the cards and see what is similar or different. For example, all the virus cards could be grouped together, or all the microbes which cannot be treated by antibiotics could be grouped together.

This activity will help students understand that there are different types of microbes that behave in different ways and need different types of treatment

Try not to lead the students too heavily in this activity, let them find the similarities and differences themselves using the information on the cards.

## ACTIVITY 4

# Matching Medicines to Microbes

### What To Do

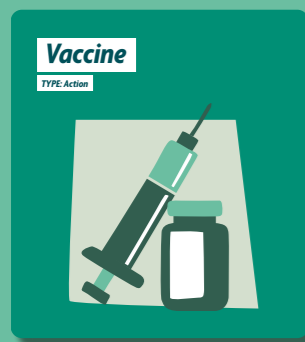
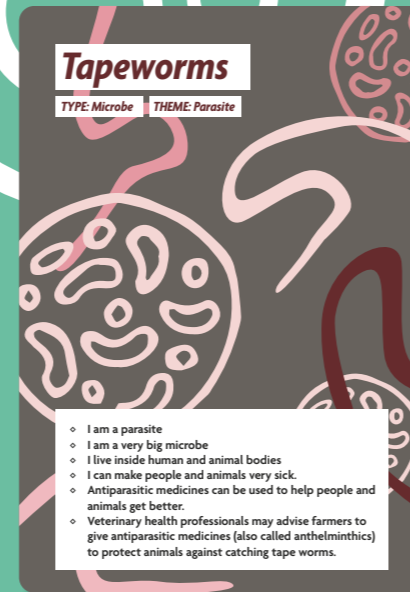
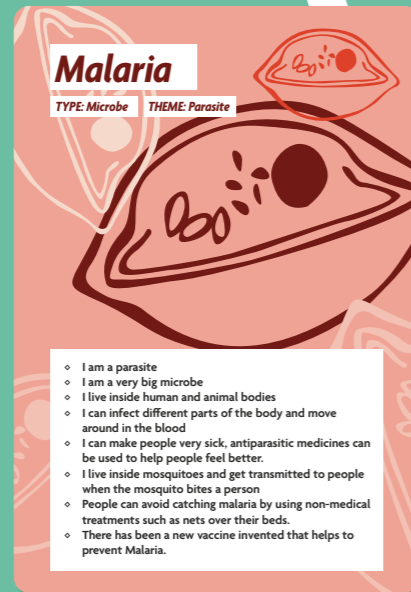
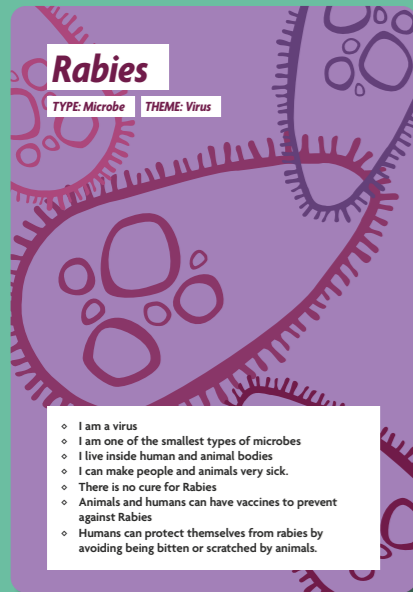
1. Sort the cards into three piles: **Microbes, Medicines, and Actions.**
2. Each pick up a microbe card and read it.
3. Describe the microbe to the rest of the group.
4. Group should decide if this microbe is going to make them unwell or not, would the microbe make other people or animals unwell?
5. Keep hold of the microbe card.

### Next

1. Take a medicine card.
2. Decide if this medicine could help treat the microbe card you currently hold.
3. Can you explain to the group why this medicine will/won't work on your microbe?
4. Would it work on someone else's' microbe?

### Next

1. Take an action card.
2. Could this action help to treat your microbe?
3. Could it help your medicine to work?
4. Could it help to treat someone else's microbe?





### *Facilitator's Note:*

This is quite an advanced activity. Students can do this alone (for older students) or in pairs/small groups. The students will need to have done activities 2-4 before attempting activity 5.

Do this several times so that students can appreciate the range of different microbes and medicines.

The **KEY LEARNING** from this activity is that the right medicine must be matched to the right microbe to treat the illness. For example, viruses cannot be treated by antibiotic medicines but can be treated by antiviral medicines. Vaccines can also protect against viruses.

## ACTIVITY 5

# Microbe Card Game

## What To Do

**The aim of the game is to get rid of all your cards as quickly as possible. The winner is the person who has no cards left first.**

## Game Rules:

Sit around a table.

1. 1 person is the 'dealer' and they are responsible for the cards.
2. Dealer shuffles the cards, so they are mixed up.
3. Dealer gives 5 cards to each person (Do not let other people see your cards!)
4. Dealer takes 1 microbe card to start the game and places it face-up on the table
5. Place the rest of the cards together in a pile on the table face down.
6. Take turns to play (put down) a card.

You can play (put down) a card if:

7. You have a medicine card that will treat the microbe card in the middle of the table.
8. You have an action card which will help to treat the microbe card on the table.
9. You have the same microbe card as the one on the table.
10. Once the right medicine card has been placed on this microbe the cards are moved on to the green square.



11. If you cannot play a card, then you must pick up another one from the pack on the table.
12. If you play a medicine card that will not work on this microbe, or is not needed to treat this microbe, you must pick up another card AND miss a turn.
13. If the wrong medicine card is played the set of cards is moved onto the red square.
14. The red square represents a situation where AMR could develop.
15. Once a set of cards has been moved into the red or green squares, the dealer will place another microbe card face-up on the table and the process starts again.
16. The winner is the person who can get rid of all their cards the fastest.

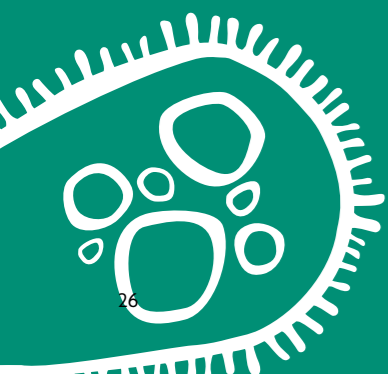
17. Once the game is over look at the sets of cards in the red and green squares.
18. Think about why the sets of cards in the red square could be dangerous.
19. Why are the sets of cards in the green square safe?
20. Why could using the wrong medicine lead to AMR?

## Facilitator's Note:

This activity should not be played until activities 2-4 have been completed. It is an advanced activity which requires students to understand that there are different types of microbes and different treatments.

Older students may be able to play this game quite quickly. Younger children may need to discuss and share their cards with others to come to the right solution.

You could play this game in teams to create a safer atmosphere where students feel less worried about making the wrong decision. Teachers should use the facilitation pack to support their answers. The **KEY AIM** of this activity is to realize that using the wrong antimicrobial medicine can lead to AMR developing.



## ACTIVITY 6



# Acting Out Your Microbe's Personality

**Use the information on the cards to create characters within a play/drama/theatre production showing the relationship between microbes and medicines. You can act out the part of microbes and medicines showing that only certain medicines can treat certain infections. You can also use the action cards to show that people's behavior can help minimize illness and AMR in our communities.**

### ***You May Want To Think About:***

- Is my microbe/medicine friendly or harmful?
- Is my microbe/medicine a hero or a villain?
- What type of personality would my microbe/medicine have?
- How will I act out this microbe/medicine?
- Will I have a loud voice?
- Will I move fast or slow?
- How would my microbe react to the medicines/actions/other microbes?
- Would my medicine fear any of the microbes? Why?
- Will the audience like my character? Why/why not?



### ***Facilitator's Note:***

This is quite an advanced activity, and it may be best to do this after completing other activities such as the reflective diary and AMR investigation exercise.

This activity may be more appropriate to use in an after school/lunch club rather than a curriculum session. It may take several sessions for the students to plan out their drama, practice it and deliver it. This activity would also be a good way to engage parents and wider community members with AMR as they could be invited to come and watch the final drama/theatre activity.

The **KEY AIM** of this activity is to allow students to reflect upon AMR stories based on their own experiences.

Submit photos/videos of your activity to CE4AMR

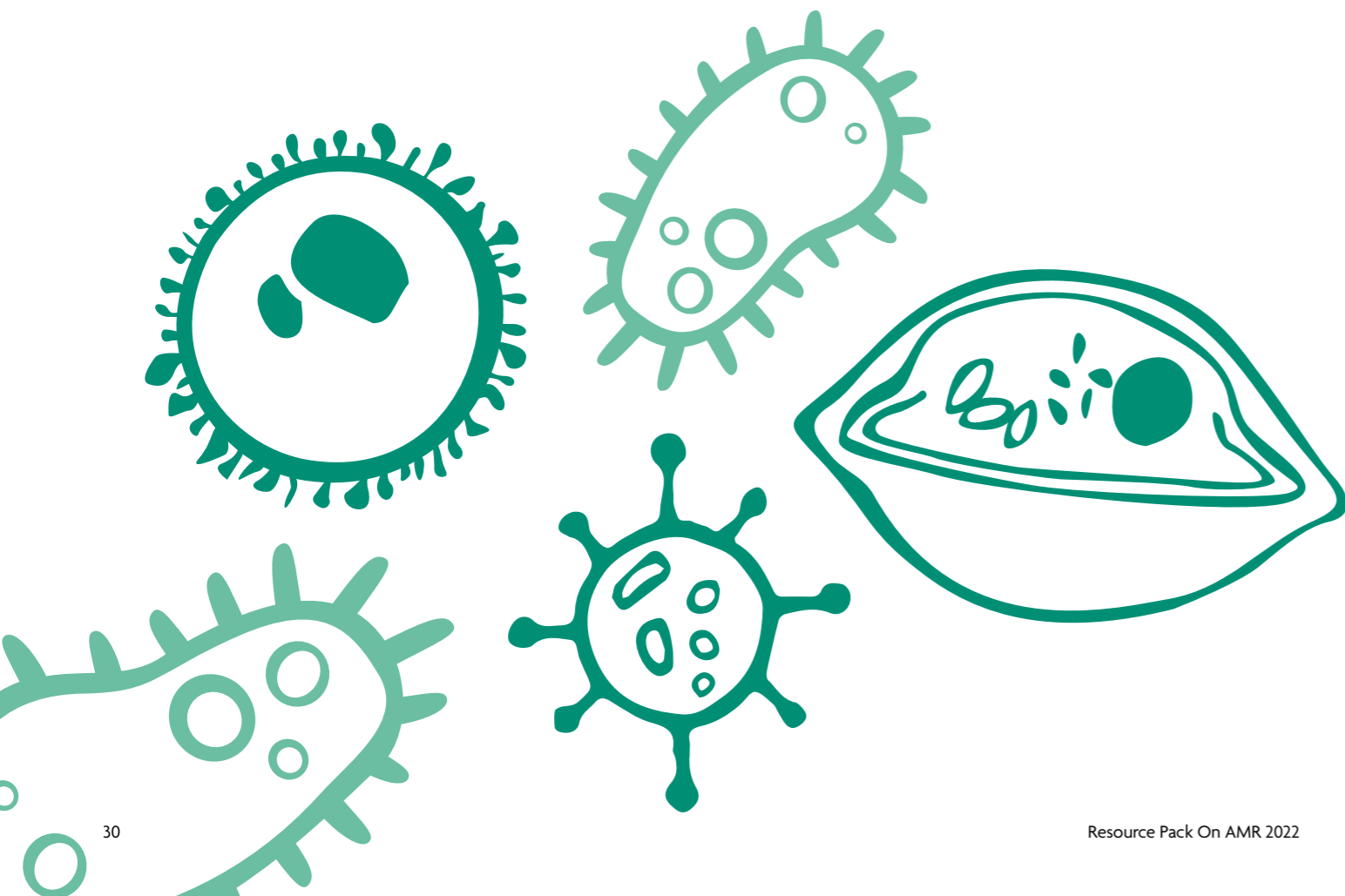
After creating your play/drama/theatre production, ask your teacher to share any photos of videos with the CE4AMR network by emailing [CE4AMR@leeds.ac.uk](mailto:CE4AMR@leeds.ac.uk) We will share these on our website and social media sites. (Teachers, please note that we will need to seek consent in order to share photos and videos of your students, after you contact us we will share the relevant consent forms out to you)

## ACTIVITY 7

# AMR Case Study From The CARAN project

### What You Will Learn

- We can all do things to prevent AMR happening.
- Changing people's behaviour is a very important way of preventing AMR happening.
- There are many examples of AMR action that can be taken at community level.



### Facilitator's Note:

This activity uses a research project to give examples of AMR. In 2018-2019 members of this community were involved in a research project with HERD International and The University of Leeds (UK) to understand what behaviours can lead to antibiotic resistance in Nepal. The project was known as 'CARAN' and allowed community members to create short films about antibiotic use in their lives and suggest ways of changing behaviours to minimise antibiotic resistance.

There are several films linked to the CARAN project. These will not all be suitable for all age groups, and we recommend that teachers watch the films first to approve their content.

#### Quick introduction to CARAN:

[vimeo.com/591820106](https://vimeo.com/591820106)

Film 1: [youtube.com/watch?v=GBZCunEPD3U](https://youtube.com/watch?v=GBZCunEPD3U)

Film 2: [youtube.com/watch?v=W-R205-kudQ](https://youtube.com/watch?v=W-R205-kudQ)

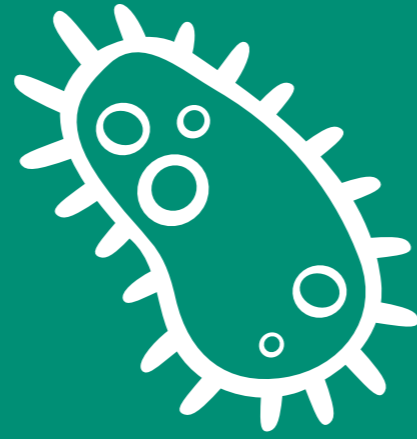
- After watching the film discuss the following questions with students:
- What behaviours did you see which could have made the illnesses worse?
- What behaviours did you see which could have made the illnesses better?
- Did you learn any new information about AMR? What do you think is the most important message about AMR in these films?

**KEY POINT** Remember that antibiotic resistance is only 1 example of AMR. The details of the examples in these films only relate to antibiotic resistance and not other examples of AMR such as antiviral resistance, antiparasitic resistance etc. However, the key learnings are the same, medical, and veterinary professionals should always be consulted when a person or animal is sick. Medicines should only be used according to health professional's advice and the right medicine must be used to treat each illness.





## ACTIVITY 8



# Reflective Diary

## What You Will Learn

- This activity will give you time to think about your knowledge of AMR.
- Think about the other people in the world who need to know about AMR.
- Think about how you would communicate AMR to your friends/family/community.

### Facilitator's Note:

This is the same resource as you will find in your facilitator's pack. 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 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 think your students/friends/family will find AMR interesting?	
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 your/your family's/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?	

## ACTIVITY 9

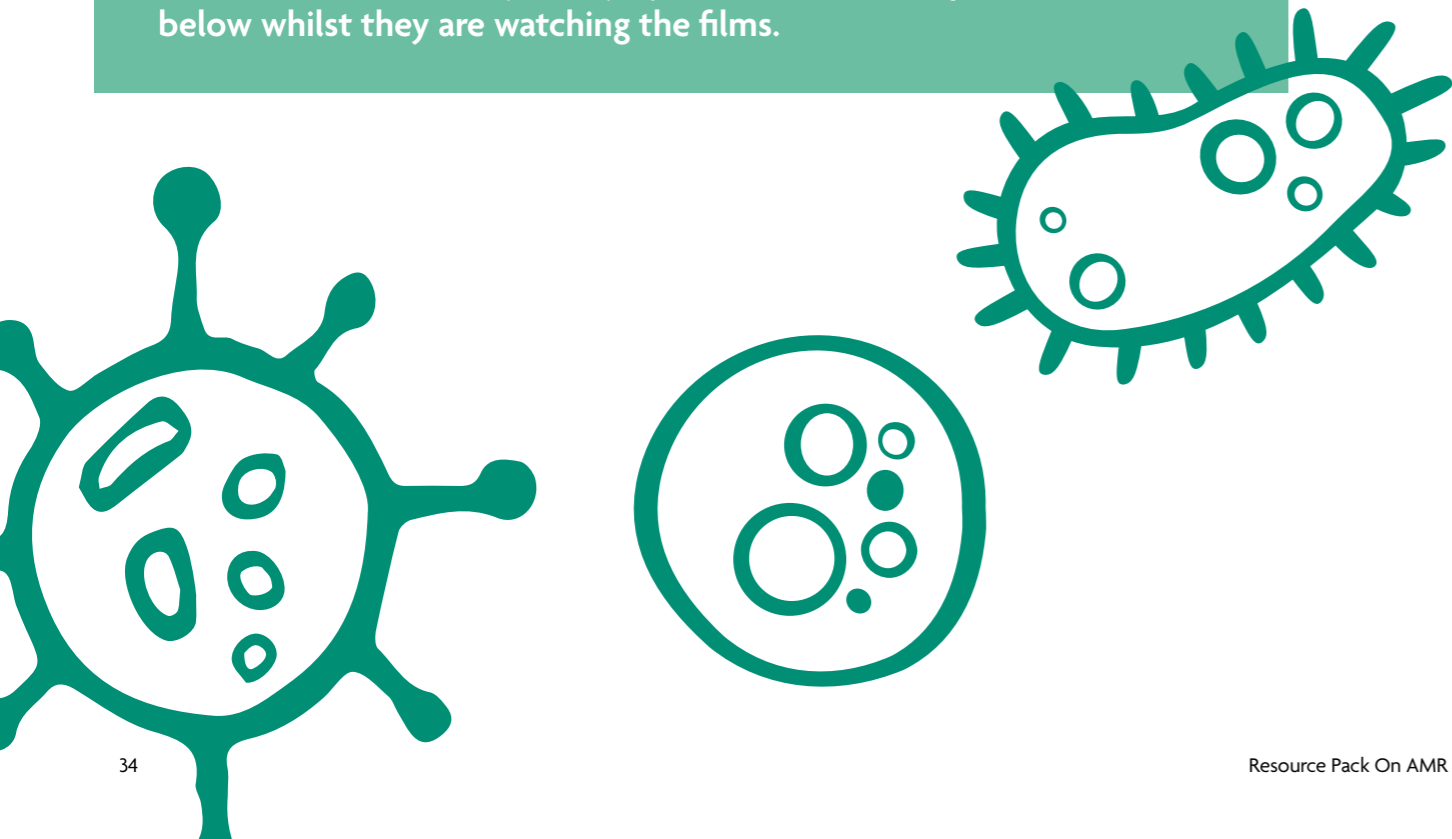
# AMR Investigation Exercise

### What You Will Learn

- To identify AMR risks in your community.
- Think about why people may do things that could lead to AMR.
- Think about how you could make these behaviours safer and protect against AMR.

### Facilitator's Note:

This activity is designed for use with older students. It is important to create a 'safe space' to work in whilst sharing this activity. Students need to feel comfortable sharing the behaviours and information they have written down, many will have occurred during their time at home, and we want to avoid any feelings of embarrassment or shame. If you are worried about this, you may want to combine this activity with the CARAN films (activity 7). Students can complete the table below whilst they are watching the films.



### What To Do

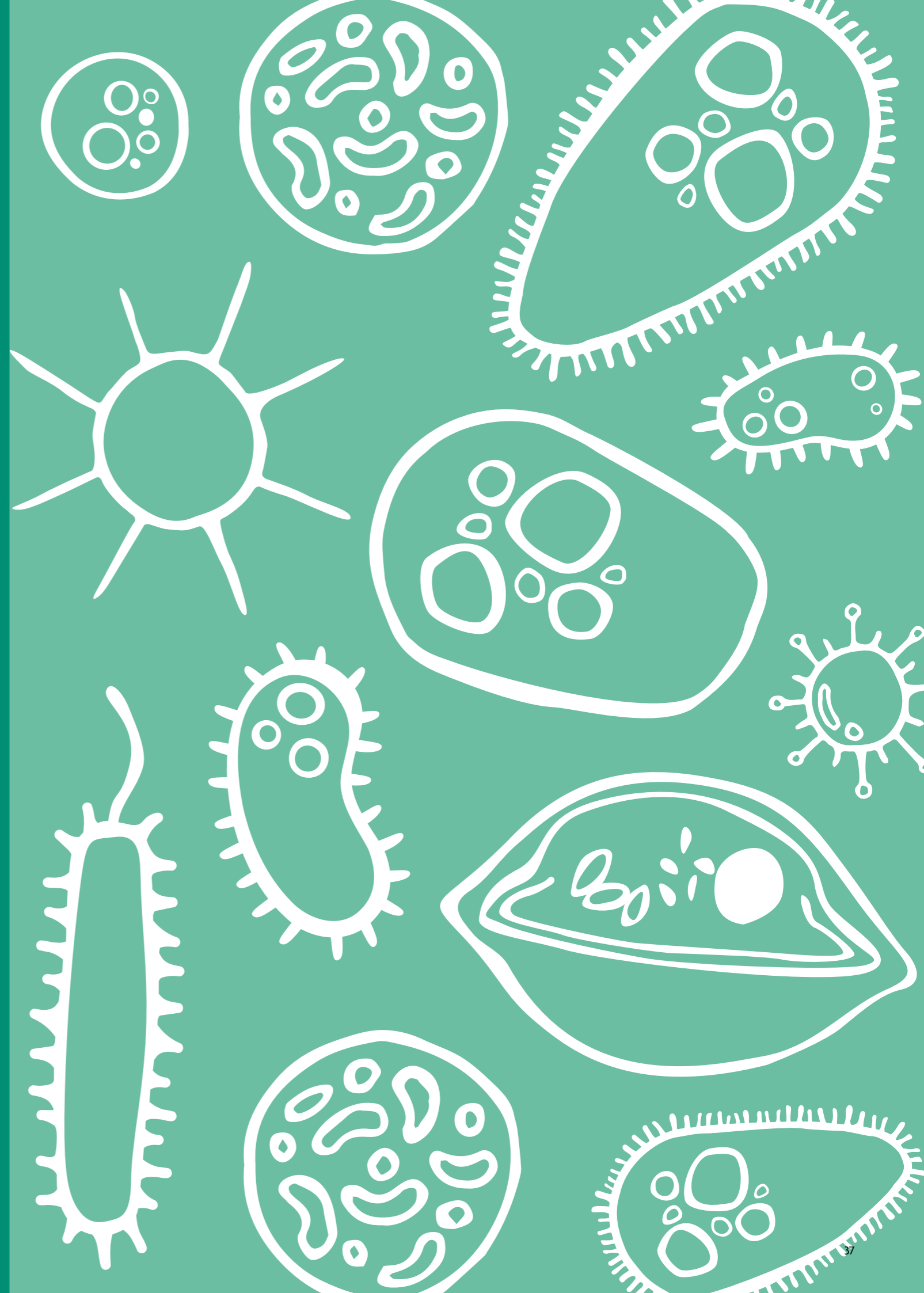
Take a walk around your home/school/local area and have a look for AMR risks. What could you and your community do to make these safer? There are a few examples included in the table below to give you an idea of what to look for.

AMR Risk	Why is this a problem?	What could you do to make it safer?	Any other comments
Old/remaining antimicrobials / antimicrobials used in previous illness being stored in the home	If used without health care professional's guidance they may not treat future/current illness and could drive AMR as they might not be the correct medicine	Throw these away and when you are next in need of medicines, go to a healthcare professional for advice.	Make sure you throw these away responsibly. Could return them to a pharmacy or health care centre to ensure they are disposed of safely.
Milk is being sold from a sick cow	The milk may pass on the infection to humans. If the cow is on antimicrobial treatment, it is unsafe to drink the milk.	Don't buy animal products from sick animals/ animals on antimicrobial treatment.	

**Turn over to start filling out**



AMR Risk	Why is this a problem?	What could you do to make it safer?	Any other comments





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**AMR**

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