e-Bug

operated by UK Health Security Agency

e-Bug Training Manual

Early Years

Key Stage 1

Key Stage 2

Key Stage 3

Key Stage 4

Contents

Chapter 1: The e-Bug Programme

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What is the e-Bug programme?

e-Bug is a health education programme that develops evidence-based resources for use in schools, households, and community groups to educate children and young people on microbes, the spread, treatment and prevention of infection, and antibiotic resistance. Our resources are free to download from www.e-Bug.eu.

The programme is operated by the UK Health Security Agency (UKHSA), a government agency set up to protect every member of every community from the impact of health threats. We provide intellectual, scientific, and operational leadership at national and local level, as well as on the global stage, to make the nation's health secure.

Aims of the e-Bug resources

The e-Bug resources are designed to promote behaviour change amongst children and young people so that they adopt behaviours that can prevent or reduce the transmission of infections in their schools and communities. These can be used alongside Health Protection in Education and Childcare Settings Guidance to educate children and young people on the role they can play in breaking the chain of infection.

In addition, the e-Bug resources encourage children and young people to use antimicrobials appropriately to support efforts to respond to antimicrobial resistance (AMR). AMR occurs when microbes (bacteria, viruses, fungi, and parasites) change over time and no longer respond to medicines used to kill them. This makes infections harder to treat. AMR is one of the top threats to our health here in the UK and across the world[1]. If AMR continues to rise, without action to stop it, 10 million people are predicted to die every year from drug resistant infections by 2050[2].

Aims of the e-Bug training

The training programme works through local authorities to ensure schools and educators receive consistent public health messaging, which can then be delivered with 'one voice'. The e-Bug training of trainers programme aims to equip local authorities with everything needed to support schools with advice, guidance, and resources on infection prevention and control, and using antimicrobials appropriately from a single and trusted source.

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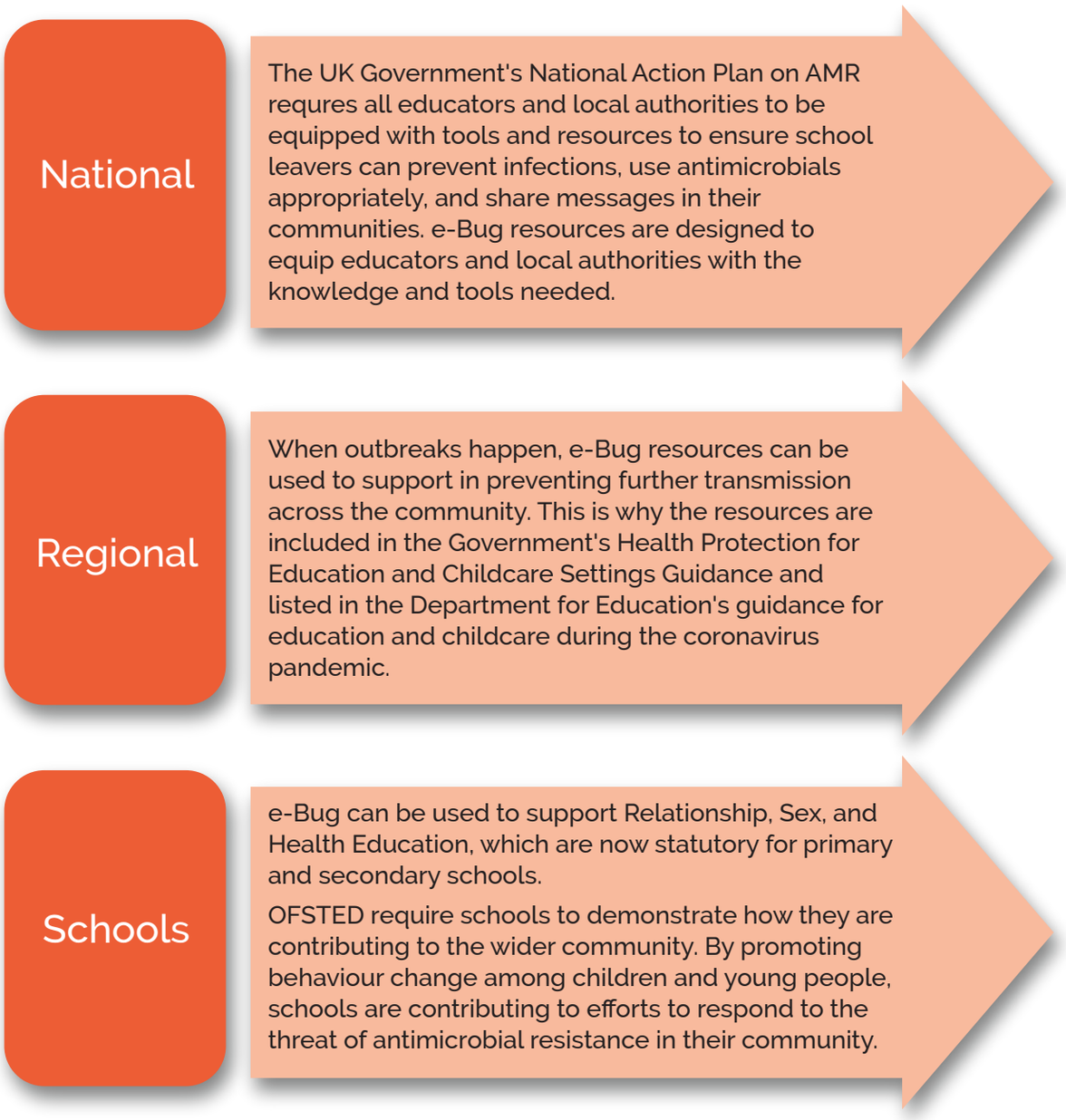
1 Antibiotic resistance: Key facts. World Health Organisation, 2020
2 Tackling drug-resistant infections globally: Final report and recommendations. The review on antimicrobial resistance. O'Neill, J, 2017

Why use the e-Bug resources?

e-Bug resources support several commitments and priorities at national, regional, and local levels:

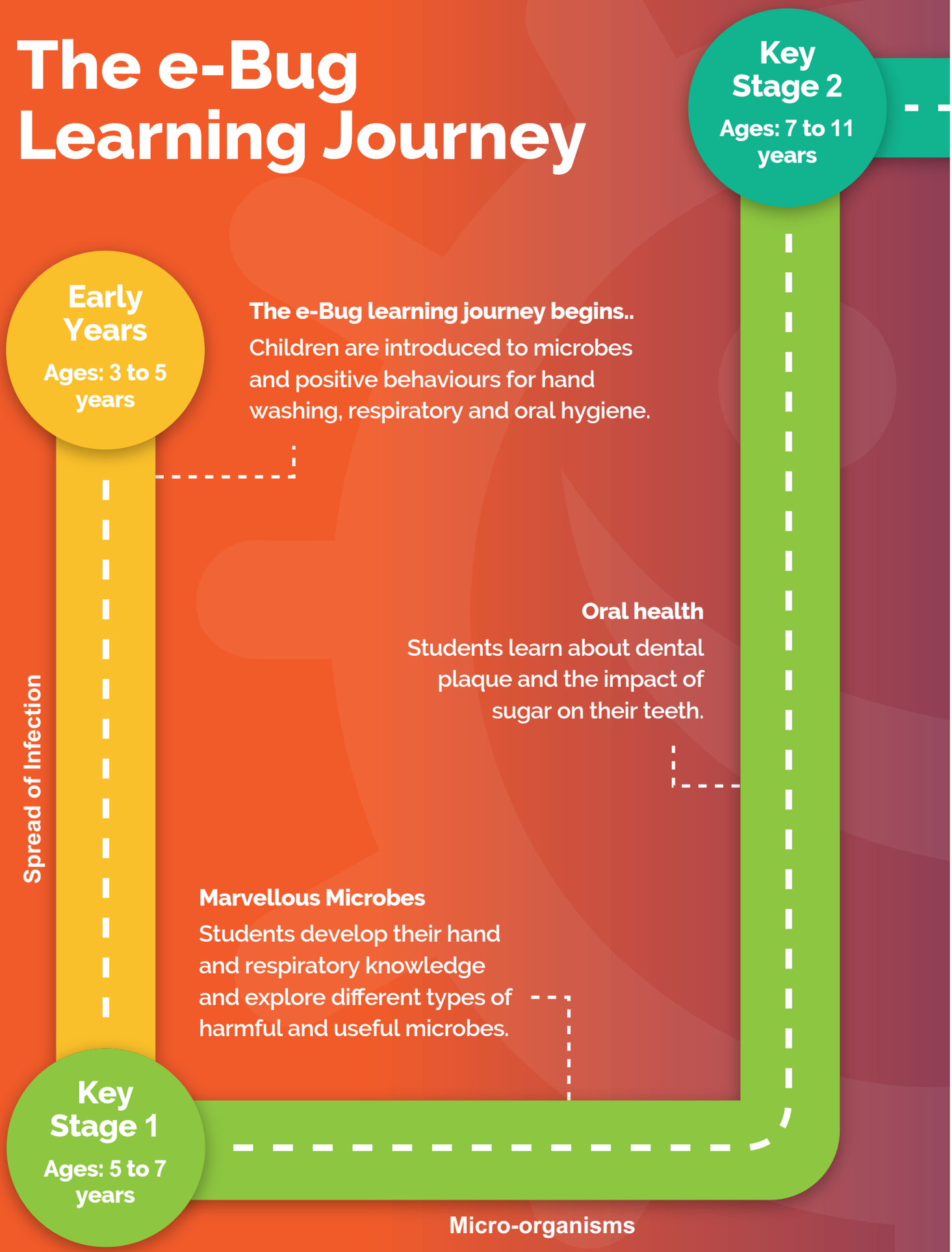


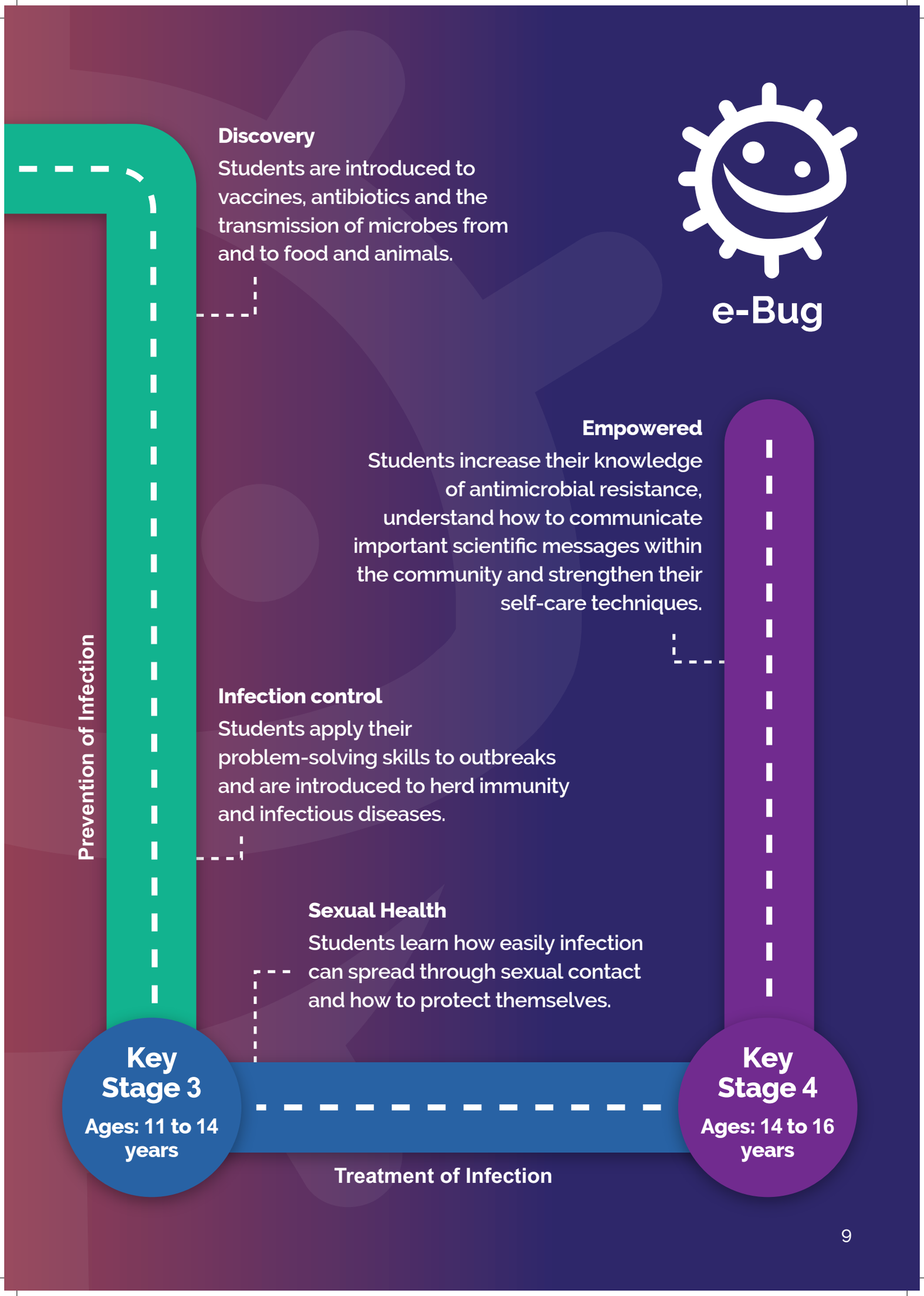
Further, there are benefits for educators and schools for using the e-Bug resources:

1. e-Bug resources are evidence based and grounded in behaviour change methodology. See page 10 for details on how we develop resources
2. The resources follow a learning journey to ensure knowledge is built upon, and that behaviours in children and young people are embedded over time
3. The UK e-Bug lesson plans are accredited by the Association for Science Education (ASE)
4. The topics covered in the lesson plans align with the national curriculum for England. Full curriculum links are noted at the start of each lesson plan

Chapter 2: Overview of the e-Bug Resources

The e-Bug Learning Journey




Discovery
Students are introduced to vaccines, antibiotics and the transmission of microbes from and to food and animals.
e-Bug
Empowered
Students increase their knowledge of antimicrobial resistance, understand how to communicate important scientific messages within the community and strengthen their self-care techniques.
Prevention of Infection
Infection control
Students apply their problem-solving skills to outbreaks and are introduced to herd immunity and infectious diseases.
Sexual Health
Students learn how easily infection can spread through sexual contact and how to protect themselves.
Key Stage 3
Ages: 11 to 14 years
Key Stage 4
Ages: 14 to 16 years
Treatment of Infection

Chapter 2: Overview of the e-Bug Resources

While the e-Bug programme is primarily known for its educational lesson plans, it also produces a series of other resources to provide wrap around messaging that aims to reach every child in every community. These are outlined below.

For educational settings

e-Bug lesson plans

The e-Bug learning journey (see pages eight and nine) demonstrates how resources build knowledge over time, from age 3 up to age 16, ensuring that school leavers understand the 'how', 'why' and 'what' of preventing and treating infections.

The e-Bug lesson plans are designed by teachers and scientists as easy to use, engaging, and fun ways of introducing key concepts around microbes, hygiene, infection, vaccination, and antibiotics. The lesson plans are mapped to the national curriculum and designed for a 50-minute period.

The lesson plans include experiments; extension activities; student handouts; student worksheets and teacher guidance. All the lesson plans are available in accessible, adaptable, and print friendly formats. You can find all the resources, and more, at www.e-Bug.eu.

e-Bug resources cover the following topics

	EY	KS1	KS2	KS3	KS4
Hand Hygiene	■	■	■	■	■
Respiratory Hygiene	■	■	■	■	■
Oral hygiene	■	■	■		
Introduction to Microbes		■	■	■	■
Useful Microbes			■	■	■
Harmful Microbes			■	■	■
Food Hygiene			■	■	■
Animal and Farm Hygiene			■		
Vaccinations			■	■	■
Antibiotics			■	■	■
Sexually Transmitted Infection				■	■
Antimicrobial Resistance					■

Online training

Two online training courses are available for free on the FutureLearn website. These courses are aimed at those working in education settings.

e-Bug Health Educator e-Learning course: A three-week course designed to build confidence of educators using the e-Bug lesson plans.

Week 1: microbes, hand and respiratory hygiene

Week 2: food and oral hygiene

Week 3: antimicrobial resistance

Please note, this course will be taken down for essential updates in the summer of 2022 and launched again at the start of 2023. Sign up to our newsletter to for updates on our online training courses.

Preventing and Managing Infections in Childcare and Pre-school Settings e-Learning course: This two-week course provides learning on how to prevent infection outbreaks in early years settings.

Webinars

The programme run a series of webinars for educators and local authorities, designed to introduce the e-Bug materials, and how they can be used to support learning and promote healthy school environments. They run quarterly and provide substantial time for educators to share learning and tips on using and adapting the materials for their settings. Sign up to our newsletter via our website for details of upcoming webinars, or to access recordings on the e-Bug YouTube channel.

For community settings

Beat the bugs

A six-week programme aimed to support community groups to learn more about infection prevention and control and understand what can be done to prevent AMR. The sessions are commonly incorporated into broader 'life skills' courses for young people learning to live independently. The course includes interactive e-Bug activities, guidance for discussion, and sessions to support participants to consider how they can act upon their learning.

Antibiotic guardian youth badge

A series of activities and learning aimed at extra-curricular, or community groups to complete to earn an Antibiotic Guardian youth badge. This pack is often used by groups such as Scouts and Guides. For more information, please contact e-Bug@ukhsa.gov.uk.

For children and young people

Microbe mayhem

Developed in association with Focus Games, microbe mayhem is a card game that helps familiarise children and young people with microbes and their characteristics. The game features 30 different microbe cards, representing bacteria, fungi, and viruses, with each card highlighting specific microbe attributes. These are available on the e-Bug website.

Debate kits

Developed in collaboration with 'I'm a Scientist', debate kits enable children and young people to consider different views and perceptions towards three key topics: antibiotic use; vaccinations; and food hygiene, and in turn allow students to explore their own views on these key issues. These are available on the e-Bug website.

Resources in development

Information on projects and resources in development will be shared via the e-Bug newsletter and website. Current (July 2022) projects in development include:

Parent and care-givers portal

This section of the website will provide guidance and signposting to parents and caregivers around preventing infections in the home, including simple information on vaccinations, and managing childhood infections.

Games

e-Bug are working with institutions to host a number of evidence-based games designed to further learning around microbes and antibiotics.

Learning and research

One of the underpinning principles of e-Bug is our emphasis on evidence and research. Summaries of our learning as well as links to peer reviewed papers are available at www.e-Bug.eu

Chapter 3: Becoming an e-Bug Trainer

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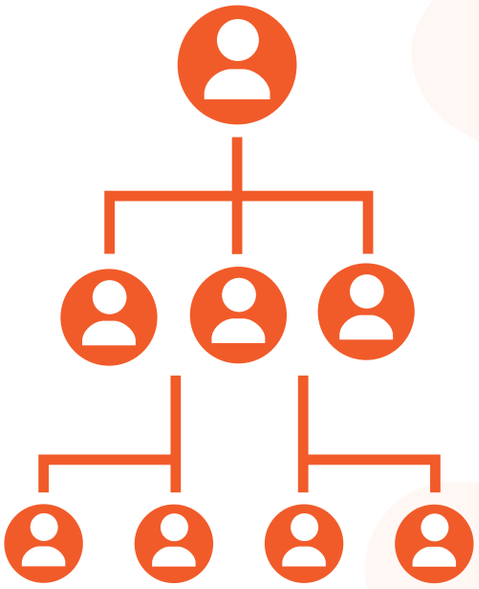
Suggested training structure



e-Bug leads	UKHSA and NHSE provide local authorities with training to gain a strong grasp of the materials on offer and be able to deliver training to others
Trainers	Local authorities are equipped with resources to cascade training to educators, ensuring they receive messaging from 'one voice'
Educators	Educators have the knowledge, confidence, and resources to embed hygiene messages and associated positive behaviours in schools

Local authorities will receive training from e-Bug leads to become trainers. This manual accompanies the training, and outlines how to cascade to educators. The implementation approach is designed to be flexible and can be adapted according to each local authority's needs.

During the training of trainers day, time will be allocated to support action planning. This will include considering:

- Who to target during training roll out, based on your broader strategic priorities, i.e., specific schools, age ranges, or other professionals, such as school nurses.
- What part of the suite of resources to implement, i.e., in person training using the accompanying slides delivered to educators, FutureLearn courses, or you may choose to run your own series of webinars.
- When to roll out training. The UKHSA team can provide data on school preferences around when to deliver training.

What are the benefits of cascading this training?

For local authorities

- A suite of resources that can be used to educate children and young people on how to support the prevention and management of infections in educational settings and their communities
- Ensures materials are available alongside health protection guidance to strengthen implementation
- Enables local authority public health teams to continue to build on the trust and relationships already established with educational settings
- Provides a mechanism to feedback needs from the education sector to health agencies

For educational settings

- Ensures educators have the background knowledge and understanding to action and disseminate learning around infection prevention and control
- Empowers educators to embed key IPC behaviours in children and young people, reducing the risk of infection outbreaks such as norovirus, the flu and any future COVID-19 waves. These behaviours have in turn been shown reduce absenteeism[3,4,5]
- Implementation of the e-Bug resources can be used as an 'intervention' as part of the healthy schools silver level award, and measured against specific outcomes
- Implementation of e-Bug has also been used by schools as evidence of students having a 'positive, tangible contribution to the life of the school and/or wider community' during OFSTED inspections. This is through students adopting healthy behaviours that can protect the broader community from infections, and playing the role of antimicrobial stewards within their communities

Benefits to children and young people, and the community

- They have increased knowledge and understanding of the causes of disease (microbiology); principles and practices of infection prevention and control; and explored how to reduce the impact of antimicrobial resistance
- They can share information learnt through school with their households, encouraging healthy behaviours in the wider community
- They are equipped and prepared to respond to infectious disease outbreaks and antimicrobial resistance

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3 Watson et al., (2021). Effectiveness of behaviour change techniques used in hand hygiene interventions targeting older children – A systematic review. Social Science and Medicine

4 Jess & Dozier, (2020). Increasing handwashing in young children: A brief review. Journal of Applied Behaviour Analysis

5 Rutter et al., (2021). Evaluating children's handwashing in schools: An integrative review of indicative measures and measurement tools. International Journal of Environmental Health Research

e-Bug training accreditations

This training programme is being accredited, to formalise the continued professional development (CPD) of taking part in the training of trainers or educator training programme. There will be two accredited pathways, one for trainers and one for educators, both of which are outlined below.

e-Bug accredited trainer

This will be offered to those taking part in the training of trainers programme and deliver training to educators/ those working with children and young people.

Eligibility criteria:

- Attend a training of trainers workshop
- Deliver at least two training sessions to educators within the academic year
- Encourage at least 80% participants of your training to submit evaluation forms using the e-Bug training evaluation template (see page 76)
- Submit details of any training provided to educators to e-Bug@ukhsa.gov.uk, including the number of educators in attendance, topics covered, and dates of the trainings using the quarterly training report (see page 77)
- Attend annual e-Bug trainers refresher sessions

Approved trainers will:

- Receive an e-Bug CPD certificate
- Receive feedback through your local authority focal point on the training sessions provided from participants/ educators who have filled in the evaluations (see page 77)
- Receive updates regarding new resources and training opportunities on a quarterly basis (if desired)
- Have the opportunity to attend quarterly working group meetings with other trainers seeking to roll out e-Bug

e-Bug educators

At the end of the training session, the trainer will provide a link / QR code to complete an online training evaluation (see point six on page 69); note – this step is very important as it is also part of the eligibility criteria for you, the trainer, to receive your accredited trainer status). During the evaluation survey, participants (educators) will be asked for permission for e-Bug to follow up with them after three to six months. If agreed, they have the opportunity to share how they have cascaded this training to other educators or have used the training in the classroom. At the end of the evaluation survey there will be a link for all educators who attended the training to download an attendance certificate (see page 77).

Eligibility criteria:

- Attend a training workshop, delivered by their local authority
- Evaluate the training session using the e-Bug training evaluation form (see page 67)
- Provide a summary of either: sharing knowledge of e-Bug with other educators, or delivering an e-Bug activity to children and young people within their setting

Approved e-Bug educators will:

- Receive a certificate to provide evidence of CPD
- Receive updates regarding new resources and training opportunities on a quarterly basis (if desired)

Chapter 4: How to Deliver e-Bug Training

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The workshop can be tailored to the needs of the participants and the children and young people they work with. We recommend selecting at least four topics from this chapter to cover on the day of the workshop and explain how you can use the resources to cover other topics when delivering content to children and young people.

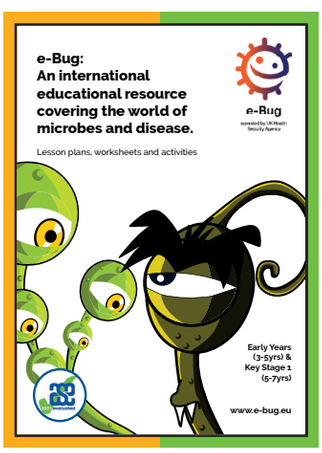
Below, we provide summaries of each topic, outcomes, suggested activities to demonstrate during the training, and required preparation.

Suggested approach for each topic

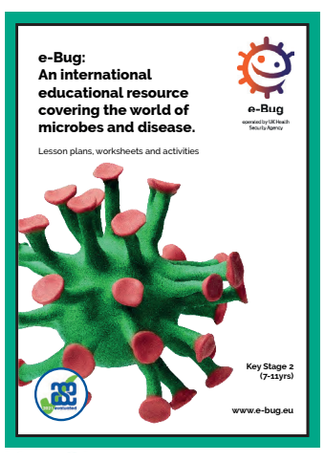
Background information → Introduce lessons → Demonstrate activities → Review resources → Discuss

1. **Background Information**
   Start the session by providing background information on each topic. A summary is provided for each topic below, with further information in the accompanying topic folders, which includes a slide deck and reference list for further reading.

2. **Introduce the lessons**
   Explain the learning journey of children and young people for each topic through the respective lesson plans. Run through the lesson plans with participants and provide time for participants to become familiar with the material. Point out the health and safety information for each experiment. This can either be using lesson plans printed out in advance, or, if participants are using computers, by accessing the material at www.e-Bug.eu.



Early years / Key Stage 1



Key Stage 2

Key Stage 3

Key Stage 4

3. **Demonstrate activities**

   There are step by step instructions and considerations for demonstrating specific topic activities and experiment(s) with further information provided in the topic folders available at www.e-Bug.eu. The infographics which accompany the experiments in the educator lesson plans are also provided here for reference. Please see the teaching resources for health and safety considerations. Information regarding how to demonstrate all the activities is provided below. We recommend choosing activities most relevant to the participants to demonstrate during the training day. You may wish to speak through, or use training videos provided in the accompanying folders to cover the rest. As e-Bug resources and activities are so interactive, we strongly encourage all training sessions to have a practical element, whereby educators can try out the activities for themselves.

4. **Review available resources**

   Once the participants have had a go, or watched the different activities, review the available resources that support the experiments demonstrated, and mention the demonstration videos, additional resources and extension activities for each topic. Encourage educators to check the website regularly for updated content.

5. **Discuss**

   To round off the session and consolidate learning, open the floor to discussion. Information regarding some pre-empted discussion points for each topic are included in the slide decks.

Hand Hygiene

Hand Hygiene

Suggested outcome: To be able to demonstrate to children and young people how infection can spread through our hands and why it is important to use soap and the six steps of handwashing.

Background information

Our hands are naturally covered by useful bacteria –*Staphylococcus* is a common example, however, we can pick up harmful microbes from the things we touch. Hand hygiene is possibly the single most effective way of reducing and preventing the spread of these microbes and any associated infection. Schools and community groups are a relatively crowded and closed environment where microbes can spread easily and rapidly from child to child via direct contact or via surfaces. Some of these microbes can be harmful and cause illnesses. Soap is required to break up the oils on the surface of the hands and should be applied well to all surfaces of the hand, producing a lather, which helps to lift the dirt and microbes. It is important to rinse hands to help remove the dirt and microbes.

Lesson plans

Throughout the learning journey, children and young people will understand...

EYFS	How to wash their hands with soap
KS1	Washing their hands with soap will lift microbes from their hands
KS2	Washing their hands with soap also stops the spread of microbes to others
KS3	Microbes will spread from hand to hand if hand hygiene practices aren't followed, and some of these microbes might be harmful and cause illness
KS4	Pathogens can be transmitted through poor hand and respiratory hygiene, and how hygiene can break the chain of infection

By the end of the learning journey, children and young people should know why hand hygiene is important, how to practice it, and to be able to share these messages with others.

EYFS: Balloon Hands Activity

1 Add marks using washable marker to a balloon

2 Wash the marks off the balloon

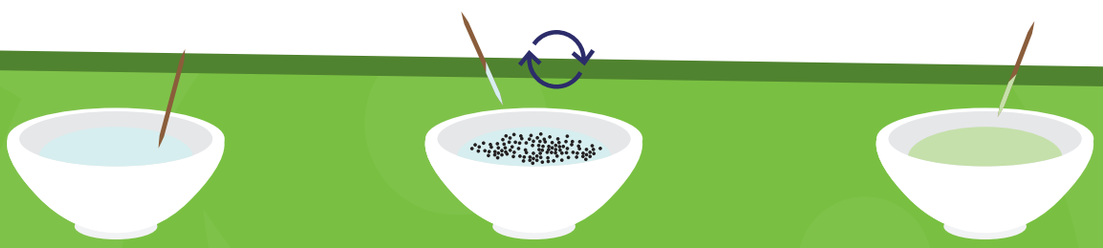
3 What did you see?

KS1: Pepper and Water Experiment

1 Dip the cocktail stick into the plain water

2 Dip the cocktail stick into the pepper water and swirl the stick around

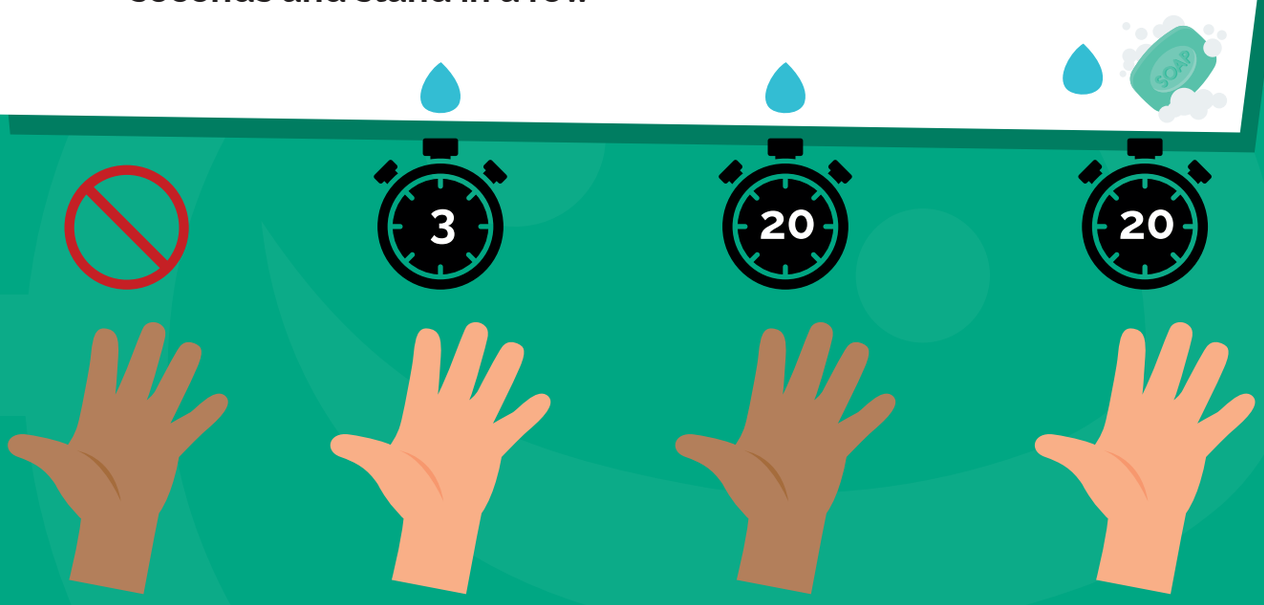
3 Dip the cocktail stick into the washing up liquid then back into the pepper water



KS2: Healthy Hands Experiment

1 Split into 4 groups: no hand washing, washing hands in water for 3 and 20 seconds, washing hands with soap and water for 20 seconds and stand in a row

2 The person in front, cover your hands with UV gel or powder

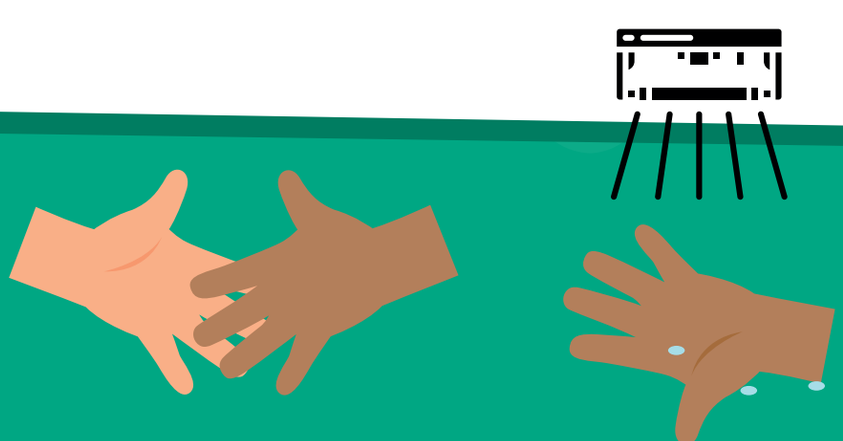


3 Person 1, shake hands with person 2 in your group

4 Person 2, shake hands with person 3 and so on

5 Look at your hands under a UV lamp.

What do you see? How does this compare across groups?



KS3: Hand Shaking Experiment

1 Draw a line on the base on the Petri dish to divide it in half

2 Label one side of the base 'clean' and the other 'dirty'

3 Make a fingerprint on the dirty side

4 Wash your hands then make a fingerprint on the clean side

5 Wait at least 2 days.

What do you see?

KS4: Toilet Paper Experiment

1 Label 2 sterile malt agar plates A and B with your name and the date

2 Wash and dry your hands thoroughly

3 Swab the plate of *Saccharomyces cerevisiae* then wipe it on plate A

4 Cover a new swab with a layer of toilet paper then swab the plate of *Saccharomyces cerevisiae* and wipe it on plate B

5. Incubate for 48 hours. What do you see?

Available training resources

Folder B contains the resources available to support training on hand hygiene:

- Slide deck
- Training video(s)
- Reference list / further reading

Demonstrations

EYFS Balloon Hands Activity

Resources required:

- Balloons or rubber gloves
- Non-permanent marker pens
- Bowl
- Soap

Demonstration instructions:

1. A balloon or glove is used to represent a hand. Ask participants to use a non-permanent marker to draw on the balloon to represent microbes. This can be scribbles, or if you have already covered the topic of microbes, you may wish to encourage participants to consider the properties they have learnt when marking the balloon.
2. Using a bowl of water and soap, ask participants to wash the balloon and see that, as they scrub different parts of the hands, the microbes are removed.
3. Explain that this is a great way to help children to visualise that there are microbes – or germs – on their hands, using soap to remove these, and to practice scrubbing different parts of the hand.

KS1 Soap, Pepper and Water Experiment

Resources required:

- Cocktail or lollipop sticks
- Small bowls of water
- Hand soap

Demonstration instructions:

1. Set up the activity by filling several bowls (one per participant) with water and sprinkle powdered pepper on the surface. The pepper will float to the top.
2. Explain to educators that the surface of the water in the bowls represents our hands. The pepper represents dirt and harmful microbes.
3. Ask participants to dip one end of a cocktail stick (or lollipop stick) into the bowl. Explain that this demonstrates that when we use water alone to wash our hands, this only moves the microbes around, it doesn't remove them.
4. Dip the cocktail sticks into a bowl of hand soap and then plunge back into the pepper water in the centre of the bowl.
5. The pepper (microbes) will move away from the soap, towards the edges of the bowl.
6. Explain that this demonstrates how microbes stick to the oils on hands, which is why we wash our hands with soap. Without soap, the oils are not removed, and microbes may find it easier to remain on our hands.

KS2 Healthy Hands Experiment

Resources required:

- UV lamp
- UV gel bottle
- Soft ball (optional)

Demonstration instructions:

1. Divide the participants into four equal separate groups. Designate groups as: a) No hand washing; b) Wash hands with water for three seconds; c) Wash hand with water for 20 seconds; d) Wash hands with soap and water for 20 seconds.
2. Ask each group to stand in a line, one behind the other and cover the hands of the first person in each group with UV gel. Ask the front person to wash their hands according to the group they are in.
3. Once completed, ask the front person to shake hands with the person behind them. It is important that they shake hands firmly and well. Person two should then shake hands with person three and so on until everyone in the group has shaken hands with the person in front of them.
4. Shine the UV torch over everyone's hands.
5. Those who had washed their hands with soap transferred less of the UV gel than those who had not washed their hands. This can be taken further by looking at where the UV gel remains on their hands, highlighting the importance of the six steps of handwashing.

6. Discuss with the group the different alternatives to this activity, including:
    - Using a ball with UV gel on rather than shaking hands
    - Using eco glitter and moisturiser, or washable paint, rather than UV gel

KS3 Hand Shaking Experiment

In the KS3 lesson plan, we suggest using a Petri dish of nutrient agar or slices of white bread to conduct this experiment. For training purposes, we have outlined using white bread below. Please refer to the KS3 hand hygiene lesson plan and health and safety guidance if you plan to demonstrate with Petri dishes.

Resources required:

- Hand washing facilities
- Pen for labelling
- Two slices of white bread
- Clear plastic freezer bags

Advanced preparation:

1. Label one plastic bag (or Petri dish) clean, and the other dirty.
2. Touch some 'high traffic areas' such as door handles. Then, make a fingerprint or handprint on one slice of bread (or Petri dish) and place this in the bag labelled 'dirty'.
3. Wash and dry your hands thoroughly following the six hand washing steps and repeat step two on the other slice of bread and place this in the bag labelled clean.
4. Seal the plastic bags or secure the Petri dishes with tape and do not open. Leave them in a warm dark place for 48 hours before the training session.

Results:

5. Examine each bag (or Petri dish) and as a group discuss what you can see. Remember not to open the bags or remove the lids from the Petri dishes as this could release fungal spores which could be inhaled and cause respiratory distress.
6. On the dirty slice of the bread (or Petri dish) they should observe a range of different bacterial and fungal colonies; each colony type represents a different bacterial or fungal strain – some natural body flora and some contamination from areas that were touched.
7. On the clean slice of bread (or side of the Petri dish) they should observe a distinct decrease in the number of different types of colonies observed. This is because hand washing has removed many of the organisms 'picked up' through touch. The organisms left growing on the plate are the body's natural flora. These are usually one type of microbe.

KS4 Toilet Paper Experiment

This experiment should be conducted in a (school) lab environment, with support from a laboratory technician. We do not suggest demonstrating this activity, but instead, recommend outlining the concept and key steps so that educators understand the premise.

This experiment uses a nutrient agar plate to grow yeast. The yeast represents faeces and the yeast cultures that grow on each plate demonstrate the microbes left on your hand after visiting the toilet with varying levels of hygiene practices:

Plate A – direct contact with faeces and no hand washing

Plate B – wiping with toilet paper and not washing hands

1. Swab the yeast and wipe this on plate A – this is a control to show the effects of direct contact with faeces.
2. Next, cover the swab in toilet paper and swab the yeast and wipe this on plate B. This would represent using toilet paper and not washing hands.
3. The plates are flipped upside down and incubated for 48 hours. Educators should compare the growth of the yeast on each plate to iterate the effectiveness of good hand hygiene practices in removing microbes from hands at this key moment. There are worksheets to support recording observations and conclusions for this activity.

Review resources

Following the experiments, support participants to review the range of additional teaching resources and activities available. These include:

- Fill in the blanks worksheets
- Hand hygiene quiz
- Stomach bug chain of infection
- Spread of infection on a cruise scenario

If time allows, we recommend providing an opportunity for educators to try out these extension activities, for example, trying out the ‘hand hygiene’ quiz in small groups.

Discussion

To round off the session and consolidate learning, open the floor to discussion. This may take the form of questions and answers, or could be facilitated through asking participants questions such as:

- How do children feel about hand washing?
- How do parents and caregivers feel about hand washing?
- What are the challenges faced around handwashing?

This may provide an opportunity to discuss and address concerns around hygiene anxiety, the resource/logistical barriers to accessing hand washing facilities regularly, or questions regarding the use of soap versus sanitisers. Information regarding some pre-empted discussion points are included in the slide deck of folder B on hand hygiene.

Respiratory Hygiene

Respiratory Hygiene

Suggested outcome: To be able to demonstrate to children and young people why it is important to cover our coughs and sneezes with a tissue, and why washing our hands afterwards is a crucial step to minimise the spread of respiratory infections.

Background information

Colds and flu are amongst the most common illnesses in the classroom and perhaps one of the most contagious. Coughing and sneezing is a way in which our body tries to get rid of any harmful microbes and particles we might inhale to prevent them from getting deeper into our respiratory tract. A sneeze can travel at 100mph through the air and spread microbes several metres. Good respiratory hygiene is important to prevent the spread of these microbes, especially in the approach to the winter cold / flu season each year, and when there is an outbreak of respiratory tract infections.

Lesson plans

Throughout the learning journey, children and young people will understand...

EYFS	That it is important to cover our coughs and sneezes
KS1	What happens when they use a hand or a tissue to cover a sneeze
KS2	Why respiratory hygiene is a key way to break the chain of infection
KS3	How microbes spread through droplet transmission

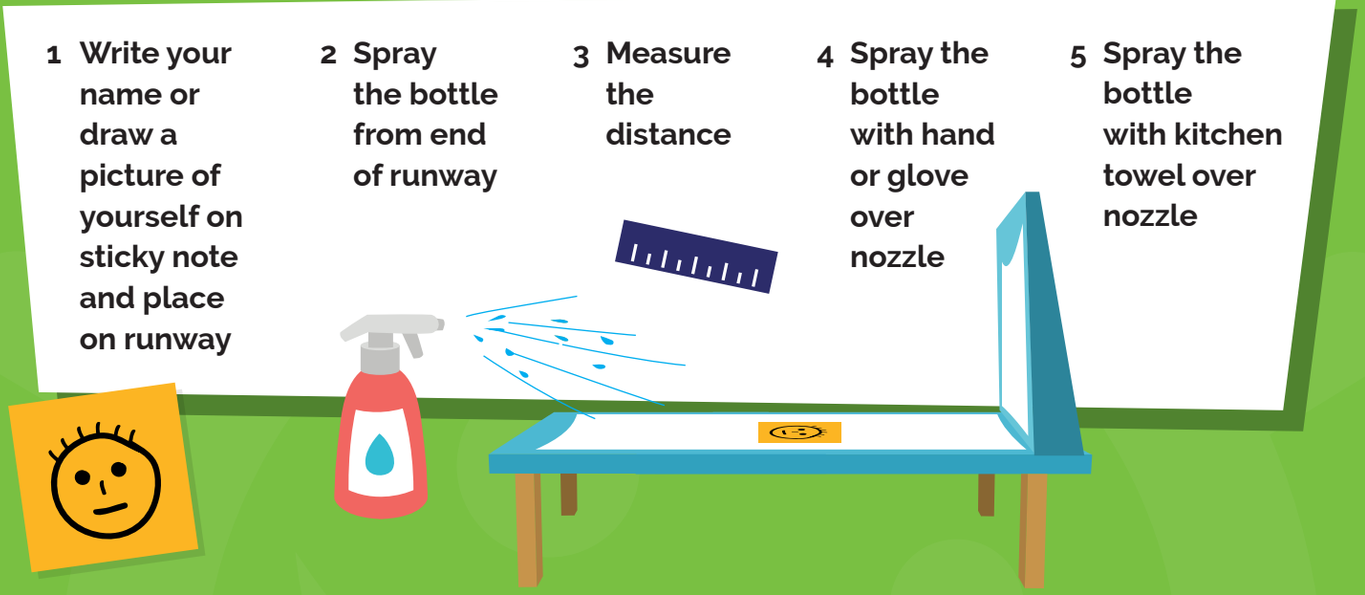
By the end of the learning journey, children and young people should understand how to cover a cough and sneeze, implement the practice of 'Catch it. Bin it. Kill it.' and be able to share this message with others.

EYFS: Paint Sneezes

1. Use a pen to draw around your hand onto a paper plate or a sheet of paper
2. Add drops of coloured water to the drawn hand
3. Blow the water all over the drawn hand
4. What do you see?

KS1/KS2/KS3: Snot Gun Runway

1. Write your name or draw a picture of yourself on sticky note and place on runway
2. Spray the bottle from end of runway
3. Measure the distance
4. Spray the bottle with hand or glove over nozzle
5. Spray the bottle with kitchen towel over nozzle



Available training resources

Folder C contains the resources available to support training on respiratory hygiene:

- Slide deck
- Training video(s)
- Reference list / further reading

Demonstrations

EYFS Paint Sneezes

Resources required:

- Paper/ paper plates
- Pens
- Scissors
- Water
- Food colouring
- Drinking straw

Demonstration instructions:

1. Ask participants to use a pen to draw around their hand onto a sheet of paper and sprinkle a few drops of coloured water onto the cut-out hand.
2. Using a drinking straw, blow the water, representing the germ-filled sneeze, all over the cut-out hand.
3. Discuss why it is important to cover coughs and sneezes and consider alternative options, such as sneezing into a tissue, or your elbow/ sleeve as alternatives that limit the spread of germs.

KS1 , KS2, KS3 Snot Gun Runway

Resources required:

- Pump action spray bottle
- Character mask (optional)
- Long roll of paper such as wallpaper lining or flipchart paper
- Tape measure (2m+ in length)

- Disposable gloves
- Food colouring
- Snot gun recording sheet (consider laminating these if you wish to reuse)

Demonstration instructions:

1. Explain that the main activity for teaching respiratory hygiene from KS1 to KS3 is the recreation of a giant sneeze via the 'snot gun' activity. Adaptations at each stage develop learning around this topic, as outlined on page 31.
2. Arrange the tables to create a runway, and cover with large sheets of paper.
3. To demonstrate the distance a sneeze and the microbes in the sneeze can travel, participants should take turns holding the bottle at the end of the runway and simulate a sneeze by squeezing the trigger once over the paper.
4. Before 'sneezing' (squeezing the trigger) participants should predict how far and wide the sneeze will go. They can use sticky notes to write their name on and place on the 'sneezing runway' where they think the sneeze will land. After sneezing you can discuss the placement of the sticky notes and whose was covered in snot from the sneeze.
5. Explain that when repeating this activity with older children and young people, after 'sneezing', they can measure and record how far and how wide each sneeze spreads and fill this on their results sheet.
6. The next step is to observe what happens when we put our hand over our mouth when we sneeze; the microbes stay on our hands and can spread to anything we touch. One participant should be the 'sneezer' and a second participant should hold the giant or gloved hand about 2 to 5cm away from the spray bottle. Observe that the sneeze did not travel as far, but the microbes are on the sneezer's hand. Discuss the implications of this.
7. Finally, observe what happens when we cover our mouth with a tissue during sneezing. Ask a different participant to be the 'sneezer' and ask another participant to hold the tissue directly in front of the spray nozzle. Observe that when using a tissue, microbes are transferred to the tissue, and some microbes may be transferred onto hands. This is why it is important to put the tissue in a bin after sneezing and then wash hands. This is a key opportunity to emphasise the phrase 'Catch it. Bin it. Kill it.' and to reinforce hand hygiene behaviours.

Review resources

In addition, review the range of additional resources and activities available in the respiratory hygiene lessons. These include:

- Fill in the blanks worksheets
- Respiratory hygiene quiz
- Make your own snot activity
- Snot gun recording worksheet

You may wish to make a jar of snot in advance to bring along to the workshop to demonstrate the volume of snot produced each day (~1.5L). Alternatively, you could provide an opportunity for educators to try out these extension activities, for example, trying out the 'respiratory hygiene' quiz in small groups.

Discussion

To round off the session and consolidate learning, open the floor to discussion. This may take the form of questions and answers, or could be facilitated through asking participants questions such as:

- How do you teach children to cover a sneeze?
- How do parents and caregivers feel about respiratory hygiene?
- What are the barriers to good respiratory hygiene in your school?

This may provide an opportunity to discuss and address concerns around hygiene anxiety, the resource/logistical barriers of good respiratory hygiene within a classroom, including the use of 'snuffle stations' in classroom. Information regarding some pre-empted discussion points are included in the slide deck of folder C, 'Respiratory Hygiene'.

Oral Hygiene

Oral Hygiene

Suggested outcome: To be able to explain to children and young people that sugary food and drinks directly affect our oral health and to demonstrate the benefits of effective tooth-brushing and why this is important.

Background information

Bacteria can grow on teeth, clumping together to form a sticky substance called dental plaque. If plaque is not brushed away regularly or there is a high frequency of sugar in the diet, the bacteria within the plaque can lead to tooth decay (caries). When we eat sugary foods and drinks, bacteria in the plaque can use the sugars to make acid. Over time this can dissolve the outer surface of our teeth (the enamel). As more enamel is dissolved, a hole (cavity) appears. As the decay process continues, the bacteria can reach the nerve and cause toothache.

Dental health is extremely important; over 23% of children in England have tooth decay and it is the main reason for children aged five to nine being admitted to hospital. The good news is that tooth decay can be prevented by limiting the number of times we eat foods and drinks with added sugar, brushing twice a day with fluoride toothpaste and regularly seeing the dentist to check our teeth and gum health.

Lesson plan

Oral hygiene is now included in the PSHE curriculum. Throughout the learning journey, children and young people will...

EYFS	Learn how to correctly brush their teeth using a toothbrush
KS1	Be introduced to the concept of tooth decay and can observe the effect sugar in their diet can have on their tooth enamel
KS2	Explore how a diet high in sugar can affect their oral health and why regular teeth brushing is so important to reduce the build-up of plaque, which can lead to tooth infections

By the end of the learning journey, children and young people should understand how to brush their teeth, why teeth brushing reduces the risk of tooth infections, and the importance of limiting sugary drinks

EYFS: Tooth Brushing Mine

1 Open your toy or puppet's mouth

2 Brush your toy or puppet's teeth in circles

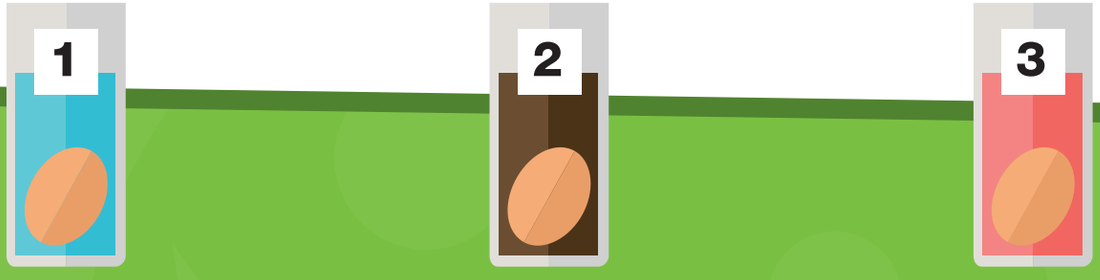
KS1: Eggshell Experiment

1 Label each cup with a number from 1 to 3

2 Place each egg in a different cup

3 Pour one of the liquids in each cup (enough to cover the egg)

4 Wait at **LEAST** one day



KS2: Attack the Plaque

1 Mix water, cornflour and food colouring

2 Paint the outside of a yoghurt pot with the mixture

3 Wait to dry

4 Try to brush the mixture off the yoghurt pots with a toothbrush

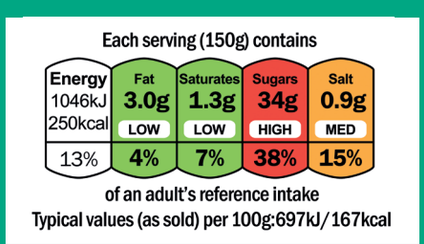
KS2: Sugary Drink Experiment

1 Look at the nutritional information and identify how much sugar is contained in each drink

2 Fill up each bag with the amount of sugar in the drink

3 Make a note of which bag is which drink

4 Ask others if they can identify which drink is which based on the bags



Available training resources

Folder D contains the resources available to support training on oral hygiene:

- Slide deck
- Training video(s)
- Reference list/ further reading

Demonstrations

EYFS Tooth Brushing Mime

Resources required:

- Puppet or soft toy with an open mouth and teeth
- Toothbrush

Demonstration instructions:

1. Explain that this activity uses a soft toy or puppet with an open mouth and teeth to demonstrate correct toothbrushing technique.
2. Iterate the recommended technique is to brush the teeth by moving the toothbrush in small circles on the front and the back of the teeth, and all the way back to the molars for at least two minutes, twice a day.

KS1 Eggshell Experiment

Resources required:

- Eggs (hard boiled)
- Cola; water/ milk; fruit juice (liquids with different sugar contents)
- Three cups
- Pens for labelling

Advanced preparation:

- Hard boil two/ three eggs and carefully remove the shell of each egg as two halves.

Demonstration instructions:

Label three glasses or clear plastic cups one to three and three-quarters fill with the corresponding liquids:

1. Cola or other high sugar carbonated drink
2. Water or milk
3. Fruit juice

1. Explain that you will be using eggshells to represent our teeth.
2. On the day of the training, place half an eggshell into each glass and ensure it is fully submerged in the liquid. Explain to educators that when they conduct this experiment, the eggshells should be left overnight and the effects observed over time.
3. Discuss what will happen to the eggshell if left in the drink overnight? Which liquid will change the eggshell the most? Which liquid will change the eggshell the least? Although you may observe some changes to the eggshell if left for the duration of the training session, iterate that these changes will be more pronounced the longer the eggshell is left in the liquids.
4. Explain to educators that when they repeat this experiment, and the egg is left in the liquid overnight, they should see slight discolouration and dissolving of the eggshell from the cola, an unchanged eggshell from the water (or milk), and a slightly dissolved eggshell from the juice. This demonstrates that high sugar content foods and drinks can damage the enamel on our teeth, and why it is important to brush our teeth twice a day.

KS2 Attack the Plaque

Resources required:

- Yoghurt pots
- Paintbrush
- Bowl
- Teaspoon
- Toothbrush
- Flour
- Cornflour
- Water
- Food colouring

Advanced preparation:

1. In order to demonstrate the effects of trying to remove hardened plaque from our teeth, you will need to prepare one pot for every two to three attendees in advance.
2. Complete steps two and three of the demonstration instructions but allow the pots to dry completely overnight.

Demonstration instructions:

1. Divide the participants into groups of twos or threes.
2. Mix a small amount of water with cornflour, flour, and a drop of food colouring.
3. Ask each group to paint this mixture onto the outside of the yoghurt pots and allow to dry slightly.
4. Now ask each participant to try brushing the cornflour mixture (representing plaque) off the yoghurt pots with a toothbrush.
5. Notice that when the cornflour mixture (representing plaque) dries, it is very difficult to brush off. If we don't brush our teeth twice a day, the plaque can harden and become more difficult to remove.

This experiment can be expanded to include scientific investigation of the effects of not brushing teeth regularly versus every day. Set up three yoghurt pots as below:

1. No cornflour = brush twice a day
2. Wet cornflour = brush once a day
3. Dry cornflour = no brushing (these will need advance preparation and allowed to dry overnight)

A worksheet is provided to support the recording of observations, results, and conclusions.

KS2 Sugary Drink Activity

Resources required:

- Bags of sugar
- A variety of drinks bottles with different sugar contents
- Teaspoons
- Clear freezer bags or plastic cups

Demonstration instructions:

1. Begin by showing participants the array of drinks available and ask them to put them in order as to what they think contains the least amount of sugar to the most amount of sugar. Line them up in order and make a note or take a picture.

2. Divide participants into groups of twos or threes.
3. Provide each group with a different empty drinks bottle, a teaspoon, a bag of sugar, and a clear freezer bag / clear plastic cup.
4. Ask the participants to look at the nutritional information label on their drink and identify how much sugar is contained within each bottle, and to fill their container with the equivalent amount of sugar contained within each drink. Note, one teaspoon is approximately 4 grams, e.g., if a drink contains 54g of sugar, 54 divided by 4 = 13.5tsp.
5. Each group can present their findings (drink name, amount of sugar in grams and number of teaspoons of sugar) and discuss this with the training group.
6. Then line the drinks up in order from what contains the least amount of sugar to what contains the most amount of sugar. Compare this to the group's initial thoughts.
7. Explain to participants that this activity can be used to explore the real sugar content of popular drinks, and improve health literacy. Educators can explain to students that bacteria feed off the sugar, leading to a higher risk of tooth infections.

Review resources

In addition, review the range of additional resources and activities available in the oral hygiene lessons. These include:

- Toothbrushing chart
- Healthy eating true or false quiz
- Healthy food choice fact sheet and worksheet

If time allows, we encourage you to provide an opportunity for educators to try out these extension activities, for example, trying out the 'oral hygiene' quiz in small groups.

Discussion

To round off the session and consolidate learning, open the floor to discussion. This may take the form of questions and answers, or could be facilitated through asking participants questions such as:

- What are the challenges faced around encouraging good oral hygiene?
- Does your setting provide parents or caregivers with any information or support regarding their child's oral hygiene?

This may provide an opportunity to discuss and address concerns around hygiene anxiety, the resource/logistical barriers of good oral hygiene within a classroom, and the roles and relationship between educators and parents/caregivers. Information regarding some pre-empted discussion points are included in the slide deck in folder D, 'Oral hygiene'.

Microbes

Microbes

Suggested outcome: To be able to explain to children and young people that microbes live everywhere, come in different shapes and sizes, and there are useful and harmful microbes.

Background information

Micro-organisms, more commonly known as 'germs', 'bugs' or 'microbes', are tiny living things too small to be seen with the naked eye. They are found almost everywhere on Earth. The three groups of microbes covered in this resource are:

- Viruses are the smallest of the three and often cause illnesses like coughs and colds. They need a 'host' cell to survive and reproduce. Once inside the host cell, they rapidly multiply and destroy the host cell in the process.
- Bacteria are single-celled organisms that can be divided into three main groups by their shapes – cocci (balls), bacilli (rods), and spirals. These shapes can be used to help to identify the type of infection a patient has.
- Fungi are the largest of the three microbes and are multi-cellular organisms (made up of more than one cell). Fungi obtain their food by either decomposing dead organic matter or by living as parasites on a host. Fungi secrete secondary products while feeding that can cause swelling and itching, such as athlete's foot.

It is important to clarify that microbes are not innately 'useful' or 'harmful'. Rather that some microbes can be useful to humans whilst others can be harmful depending on the situation. One of the main ways in which microbes are beneficial is in the food industry. Cheese, bread, yoghurt, chocolate, vinegar, and alcohol are all produced through the growth of microbes.

Some microbes can be harmful to humans and can cause disease. Microbes like these are known as pathogens and each microbe can make us ill in different ways. When harmful bacteria reproduce in our bodies, they can produce harmful substances called toxins which can make us very unwell.

Lesson plan

Throughout the learning journey, children and young people will:

KS1	Be introduced to the topic of microbes, and learn the different characteristics of the main types of microbes, and understand that microbes are found everywhere
KS2	Explore further the different characteristics of microbes, and learn that microbes can be useful and harmful
KS3	Familiarise themselves with a range of microbes that they may have heard of, explore the use of microbes in the food and drinks industry, and learn about some of the infectious diseases caused by harmful microbes
KS4	Explore how useful microbes have been used in industry, and consider what they would do, if they were public health officials, in the case of an infectious disease outbreak

By the end of the learning journey, children and young people should understand that microbes can be useful and harmful to humans, and that harmful microbes can cause disease.

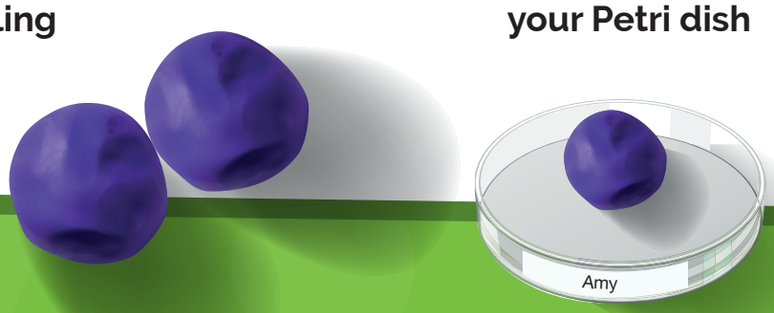
KS1: Make Your Own Microbes

1 **Shape your microbe using modelling clay**

2 **Place into your Petri dish**

3 **Write the name of your microbe on your Petri dish**

4 **Take your Petri dish home**



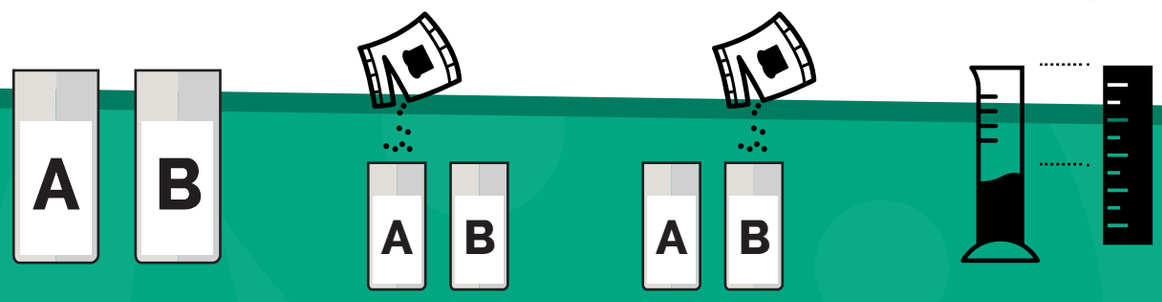
KS2: Yeast Races

1 Label 2 cups A and B. Add 4 teaspoons of flour to each cup

2 Add yeast to cup A and mix

3 Add yeast and sugar to cup B and mix

4 Pour each cup into cylinders and measure the height of the dough



KS2: Mouldy Bread Experiment

1 Place 3 slices of bread into separate sealable bags and label 1 to 3

2 Add water to one bag and put it in a dark place

3 Put the second bag in a bright sunny place

4 Put the third bag in the refrigerator

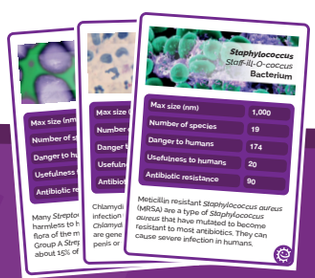
5 Wait at least one week

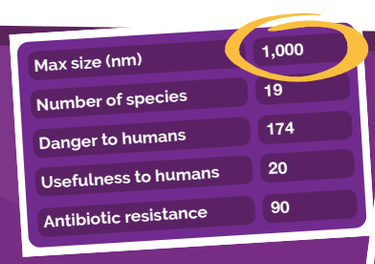
KS3: Yoghurt Experiment

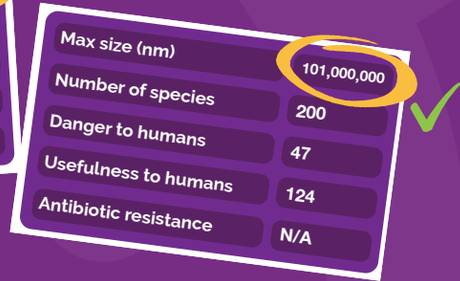
1. Add 2 tablespoons of powdered milk to a pint of whole milk
2. Stir the mixture while heating
3. Cool mixture down
4. Divide mixture into 2 labelled sterile beakers and add live yoghurt to one and sterile yoghurt to the other
5. Heat and stir mixtures
6. Cover top of container and wait at least 9 hours

KS4: Microbe Mayhem Cards

1. Shuffle the cards and deal cards to players
2. Make sure only you can see your cards
3. Take turns to choose which microbe characteristic you would like to battle others with
4. The player with the highest characteristic score wins the round!







Available training resources

Folder E contains the resources available to support training on microbes:

- Slide deck
- Training video(s)
- Reference list/ further reading

Demonstrations

KS1 Make Your Own Microbe

Resources required:

- Modelling clay
- Petri dishes or paper plates
- Laminated sheet of microbe types and examples

Demonstration instructions:

1. This is an ideal activity to set up at the start of the topic, as participants may wish to undertake this whilst listening to the presentation about microbes.
2. Encourage participants to take some modelling clay and to make a microbe in a Petri dish or on a paper plate (can be done individually or in groups).
3. Explain they can make any microbe using the sheets provided – you may wish to laminate these sheets in advance.
4. Point out common microbes that they might have heard of to get them started. You may wish to use toy microbes at this stage if you have any. Explain to participants that this activity can support students to consider the different properties of microbes, including their size, shape, and whether they are useful or harmful.

KS2 Yeast Races

Resources required:

- Yeast
- Flour
- Sugar
- Warm water
- Plastic bowls

- Teaspoon
- Tape and pen for marking and labelling
- Graduated cylinder or tall glasses and ruler

Demonstration instructions:

1. Explain that this activity is used to demonstrate that microbes can be useful.
2. Divide the participants into groups of twos or threes and have each group label two cups A and B. Put four dessert spoons of flour into each cup.
3. Mix a yeast solution as outlined on the yeast packaging, with water and dried yeast. This may vary between different brands. If made too far in advance the yeast will start to ferment, so do not prepare this step in advance.
4. Add the yeast solution to cup A and mix until it is the consistency of a thick milkshake. Do the same for cup B but also add a heaped teaspoon of sugar.
5. Pour 30 ml of the contents into the corresponding A and B graduated cylinder (or tall glass with 30ml marking) and place both cylinders/glasses into a basin of hot water.
6. Explain that the worksheet can be used to record the height of the dough every 5 minutes. However, you may wish to continue to another demonstration or discussion and return to the experiment at a later point in the training to observe the accelerated growth in cylinder B.
7. Explain to participants that cup B has risen at a faster rate due to the sugar. The yeast, which is a fungus, feeds off the sugar and produces gas and acids. The gas makes the mixture rise. Participants can use this to demonstrate to students that microbes can be useful to humans in different ways, including through food production.

KS3/4 Microbe Mayhem Card Game

Resources required:

- Pack of microbe mayhem playing cards. Additional packs of cards can be purchased through e-Bug, or you can download the cards for free from the e-Bug website and laminate them yourself.

Demonstration instructions:

1. Divide the participants into groups of threes and fours. The dealer should shuffle the cards well and deal all the cards face down to each player. Each player holds their cards face up so that they can see the top card only.

2. The player to the dealer's left starts by reading out the name of the microbe on the top card and chooses an item to read (e.g., size 50). In a clockwise direction, the other players' then read out the same item. The player with the highest value wins, taking the other players' top cards and placing them to the bottom of their pile. The winner then reads out the name of the microbe on their next card and selects the item to compare.
3. If two or more players have the same top value, then all the cards are placed in the middle and the same player chooses again from the next card. The winner then takes the cards in the middle as well. The person with all the cards at the end is the winner.
4. Explain that 'nm' on the playing cards stands for nanometres. There are ten million nanometres in a centimetre.

KS3 Yoghurt Making

This experiment is best suited to a lab environment, with support from a laboratory technician, therefore, we do not suggest demonstrating this activity, but instead, outlining the concept and key steps of the experiment so that educators understand the premise and are aware of the range of activities on offer. The key steps with discussion points are outlined below. Encourage educators to see the lesson packs for a complete explanation of the experiment.

1. Add two tablespoons of powdered, skimmed milk to 500ml (one pint) of whole milk. Explain that this helps to thicken the mixture.
2. Bring the mixture to a boil over medium heat for 30 seconds, stirring constantly to kill any unwanted bacteria present. Explain that boiling the milk helps eliminate any unwanted microbes. Later the mixture will be incubated at a temperature favourable for microbial growth and any unwanted organisms introduced at this stage may interfere with the fermentation process, or if found in the yoghurt, may cause food poisoning.
3. Cool the milk to 46-60˚C. Explain that this is important as not cooling the mixture before adding the yoghurt in step four would result in killing the 'yoghurt-making' microbes.
4. Once cooled, add one to two teaspoons of live yoghurt to the mixture. Explain that *Lactobacillus* or *Streptococcus* bacterium which are typically found in live yoghurt will convert the milk mixture to yoghurt through a process called fermentation.

5. Stir both mixtures well using a spoon previously sterilised by standing it in boiling water. Explain that stirring the mixture helps to evenly distribute the *Lactobacillus* through the mixture, and that it is important to use a sterile spoon to prevent contaminating the mixture with unwanted microbes such as mould.
6. Cover each container with aluminium foil. Explain that this helps to prevent contamination with unwanted microbes which may disrupt the fermentation process.
7. Incubate the mixtures at 32-43˚C in a hot water bath for 9-15 hours, or until desired firmness is reached. Explain that this temperature range is ideal for the growth of *Lactobacillus* or *Streptococcus*. Explain that lactic acid fermentation will turn the mixture into live yoghurt.
8. Explain that there are variations of the activities that educators can explore in the lesson packs, for example, what would happen if sterile instead of live yoghurt was added at step four? Or educators may wish to view the live microbes in the yoghurt under a microscope.
9. Explain to participants that this activity can be used to demonstrate the process of fermentation to students: the bacteria added to the milk consume the milk sugars and (through fermentation) convert them into lactic acid, which causes the milk to thicken into yoghurt. Fermentation is a process by which microbes break down complex sugars into simple compounds such as carbon dioxide and alcohol. This process is used in the food industry to create wine, beer, bread, yoghurt, and many more foodstuffs.

Review resources

In addition, review the range of additional resources and activities available in the microbe lessons. These include:

- Microbe profiles and fact sheets
- Microbe mayhem cards
- Microbe fill in the blanks, crossword, wordsearch and quiz

Discussion

To round off the session and consolidate learning, open the floor to discussion. This may take the form of questions and answers, or could be facilitated through asking participants questions such as:

- Should children and young people be scared of all microbes?
- In what subjects can the concept of microbes be introduced?
- How can children and young people be protected from harmful microbes?

Information regarding some pre-empted discussion points are included in the slide deck of folder E, 'Microbes'.

Antibiotics and Antimicrobial Resistance

Antibiotics and Antimicrobial Resistance

Suggested outcome: To be able to explain to children and young people what antibiotics are, and when they should be used. To begin to introduce the notion of antimicrobial resistance, to explain what it is, and the global impact it has on the ability to provide safe healthcare, and what actions and behaviours we can take to prevent it.

Background information:

Antibiotics are medicines used to treat diseases caused by bacteria, such as meningitis, tuberculosis, and pneumonia. They do not harm viruses or fungi. Some antibiotics stop the bacteria reproducing and others kill the bacteria. However, through increased exposure to antibiotics, the bacteria are continually adapting to develop resistance to them. Antibiotic resistant bacteria can be carried by healthy or ill people and can spread to others just as other types of microbes would, for example by shaking hands or touching all types of surfaces on animals, vegetables, or food where bacteria are present. Antibiotic resistance arises in bacteria found in the body, animals, or the environment. Overuse and misuse of antibiotics has been cited as one of the main contributing factors of antibiotic resistance.

The more often a person takes antibiotics, the more likely they are to develop antibiotic resistant bacteria in their body. We can help prevent this from happening through several ways:

1. Antibiotics do not need to be taken for colds and flu or most coughs, sore throats, ear infections, or sinusitis, as these usually get better on their own.
2. It is important to take antibiotics exactly as instructed by a doctor or healthcare professional and complete the entire course.
3. Antibiotics are personal and prescribed to individuals and for a particular infection. They should not be shared or taken for a different illness, as this may harm the individual.
4. When bacteria develop resistance to antibiotics, it reduces our ability to treat any illnesses caused by the bacteria. If we cannot treat bacterial infections, we are likely to see more people becoming ill or dying due to a lack of treatment. This is why the World Health Organisation have identified antimicrobial resistance as one of the top 10 global health threats facing the world. The best way to respond is by preventing microbes, including resistant microbes, from spreading between people through good hygiene practices and taking antimicrobials appropriately.

Lesson plans

Throughout the learning journey, children and young people will...

KS2

Learn that we all have a role to play in preventing infections from spreading, that the immune system will fight off many harmful microbes without the need for antibiotics, and that antibiotics should only be taken when prescribed by a doctor

KS3

Be introduced to the topic of antimicrobial resistance and learn what infections antibiotics can and can't treat

KS4

Learn how different antibiotics can be used to treat different bacterial infections, and that some bacterial infections are becoming increasingly difficult to treat due to the bacteria developing resistance, and that this is creating a global health threat which will impact the provision of basic healthcare

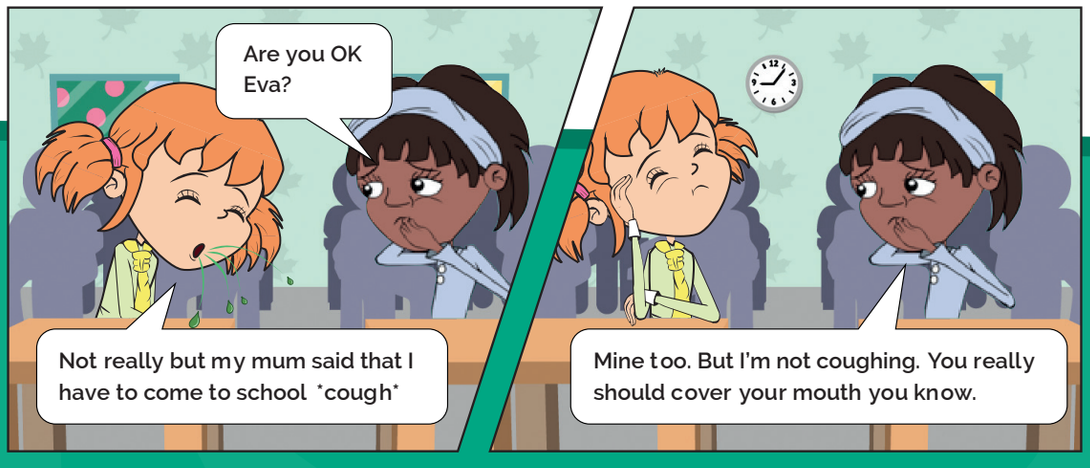
It is hoped they will share the message of the importance of taking antibiotics appropriately within their local communities

By the end of the learning journey, children and young people should understand the threat of antimicrobial resistance and the ways that they can take action to respond to this.

KS2: Comic Strip Scenarios

1 Read through the comic strips

2 Make decisions about antibiotic use for the characters



KS3: AMR Card Game

Antimicrobial Resistance Flash Card Game

1 Place the resistance bacteria card deck and action cards facing down

2 Deal each player 4 blue bacteria cards

3 Take turns to pick up an action card and read it aloud

The player with the most blue bacteria cards wins!

KS4: Antibiotic Agar Experiment

What antibiotics should be prescribed to each patient?

1 Place each agar plate on a sheet of white paper and label the boreholes (one per antibiotic)

2 Carefully and slowly use the pipette to drop antibiotics into the appropriately labelled hole until it is filled

3 Replace the lid on the Petri dish and leave for 5 mins

4 Measure the size of the decolourised zone (if present)

5 Record your findings on the worksheet

Available training resources

Folder F contains the resources available to support training on antibiotics and antimicrobial resistance:

- Slide deck
- How to take antibiotics correctly video
- How antibiotic resistance spreads between bacteria video
- Reference list/ further reading

Demonstrations

KS2 Comic Strip Scenarios

Resources required:

- Comic strips
- Trainer discussion points

Demonstration instructions:

1. Show the participants the comic strip, either on the printed sheets, or on the projector. See that each section of the comic strip has a situation with a decision that needs to be taken.
2. As a group, discuss whether the decision maker in the comic has made the correct choice on the need for antibiotics. The discussion points will support this.

KS3 Antimicrobial Resistance Card Game

Resources required:

- AMR flashcard game. You may wish to laminate this in advance.

Rules of the game:

The aim of the game is to keep as many 'normal bacteria' as possible and to avoid the 'resistant bacteria'.

- 'Normal bacteria' haven't developed resistance and can still be treated with antibiotics.
- For the purpose of this game, 'resistant bacteria' are bacteria that have been exposed to too many antibiotics and have developed resistance – antibiotics won't work on these bacteria.

- The game ends when a player has only 'resistant bacteria' in their hand and this player loses.
- If the instruction is to 'pass a card' the player must pass the relevant bacteria card to their opponent or the person on their left and place the 'action card' to the bottom of the deck.
- If the instruction is to 'return a card' the player must return the relevant bacteria card to the corresponding deck and place the 'action card' to the bottom of the deck.
- If the player isn't holding the relevant bacteria card, they must return the 'action card' to the bottom of the 'action card' deck and miss a go.

How to play:

1. Place the 'resistant bacteria' deck face up on the table, and the 'action cards' face down on the table.
2. Each player starts the game with four 'bacteria' cards in their hand, the rest should be placed in a separate deck on the table facing upwards.
3. The first player to start picks up an 'action card' and reads the instruction aloud to their group.
4. Read the scenario on the action card and follow the actions regarding normal bacteria and/or resistant bacteria cards.
5. The game ends when a player has only 'resistant bacteria' cards in their hand. If three or more people are playing, the winner is the person with the most 'bacteria' cards in their hand at the end.

KS4 Antibiotic Agar Experiment

This experiment is best suited to a lab environment, with support from a laboratory technician, therefore, we do not suggest demonstrating this activity, but instead, highly recommend outlining the concept and key steps of the experiment so that educators understand the premise and are aware of the range of activities on offer. They key steps with discussion points are outlined below.

Resources required:

- Agar experiment worksheet and answers
- Antibiotic sensitivity test result handout

Demonstration instructions:

1. Provide participants with laminated handouts and explain that Eva is working in a hospital lab, and it is her job to grow bacterial cultures from swabs taken from patients at a doctor's surgery. Eva then tests which antibiotics kill the bacteria. The results help the doctor decide what microbe is causing the illness and which antibiotics, if any, to prescribe.
2. Explain that, as a group, you will discuss the bacterial cultures Eva is growing from four of her patients to determine which, if any, antibiotic is required. You may wish to have the antibiotic sensitivity results on the projector screen.
3. Highlight that the red/orange colour indicates microbes growing in the agar; and that this would mean that the antibiotic is ineffective against that infection for that patient. Explain that the yellow colour around the bore hole shows what is known as the zone of inhibition – the area around the antibiotic where microbes cannot grow.
4. Can the group correctly identify each patient from the test results? The answer sheet will support you to guide the group to the correct conclusions.
5. Now you know which antibiotics would work for each patient, the group can determine which is the most appropriate for each infection. You can do this by measuring the diameter of the zone of inhibition (i.e., the yellow circle indicating no growth). The largest inhibition zone is the recommended antibiotic. Again, the answer sheet will guide you through this, and the conclusions will support you with the explanation of why each antibiotic was most appropriate.
6. Explain that this activity can be used to highlight to students that specific antibiotics only work on specific bacteria. This is why it is important to only take the antibiotics prescribed by a health care professional, and never to share with others.

Review resources

Following the experiments, support participants to review the range of additional teaching resources and activities available in the antibiotics and antimicrobial resistance lessons. These include:

- Antibiotic debate kit
- Antibiotic flashcards
- Antibiotic quizzes
- Antibiotic misconception fact sheet

Discussion

To round off the session and consolidate learning, open the floor to discussion. This may take the form of questions and answers, or could be facilitated through asking participants questions such as:

- What impact could antimicrobial resistance have on children and young people in our schools?
- What role do adults providing care and education to children and young people have in responding to antimicrobial resistance?

Information regarding some pre-empted discussion points are included in the slide deck of folder F, 'Antibiotics and Antimicrobial Resistance'.

Depending on your audience (those working with primary or secondary school aged children), you may wish to discuss the scenarios from the comic strip or antibiotic right or wrong quiz, if not already done so, to iterate the importance of appropriate antibiotic consumption.

Vaccinations

Vaccinations

Suggested outcome: To be able to demonstrate to children and young people how vaccination can prevent the spread of harmful diseases.

Background information

Our immune system generally fights any harmful microbes that may enter our bodies. Another means of helping our immune system is through vaccinations. It is important to highlight vaccines are used to prevent not treat infection. All vaccines contain ingredients that help your immune system make antibodies (proteins that fight off infection and disease), although different vaccines do this in different ways.

- Some vaccines contain weak or inactive versions of the same microbes that make us ill.
- Some vaccines are made from organisms which are similar to, but not exactly, the microbes that make us ill.
- Some vaccines, contain material from the virus (mRNA) that causes the disease and gives our cells instructions on how to make a harmless protein that is unique to the virus. After our cells make copies of the protein, they destroy the genetic material from the vaccine.

When the vaccine enters the body, the immune system detects it and attacks it as if harmful microbes were attacking. White blood cells, a part of our immune system, create lots of antibodies to attach to specific markers on the surface of the vaccine organisms, called antigens. It takes our immune system around two weeks to learn about the vaccine organisms, therefore, it is possible that a person could be infected with the microbe just before or just after vaccination and then get sick because the vaccine did not have enough time to provide protection. While our bodies are learning about the vaccine organism, we might feel a little tired. This is because the immune system is working hard to kill or eliminate the vaccine organisms: once done so, the immune system remembers how to combat those microbes before it has a chance to make you ill. This means you develop immunity against diseases.

In some cases, the immune system needs reminding again, and therefore some vaccinations require booster jabs. Some microbes, like the flu, are tricky. They evolve very quickly, changing their markers/antigens. This means that the immune system can't remember how to fight them. For this reason, we have annual flu vaccinations.

Herd immunity is a type of immunity which occurs when the vaccination or infection of a portion of a population (or herd) provides protection to unvaccinated individuals. If enough of a population is vaccinated, unvaccinated individuals are less likely to encounter the disease due to its decreased occurrence in the population. Vaccinations are one of the most effective methods to prevent disease and have helped to lower mortality associated with infectious diseases worldwide.

Lesson plans

Throughout the learning journey, children and young people will...

KS2	Learn the history behind vaccinations, and how the first vaccine was discovered
KS3	Learn how vaccinations work and the impact vaccines can have on preventing infections from spreading across the community
KS4	Explore in more detail how vaccinations can help individuals to develop immunity against certain diseases or to fight off the infection, and learn how to respond to common vaccine misconceptions and debates

By the end of the learning journey, children and young people should understand what vaccinations are, and how vaccinations protect society from certain infections. They will be equipped with the knowledge and understanding to be able to challenge common misconceptions and share these messages with their communities.

KS2: Historic Heroes

1 **Read the story of Edward Jenner**

2 **Learn how Jenner created the first vaccine**

3 **Test your understanding by filling in the blanks and answering the questions**

KS3: Herd Immunity Simulation

1 Make sure everyone has a red, white and blue card. For every 10 students, give 3 an additional yellow card, and 7 a purple card.

2 Choose a student in the middle of the room and ask them to raise their red card.

5 Anyone with a red card should touch someone else close to them. If they have a yellow card card they do nothing. If they have a purple card, they hold up a red card

4 Once a student with a red card has infected 2 people, swap from a red to blue card.

5 Once a student with a blue card has infected 2 people, swap from a blue to white card. They cannot be infected again.

6 How quickly did the disease spread?

KS4: Vaccination Debate Kits

1 Break into a maximum of 8 groups. Your teacher will assign each group a character card.

2 Choose one person from your group to read aloud the character's opinions to the rest of the class

3 As a class, discuss the opinions of each of the characters

4 Now, choose a person from your group to read aloud the fact on the character cards

5 Discuss as a class. Have your views changed?

Available training resources

Folder G contains the resources available to support training on vaccines:

- Slide deck
- Types of immunity video
- Immune response video
- How do vaccines work video
- Reference list/ further reading
- Vaccine misconceptions reference sheet

Demonstrations

KS2 Historic Heroes

Resources required:

- Historic heroes story and quiz sheet

Demonstration instructions:

1. Provide participants with the story of Edward Jenner and how he created the first vaccine.
2. Participants can test their knowledge of how vaccines were discovered by completing their quiz either individually or as a group.
3. Explain to participants that this activity eases children and young people into the topic of vaccines through learning about the history and discovery of vaccinations.

KS3 Herd Immunity Simulation

This activity will simulate an infection outbreak to see how vaccines are used to prevent the spread of infections and discover the significance of herd immunity. We recommend running through the game with participants at the training so that educators become familiar with the process.

Resources required:

- Herd immunity simulation cards (you may wish to laminate these in advance)

How to play:

1. Give everyone a red 'infected' card, blue 'recovering but still infectious' card; and white 'immune' card.
2. For every ten people, give seven of them the purple 'susceptible' card, and the other three a yellow 'vaccinated' card.
3. Select a person in the middle of the room to hold up their red card. Explain that they are now infected by a disease. Ask them to touch two people in their vicinity.
    a. If the person has a purple card, this person is now infected and must hold up a red card.
    b. If the person was dealt a yellow vaccinated card, they should display their yellow vaccinated card and will not transmit the infection onto anyone else.
4. Once a person with a red card has touched two people, they should switch to their blue card and touch two more people. Again,
    a. If the person has a purple card, this person is now infected and must hold up a red card.
    b. If the person was dealt a vaccinated card, they should display their yellow vaccinated card and will not transmit the infection onto anyone else.
5. Once a blue card holder has touched two people, they can now switch to the white 'immune' card, and do not need to take any further action.
6. The game ends when everyone in the group is either holding a yellow or a white card. Discuss with the group:
    a. What difference did the people with yellow cards make to how quickly the disease spread?
    b. What would have happened if the disease had caused severe illness? How many people would have been ill?
7. Now repeat the game. This time, for every ten people, give three of them the purple 'susceptible' card, and the other seven a yellow 'vaccinated' card. You can change the ratios to provide different scenarios.
8. Note the downward trend in infection transmission as more people become vaccinated. It may be beneficial at this point to explain the term 'herd immunity'. Herd Immunity is a type of immunity which occurs when the vaccination or infection of a portion of a population provides protection to unprotected individuals. However, herd immunity caused through infection can have serious consequences for the population such as illness and long-term effects.
9. After repeating the game using different scenarios, ask the group to discuss the differences between the scenarios and how it demonstrates the importance of vaccination to break the transmission of diseases in the community.

KS4 Vaccination Debate Kits

Developed in collaboration with 'I'm a Scientist', the vaccine debate kit facilitates a structured practice debate about a controversial topic: vaccinations. This will support students to discuss the views and opinions of vaccinations from eight different characters from modern day society.

Resources required:

- Vaccination debate kit

Demonstration instructions:

1. Divide the group into a maximum of eight groups, or as many characters as you wish to cover and assign each group a character.
2. Work through each round of the debates as instructed and encourage consideration of their opinions. The structure demonstrates how to build a discussion and reinforce their opinions with facts. Detailed notes are included in the kit to help carry out the activity effectively.
3. Explain to participants that the opinions of the characters will likely resonate with those of either young people or their parents, carers, or close community. Educators can use the debate kit to encourage critical thinking in their students, and use the facts presented to consider their own opinions on vaccinations.

Review resources

In addition, review the range of additional resources and activities available in the vaccination lesson plans. These include:

- World map vaccination activity
- Immune system worksheet

If time allows, we encourage you to provide an opportunity for educators to try out these extension activities, for example, trying out the 'world map activity' in small groups.

Discussion

To round off the session and consolidate learning, open the floor to discussion. This may take the form of questions and answers, or could be facilitated through asking participants questions such as:

- What considerations are needed when discussing topics such as vaccinations and how can these be addressed?
- Are there any common misconceptions about vaccines you come across in your setting?

Information regarding some pre-empted discussion points are included in the slide deck of folder G Vaccinations.

Sexually Transmitted Infections

Sexually Transmitted Infections

Suggested outcome: To be able to explain to children and young people what sexually transmitted infections are and how to prevent the spread of these.

Background information:

Sexually transmitted infections (STIs) are contracted by having close sexual contact with someone who is already infected with an STI. Some STIs can be treated and cured with antibiotics whereas others cannot. Many symptoms of incurable STIs can be treated to make them easier to live with. There are over 25 different STIs and these can be caused by bacteria or viruses. Not all STIs have immediate or obvious symptoms, and many of those who have an STI and transmit it to others do not know they are infected.

Bacterial STIs are caused when bacteria are spread through vaginal, oral, or anal sexual contact with an infected person. These infections include chlamydia, gonorrhoea and syphilis and are generally cured through antibiotic therapy.

Viral infections can be spread via sexual contact but can also be spread through direct contact with infected skin or bodily fluids such as blood, semen, or saliva from an infected person entering the bloodstream of an uninfected person. Viral infections include genital warts, hepatitis B, herpes, and HIV. HIV is treatable, but not curable.

Although most STIs are generally transmitted through sexual encounters, some of these infections can be transmitted in ways other than sexual contact. For example, hepatitis B, C, and HIV can be spread to others by sharing needles and syringes or transferred from mother to child unborn baby during pregnancy, childbirth, and breastfeeding. It is important to note that an HIV positive person who is on treatment and their viral load is undetectable cannot transmit HIV to another person.

Lesson plans:

Throughout the learning journey, young people will...

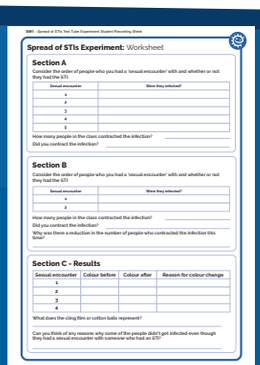
KS3	Learn how easy it is for STIs to be transmitted from person to person, and the importance of barrier methods of contraception to prevent transmission
KS4	Learn about some of the misconceptions around STIs, and how to negotiate safer sex to prevent STI transmission

KS3: Test Tube Experiment

1 Pass liquid filled test tubes around, one of them will contain starch

2 Mix the fluids from your test tube with 5 other people

3 Find out who has the test tube with starch (STI) by testing everyone with iodine



SW1 - Spread of STIs Test Tube Experiment Student Recording Sheet

Spread of STIs Experiment: Worksheet

Section A

Consider the order of people who you had a 'sexual encounter' with and whether or not they had the STI.

Sexual encounter	Were they infected?
x	
1	
2	
3	
4	
5	

How many people in the class contracted the infection? _____

Did you contract the infection? _____

Section B

Consider the order of people who you had a 'sexual encounter' with and whether or not they had the STI.

Sexual encounter	Were they infected?
x	
2	

How many people in the class contracted the infection? _____

Did you contract the infection? _____

Why was there a reduction in the number of people who contracted the infection this time? _____

Section C - Results

Sexual encounter	Colour before	Colour after	Reason for colour change
1			
2			
3			
4			

What does the cling film or cotton balls represent? _____

Can you think of any reasons why some of the people didn't get infected even though they had a sexual encounter with someone who had an STI? _____

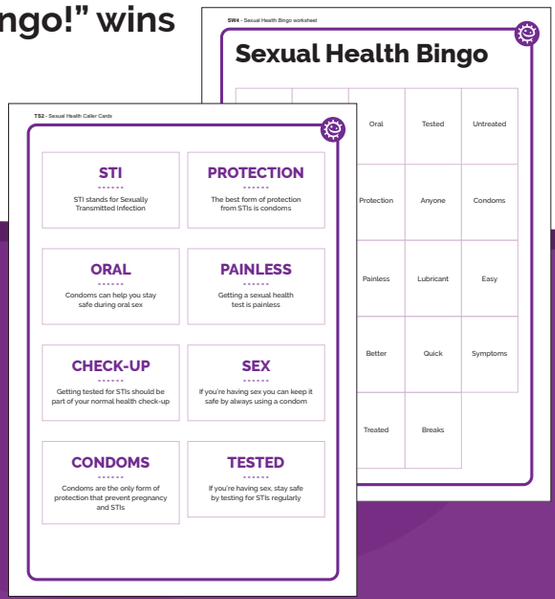
KS4: STI Bingo!

1 Give each player a sexual health bingo playing card (SW4)

2 Draw sexual health bingo caller cards from a hat one at a time

3 Read aloud the bingo call from the caller card and the associated health message

4 The first person to cross of a complete horizontal, vertical or diagonal row and call out "Bingo!" wins the game



SW4 - Sexual Health Bingo worksheet

Sexual Health Bingo

		Oral	Tested	Untreated
		Protection	Anyone	Condoms
		Painless	Lubricant	Easy
		Better	Quick	Symptoms
		Treated	Breaks	

TS2 - Sexual Health Caller Cards

STI STI stands for Sexually Transmitted Infection	**PROTECTION** The best form of protection from STIs is condoms
ORAL Condoms can help you stay safe during oral sex	**PAINLESS** Getting a sexual health test is painless
CHECK-UP Getting tested for STIs should be part of your normal health check-up	**SEX** If you're having sex you can keep it safe by always using a condom
CONDOMS Condoms are the only form of protection that prevent pregnancy and STIs	**TESTED** If you're having sex, stay safe by testing for STIs regularly

By the end of the learning journey, children and young people will understand how to protect themselves and others from STIs and the steps they can take to access treatment where needed

Available training resources

Folder H contains the resources available to support training on STIs:

- Slide deck
- Training video(s)
- Reference list/ further reading
- STI misconceptions reference sheet

Demonstrations

KS3 Test Tube Experiment

Resources required:

- Test tubes
- One pint of milk
- Starch (this can be bought at a supermarket)
- Iodine and pipette
- Glove (as, when pipetting the iodine, it may stain your hands)
- Cling film or cotton wool

Advanced preparation:

1. Fill to three quarters level each test tube with milk or water.
2. In one test tube, stir in a teaspoon of starch – make sure to keep track of which test tube this is.

Note: This works best when the test tubes are filled with milk as this will disguise the starch, however, you can use water for the demonstration instead.

Experiment:

1. Explain to the group that they will be simulating sexual contact by mixing fluids in the two test tubes.
2. Explain that you have put starch into one test tube to represent an STI and when doing this with students, you should not let them know you have done this.

3. Give selected participants a test tube each, keeping track of who has the starch-filled test tube.
4. Ask each participant to mix fluids with three others (for smaller groups reduce exchanges to one or two).
5. Once done, explain to participants that it should be possible to see how far the starch, representing an STI has spread by using iodine. Add a drop of iodine to each test tube. If a test tube turns black, it means the test tube was 'contaminated' with starch.
6. At this stage, explain to participants that the demonstration shows how an STI can unknowingly spread around a group from a single infection.
7. You may wish to repeat the demonstration, this time covering most test tubes with cling film or cotton wool to represent a condom. Alternatively, you could talk through this next step for participants.
8. The repeated experiment, using cling film or cotton wool, can be used by educators to highlight to students the importance of using condoms to protect against STIs.
9. Explain to participants that this activity demonstrates how easily an STI can travel without detection and that young people should be encouraged to use barrier contraception such as condoms to reduce the risk of contracting or spreading sexually transmitted infections.

KS4 STI Bingo

Resources required:

- STI bingo card and caller cards

Demonstration instructions:

This is a reinvention of the classic bingo game using sexual health terms instead of numbers.

Participants are introduced to sexual health concepts relating to safer sex, STIs and sexual health testing.

1. Give each player a sexual health bingo playing card.
2. Draw sexual health bingo caller cards from a hat one at a time and read aloud the bingo call from the caller card and the associated health message.
3. The first person to cross off a complete horizontal, vertical or diagonal row and call out "Bingo!" wins the game.
4. Explain to participants that they can use this game to familiarise students with the language around sexual health, enabling students to then explore these topics in more depth.

Review resources:

In addition, review the range of additional resources and activities available in the STI lessons. These include:

- If chlamydia could talk worksheet
- STI quiz

If time allows, we encourage you to provide an opportunity for educators to try out these extension activities, for example, trying out the STI quiz in small groups.

Discussion:

There are several topics you may wish to discuss with the group either throughout the demonstrations or at the end of the session, including common misconceptions regarding sexually transmitted infections:

- Amongst teachers/colleagues?
- Amongst parents and caregivers?
- Amongst young people?

What services are available for young people in your area where they can seek confidential advice about their sexual health? What barriers might they face to accessing these? You may wish to signpost educators to any service for children and young people in your area.

Information regarding some pre-empted discussion points are included in the slide deck of folder H STIs.

Chapter 5: Accompanying Training Material

Chapter 5: Accompanying Training Material

Please visit the training section of the of the website, www.e-Bug.eu, to download the training resources and accompanying topic folders. Each folder contains various resources and documents.

Folder A: Introduction to e-Bug

The e-Bug introductory slide deck is a main part of the training, used before running through key topics. The slides are designed to introduce the e-Bug resources to participants, explains why they are important resources for schools and community groups to use, and how they can be accessed. There are accompanying notes for the slides to assist trainers during workshop delivery.

It is good practice to familiarise yourself with the website (www.e-Bug.eu) prior to this, and to check that the content remains up to date.

Folders B – H: Topic specific content

e-Bug provides training resources for seven key IPC topics. We recommend that you do not try to cover all of these topics within a single training session and instead, select topics based on the needs of your attendees.

Core topics

There are four key e-Bug topics, and we recommend covering at least two of these in your training session:

- Microbes
- Hand hygiene
- Respiratory hygiene
- Antibiotics

Optional topics

There are also three optional topics you may wish to include in your session depending on the audience and training needs. These include:

- Oral hygiene
- Vaccinations
- Sexually transmitted infections

Within each topic folder you will find three types of documents: slide decks; demonstration videos (if available); and supporting research.

Slide deck

These will guide the structure of the training but are designed to be adapted to suit your own needs. There are notes included for each slide – you are welcome to use these or adapt according to your audience. The slide decks are typically structured to include:

- Background information on the topic, e.g., what are viruses, bacteria, and fungi (microbes)
- Activity slides that will prompt you to demonstrate the key activities associated with each of the topics (according to age group)
- Discussion points that will allow you to chat through the main barriers to improving knowledge and behaviour around key topics

Training videos

- For some topics we have training videos to support demonstration of the activities or experiments

Supporting research

- Reference list for key sources cited within the slide decks
- Please check the website as we will continue to update our teaching resources in-line with recent studies and findings

Folder I: Administration

1. Promotional flyer (recommended)

A template for a flyer is included. This can be edited to promote your workshop.

2. Agenda (recommended)

An example agenda is provided with approximate timings for the various parts of the workshops, including the introduction, activity demonstrations, and completion of pre- and post-questionnaires. This can be modified depending on the facility, timings, and topics you plan to cover.

3. Resource checklist (recommended)

The resource checklist enables you to ensure you have all of the resources required for the demonstrations, based on the topics you are covering.

4. Attendance sheet (required for approved trainer certification)

The e-Bug team will be reaching out to local authorities on a quarterly basis to determine the number of educators trained to use e-Bug.

5. Action plan (recommended)

Action planning is an evidenced based approach that will allow attendees to transfer learning into action. It will take 15-20 minutes and allow participants to consider how they want to cascade or use the training within their school or community setting. Reviewing action plans, or following up on these, can provide a useful opportunity to identify further areas of support. Please contact e-Bug@ukhsa.gov.uk if you identify gaps that you think UKHSA can support with.

6. e-Bug training evaluation (required for approved trainer certification)

We strongly recommend requesting all participants (educators) to complete the online evaluation. This can be done at the end of the session by displaying the QR code and web address on the last slide of the training but should also be emailed to participants within one to four days of the workshop.

This will ask questions on the utility of the training, views on the resources, and how e-Bug can improve its offer.

These evaluations will also be used as evidence to receive accredited training status and will be required from at least two training sessions to acquire accreditation. For more details on accreditations please see page 16.

The evaluation form will also ask permission for e-Bug to follow-up with participants (educators) three to six months after the training course to ask how they have utilised the training in their settings and will enable educators to apply for accredited educator status (see page 17).

The e-Bug team will collate these results on a quarterly basis and feed summary reports on the training sessions you have delivered to each local authority at the end of January, April, July, October.

7. Pre/Post training questionnaire (optional)

The pre/post training questionnaires are to help you understand the extent to which training may have improved the knowledge and confidence to teach the various topics covered, compared to baseline. This will help you evaluate the effectiveness of training. This is a two-page questionnaire to be completed before the workshop starts and after it is completed. This questionnaire would need to be modified based on the modules you intend to focus on (folder I). e-Bug will not monitor this data, and it is not necessary to use these to obtain an approved trainer certification.

8. Quarterly report template (required for approved trainer accreditation)

This is a very brief reporting template that requests headline findings from each training provided by the local authority. This will enable e-Bug to understand the extent to which training is reaching different areas of the country.

e-Bug will send an email prompt on a quarterly basis (end of March, June, September, December) to request these headline results. Please follow the instructions on the email provided.

9. Attendance certificate

At the end of the evaluation survey (see page 76), all attendees will find a link to download an attendance certificate. Formal certification of CPD will be provided to those who receive accredited training or educator status after submission of evidence (see page 16).

Chapter 6: Cascading the Training

Chapter 6: Cascading the Training

Considerations for e-Bug training sessions

Length of training

Training usually lasts 2.5 to 3 hours, depending on how many topics you choose to cover. This includes an introduction to the e-Bug programme, resources, and website, pre-and-post training questionnaires, time for discussion and evaluation.

We recommend covering at least two of the four key e-Bug activities: microbes; hand hygiene; respiratory hygiene; and antibiotic awareness, allowing at least 15 minutes for practical demonstrations of each.

Depending on the needs of the group, other topics can also be covered, e.g., oral hygiene, vaccinations, and for teaching older age groups: sexually transmitted infections.

Venue and facilities

You will need a venue for the training to take place. This can be a room with enough space for the expected participants. In previous training, cabaret or horseshoe style seating has been most conducive to engagement.

You will need:

- nearby toilets / sinks – some activities require access to water
- facilities to project a PowerPoint presentation
- tables and chairs that can be moved around for activity demonstrations
- coffee/ tea/ refreshment facilities during the break

Please ensure it is possible for participants to follow any current public health guidelines at the time of training, including access to hand sanitiser, face masks, and ability to social distance if required.

Costs to consider

This training resource and all other e-Bug resources are free to download and use by all. Other costs you may need to consider include:

- Venue hire, and any associated travel
- Refreshments
- Resources for the demonstrations (see folder I for a checklist of resources required for each activity)

Promoting training

To promote the training amongst educators, a promotional flyer template is included in the training manual package. Please do get in touch with e-Bug@ukhsa.gov.uk if you would like further support with promotion through our social media and newsletter channels.

Training checklists

The table below summarises some of the key actions involved in organising a training session and the resources provided to support you with each step. This is not an exhaustive list, and you may wish to use the additional space to make a note of any further requirements specific to your work environment.

Pre-Training checklist

Action	Resources to use	
Identify suitable training venue and book. Check facilities i.e., sinks, projectors, tables, chairs		☐
Identify audience for the training	Training flyer (folder I)	☐
Advertise the training and modify training flyer		☐
Keep track of attendees as people register	Attendance List (folder I)	☐
Decide which topics and activities you will cover and familiarise yourself with the step-by-step instructions of how to demonstrate these	Activities in folders B – H	☐
Collect resources needed for practical demonstrations	Checklist of materials (folder I)	☐
Modify training slide decks according to your session activities	Folders A – I	☐
Modify training agenda according to your session activities	Training agenda (folder I)	☐
Printing: • Attendance list • Pre-and-post training questionnaires • Action plans	Attendance list Pre- training questionnaire (optional) Post-training questionnaire (optional) Action plan (All in folder I)	☐
Check evaluation link is active	Online training evaluation slide (folder I)	☐

On the day checklist

Action	Resources to use	
On arrival ask participants to fill in attendance sheet	Sign in sheet (folder I)	☐
e-Bug introduction using training presentation	e-Bug training presentation (folder A)I	☐
Administer pre-training questionnaire (optional)	Pre-training questionnaire (folder I)	☐
e-Bug activities	Folders B – I	☐
Discuss with participants how they plan to use the training and complete action plans Participants take the action plans away with them	Action plan (folder I)	☐
At the end of the workshop ask participants to complete: • Online training evaluation form • Post-training questionnaire (optional)	Post-training questionnaire **Online training evaluation using the QR code in e-Bug training evaluation slide** (Both in folder I)	☐
Before you leave the venue: • Sign in sheet • Pre-and-post training questionnaires (optional) • All training resources	Pre-training questionnaire (optional) Post-training questionnaire (optional) Sign in sheet All training resources	☐

Post-Training checklist

Action	Resources to use	
Note any oral feedback or impressions from the session		☐
Reflect on training success and challenges and any actions for future training sessions	Working group quarterly call with other local authorities in the region	☐
Fill in the quarterly reporting template detailing how training has been cascaded		☐