



e-Bug



# Bug



# Busters



**A complete guide to running  
the Bug Busters session**

## Introduction

During this session, participants will learn what antibiotics are, when to take antibiotics and how to take antibiotics correctly. A demonstration will introduce antibiotic resistance and a participant activity will show how easily antibiotic resistant bacteria spread. Participants will be encouraged to think about self-care and how they can treat future infections.

## Learning outcomes

Aim to understand that:

- Most common infections (sore throats, coughs, colds, flu, ear infection, sinus infection) will get better by themselves through time, bed rest, liquid intake and healthy living
- Take antibiotics exactly as given by your doctor or nurse
- You must not use other people's or any leftover antibiotics
- Only use antibiotics when you really need them
- If you over use antibiotics they might not work when you really need them for a severe infection such as meningitis, pneumonia or kidney/urine infection
- Some bacteria can no longer be killed by antibiotics and this is called antibiotic resistance
- Remember, antibiotics kill our own useful bacteria
- Antibiotic resistant bacteria spread easily from person to person

### Key words

Antibiotic, Disease, Illness, Immune system, Infection, Medicine, Symptom, Antibiotic Resistance, Bacteria, Virus

### Available web resources

Patient stories  
Gut microbiome video  
'Bug Busters' poster

### Materials required

Activity 1: Balloons, tape, pin

Activity 2: Red and gold glitter

Activity 3: Participant worksheet ([PW1](#)) and educator answer sheet

## Background information

The body has many natural defences to help fight against bad microbes that can cause infection – the skin stops microbes entering the body, the nose has a sticky membrane trapping microbes if they are inhaled, tears contain substances which kill bacteria and the stomach produces acid which can kill many microbes. Generally by living a healthy life (eating the right food, drinking plenty of water and getting lots of rest) these natural barriers work on a daily basis to keep us healthy. However, in some cases, microbes can cross these barriers and enter our bodies.

The majority of the time the immune system defeats any harmful microbes entering the body; however, in some cases the immune system needs help. Antibiotics are special medicines used by doctors to kill harmful bacteria. Some antibiotics stop the bacteria reproducing and others kill the bacteria. Antibiotics treat infectious diseases caused by bacteria, such as meningitis, tuberculosis and pneumonia. They do not harm viruses, so antibiotics cannot treat diseases such as colds and flu, which are caused by viruses.

Before antibiotics were invented harmful bacteria were life threatening. Today, however, many bacterial infections are easily treated with antibiotics – but the bacteria are fighting back! Through increased exposure to the antibiotics, bacteria are becoming resistant to them. This means that bacterial infections are once again becoming life threatening. Infections caused by antibiotic resistant bacteria pose a serious health risk. Patients who are immuno-compromised (through cancer or HIV treatment, pregnancy or other illnesses) are less able to control the infection with antibiotics. Resistant bacteria can pass their resistance on to other bacteria in our gut and these can spread easily if we do not wash our hands.

We can help prevent antibiotic resistance by:

- only using antibiotics prescribed for you by your doctor because each prescription is targeted to each patient and each infection
- always take the antibiotics exactly as prescribed otherwise the bacteria are not completely destroyed and the infection can come back
- don't use antibiotics for simple coughs and colds because antibiotics do not kill viruses and overuse increases bacterial resistance

Overuse of antibiotics can also damage our useful bacteria which are found in our gut. These useful bacteria help us to digest food and they play an important role in our immune system.

## Introduction (10-15 mins)

Talk through common infections such as coughs, colds, flu, tonsillitis etc., and ask the group if they have had them. Ask what they did to treat the infection – did they go to the doctor, how did they look after themselves at home, how long did the infection last?

Explain that most infections are caused by viruses and recap from session one where viruses are found and what illnesses they cause. Explain that antibiotics do not work on viruses, and therefore they will not help most infections. Most common infections (sore throats, coughs, colds, flue etc.) will get better by themselves through time, bed rest, liquid intake and healthy living. Reinforce that antibiotics only work on bacterial infections.

Explain that you should only take antibiotics when you really need them and take them exactly as given by your doctor. Reinforce that you must not use other people's or any leftover antibiotics.

Explain that if we use antibiotics inappropriately, for example by using them when we shouldn't, they are less likely to work in the future. Ask if anyone has heard of MRSA? Do you know anyone who had a severe infection that didn't get better? Use the patient stories on the [e-Bug Young Adult student website](#) to prompt discussion:

## Recommended Activities:

The following three activities are recommended:

## Activity 1 – Bacterial resistance (10-15 mins)

What does it mean when we say bacteria (not the patient) are becoming resistant to antibiotics? Explain that bacteria are continually developing ways to avoid being killed by antibiotics, and that this is known as antibiotic resistance. Antibiotic resistant bacteria can be very dangerous.

Explain that you will show a demonstration to describe antibiotic resistance.

Blow up balloons in two different colours and put sellotape or parcel tape on one of the balloons. Clear parcel tape works the best; if sellotape or brown parcel tape is used, several layers may be required for the experiment to work. The sellotape is best placed on the end of the balloon where the balloon is thickest.



Explain that the yellow balloons represent bacteria and the red balloon with tape on represents antibiotic resistant bacteria. The pin represents the antibiotic.

When we give an antibiotic, bacteria are killed or damaged – pop some yellow balloons with the pin. However in bacteria that are antibiotic resistant, the bacteria are not affected by the antibiotics – put the pin through the sellotape in the red balloons, it will not pop. These bacteria cannot be killed by antibiotics.

Antibiotic resistant bacteria are not killed by antibiotic



Bacteria killed by antibiotic

**Learning outcomes achieved:**

1. If you over use antibiotics they might not work when you really need them for a severe infection such as meningitis, pneumonia or kidney/urine infection.
2. Some bacteria can no longer be killed by antibiotics and this is called antibiotic resistance.
3. Remember, antibiotics kill our own useful bacteria

## Activity 2 – The spread of resistant bacteria (10-15 mins)

Antibiotic resistant bacteria can spread easily from person to person, just like any other type of microbe.

Use red and gold glitter to demonstrate the spread of bacteria. Gold glitter represents bacteria like in activity 1, and the red glitter represents the antibiotic resistant bacteria. During this activity you can recap the learning outcomes from session 2 (The spread of infection). Remind participants that microbes are found everywhere and can spread easily through touching surfaces and person-to-person contact.

Put both gold and red glitter on one or two participants' hands and ask them to touch various things around the room and shake hands with other members of the group.

Look at how far the coloured glitter has spread and discuss with the group that bacteria and antibiotic resistant bacteria both spread very quickly. Remind everyone that antibiotic resistant bacteria spreads just as easily as any other type of microbe.

### Learning outcomes achieved:

1. Antibiotic resistant bacteria spread easily from person to person

## Activity 3 – Antibiotics Right or Wrong? (10-15 mins)

Participants will use the 'true or false' worksheet provided ([PW1](#)) to learn about how to take antibiotics correctly.

Give each participant a copy of the worksheet. The worksheet has 8 statements, which teaches the group not to take antibiotics for coughs and cold, to take antibiotics as prescribed and not to use other people's or left-over antibiotics.

For each statement, discuss with the group the whether they are right or wrong and reasons why. An answer sheet is provided to aid discussions.

### Learning outcomes achieved:

1. Most common infections will get better by themselves through time, bed rest, liquid intake and healthy living
2. Take antibiotics exactly as given by your doctor or nurse
3. You must not use other peoples or any leftover antibiotics
4. Only use antibiotics when you really need them
5. If you over use antibiotics they might not work when you really need them for severe infections such as meningitis, pneumonia or kidney /urine infection

## Activity 4 – Useful microbes (10 mins)

Recap from session one that we have lots of useful microbes in our bodies. Microbes in our gut help us to digest food, and they also help us to fight off harmful microbes.

The overuse of antibiotics can damage our normal/useful bacteria. The following video could be shown: [www.youtube.com/watch?v=5DTreNdWvM](http://www.youtube.com/watch?v=5DTreNdWvM) (or similar video of gut micro biome)

### Learning outcomes achieved:

1. Overuse of antibiotics can damage our normal/useful bacteria

## Activity 5 – Antibiotic Guardian (5 mins)

Show participants the antibiotic guardian video located on the e Bug Young adult page here: [www.e-bug.eu/young\\_sub.aspx?cc=eng&ss=11&t=Antibiotic%20guardian%20videos](http://www.e-bug.eu/young_sub.aspx?cc=eng&ss=11&t=Antibiotic%20guardian%20videos)

The video explains the importance of antibiotics and how we can help the fight against antibiotic resistance by becoming an antibiotic guardian. Participants can visit the website at: [www.antibioticguardian.com](http://www.antibioticguardian.com) to make their pledge to become an antibiotic guardian and receive a certificate.

### Learning outcomes achieved:

1. If you use antibiotics when you don't need them, they are less likely to work in the future when you really need them for severe infections such as meningitis, pneumonia or kidney /urine infection
2. Bacteria are becoming resistant to antibiotics due to our overuse of antibiotics



## Discussion

Ask what the participants have learnt in this session? What will you do next time you are ill? Use the 'Bug Busters' poster to recap and aid discussion.

Recap the main learning objectives:

- Antibiotics don't help most infections as they don't work on viruses
- To treat viruses you should self-care at home
- If you use antibiotics inappropriately, they are less likely to work in the future
- Bacteria are becoming resistant to antibiotics due to our overuse
- Antibiotics cannot kill antibiotic resistant bacteria
- Antibiotic resistant bacteria spread easily from person to person
- Overuse of antibiotics can damage our normal/useful bacteria
- To take antibiotics correctly you should only take them as prescribed and you must not use other peoples or leftover antibiotics

## Action Plan

Ask participants to complete an action plan for this session (found at the back of this session booklet).

Ask participants to either choose one of the action plans from below or to make up their own if they are confident enough.

1. Help to reduce antibiotic resistance by:

- a. Not going to the doctor for coughs, colds, sore throats and flu.
- b. Always return unused antibiotics to the pharmacy.
- c. Ask the pharmacist next time you are ill about what I can take to self care at home.
- d. Not using somebody else's antibiotics.
- e. Signing up to become an antibiotic guardian and making a pledge to reduce antibiotic resistance. (This could be one of the above pledges).

### Acknowledgements

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# Bug Busters

BEAT THE  
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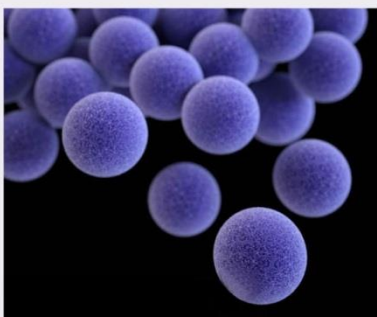
## What are antibiotics?

- Antibiotics are medicines used to kill bacteria or stop them growing.
- Antibiotics DO NOT kill viruses such as coughs or colds.
- Most common infections like sore throats, coughs, colds, ear infection are caused by viruses and will get better by themselves.
- We can help make ourselves better by:
  - ✓ Getting plenty of rest
  - ✓ Drinking fluids
  - ✓ Healthy living



## Antibiotic Resistance

- Some bacteria have learnt how to fight back and have become resistant to antibiotics. These are called antibiotic resistant bacteria.
- The first microbe to fight back and become resistant to antibiotics was Staphylococcus aureus. MRSA (Methicillin Resistant Staphylococcus aureus) is still a serious problem in some hospitals.



MRSA (Methicillin Resistant Staphylococcus aureus)

- Over use of antibiotics has allowed many harmful bacteria to become antibiotic resistant.
- If we have taken antibiotics in the last 6 months our infection is TWICE as likely to be antibiotic resistant.
- Very few new antibiotics are being discovered.
- Antibiotic resistant bacteria are very hard to treat.
- Any antibiotics we take effect our gut bacteria. These bacteria can become resistant to the antibiotics we take.
- Antibiotic resistant bacteria from the gut spread easily from person to person.

## Antibiotics – Do's & Don'ts!

- ✓ DO try to treat yourself better rather than using antibiotics.
- ✓ DO take antibiotics exactly as prescribed.
- ✓ DO only take antibiotics when you really need them.
- ✓ DO ask for treatment for your symptoms rather than antibiotics.
- ✗ DO NOT use other people's antibiotics.
- ✗ DO NOT take antibiotics for viral infections, such as coughs, colds, flu or sore throat.
- ✗ DO NOT take leftover antibiotics from a previous infection.
- ✗ DO NOT share antibiotics.



## Help save our antibiotics!

- ✓ Try the e-Bug antibiotic student games at [www.e-Bug.eu](http://www.e-Bug.eu)
- ✓ Become an Antibiotic Guardian: Choose one simple pledge about how you will make better use of antibiotics and help keep these medicines safe.

Visit [antibioticguardian.com](http://antibioticguardian.com) and make your pledge!



### Contact the e-Bug team

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Visit [www.e-Bug.eu](http://www.e-Bug.eu) to Beat the Bugs!

# Right or Wrong?

Below are the answers to the Antibiotics 'Right or Wrong?' worksheet.

Statement	Right or Wrong	Reason
He was coughing and sneezing everywhere. You would have thought the doctor would have given him antibiotics!	Wrong	Most common infections will get better by themselves through time, bed rest, liquid intake and healthy living. Antibiotics do not work on viruses.
My doctor told me to take my antibiotics for 7 days so that is what I did.	Right	Take antibiotics exactly as given by your doctor or nurse.
When my friend was ill, I gave her my old antibiotics. I like helping my friends.	Wrong	You must not use other people's or any leftover antibiotics.
Antibiotics don't help coughs and colds; you just need bed rest, lots of fluids and eat healthy.	Right	Most common infections will get better by themselves through time, bed rest, liquid intake and healthy living. Antibiotics do not work on viruses.
All drugs are bad for you. I can't see the point in taking antibiotics.	Wrong	Antibiotics can help severe infections such as meningitis, pneumonia or kidney/urine infections.
My doctor gave me antibiotics to take for 7 days but I feel better after 3 days so I'm going to stop taking them.	Wrong	Take antibiotics exactly as given by your doctor or nurse. Even if you feel better after 3 days you might still have the infection.
My headache and flu symptoms are really getting me down. I think I need antibiotics!	Wrong	Most common infections like flu will get better by themselves through time, bed rest, liquid intake and healthy living. Antibiotics do not work on headaches or viruses.
I don't take antibiotics unless I really need them as they might not work in the future.	Right	If you over use antibiotics they might not work when you really need them for a severe infection.

# Right or Wrong?

Discuss: Which of these statements are right or wrong?

1 He was coughing and sneezing everywhere. You would have thought the doctor would have given him antibiotics!

2 My doctor told me to take my antibiotics for 7 days so that is what I did.

3 When my friend was ill, I gave her my old antibiotics. I like helping my friends.

4 Antibiotics don't help coughs and colds; you just need bed rest, lots of fluids and eat healthily.

5 All drugs are bad for you. I can't see the point in taking antibiotics.

6 My doctor gave me antibiotics to take for 7 days but I feel better after 3 days so I'm going to stop taking them.

7 My headache and flu symptoms are really getting me down. I think I need antibiotics!

8 I don't take antibiotics unless I really need them as they might not work in the future.

# Action Plans



**Bug Busters**

My favourite activity was:

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After this session I will (please circle):

1. Return unused antibiotics to the pharmacy
2. Ask the pharmacist next time I am ill about what I can take
3. Never take somebody else's antibiotics
4. Sign up to become an antibiotic guardian

Or write your own:

\_\_\_\_\_

# BEAT THE BUGS

This pack contains an educational hygiene resource for community groups.

This session can be used independently or as part of a six week course and has information, suggested lesson plans and possible activities for you to use in your community groups to help you inspire and inform individuals.

This session was led in collaboration with the Primary Care Unit, Public Health England, and Kingfisher Treasure Seekers, with assistance from the following bodies:  
Cardiff University.

