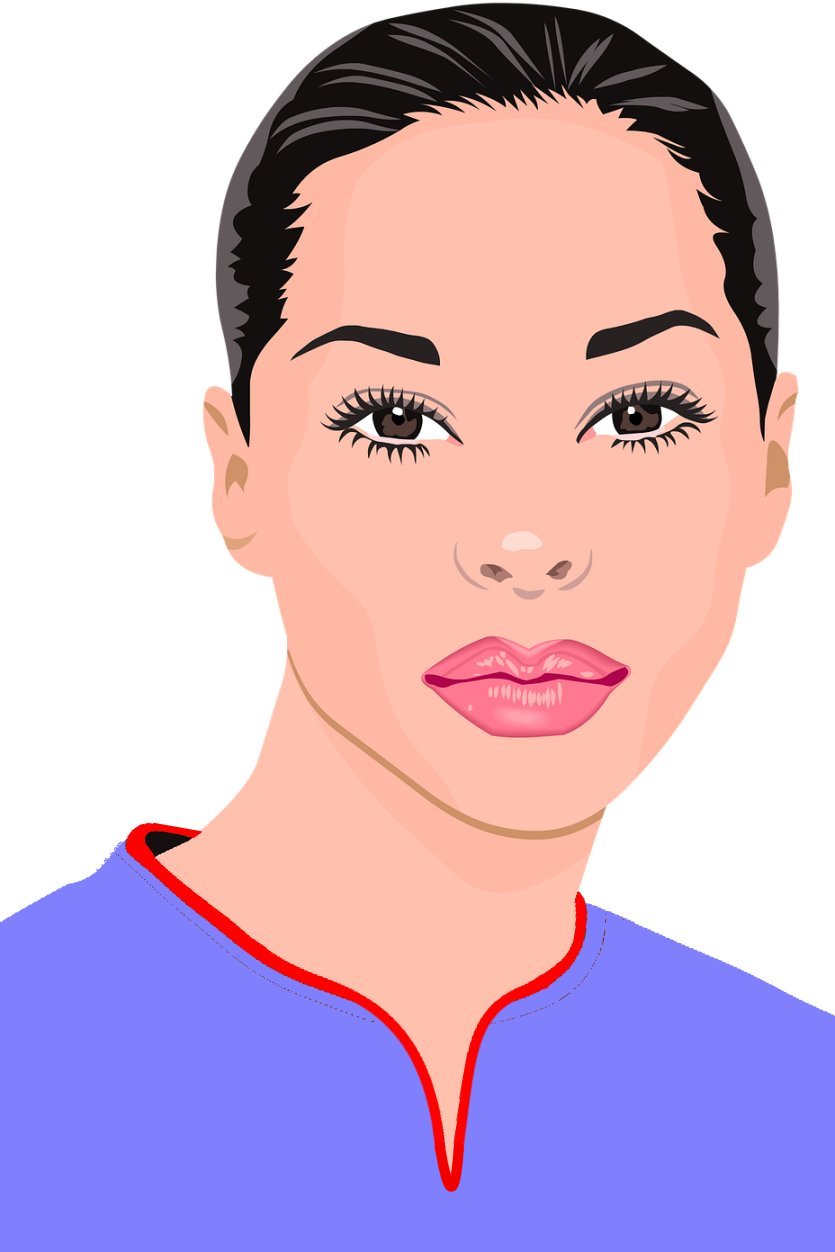
**Antibiotics**

**Part 1**

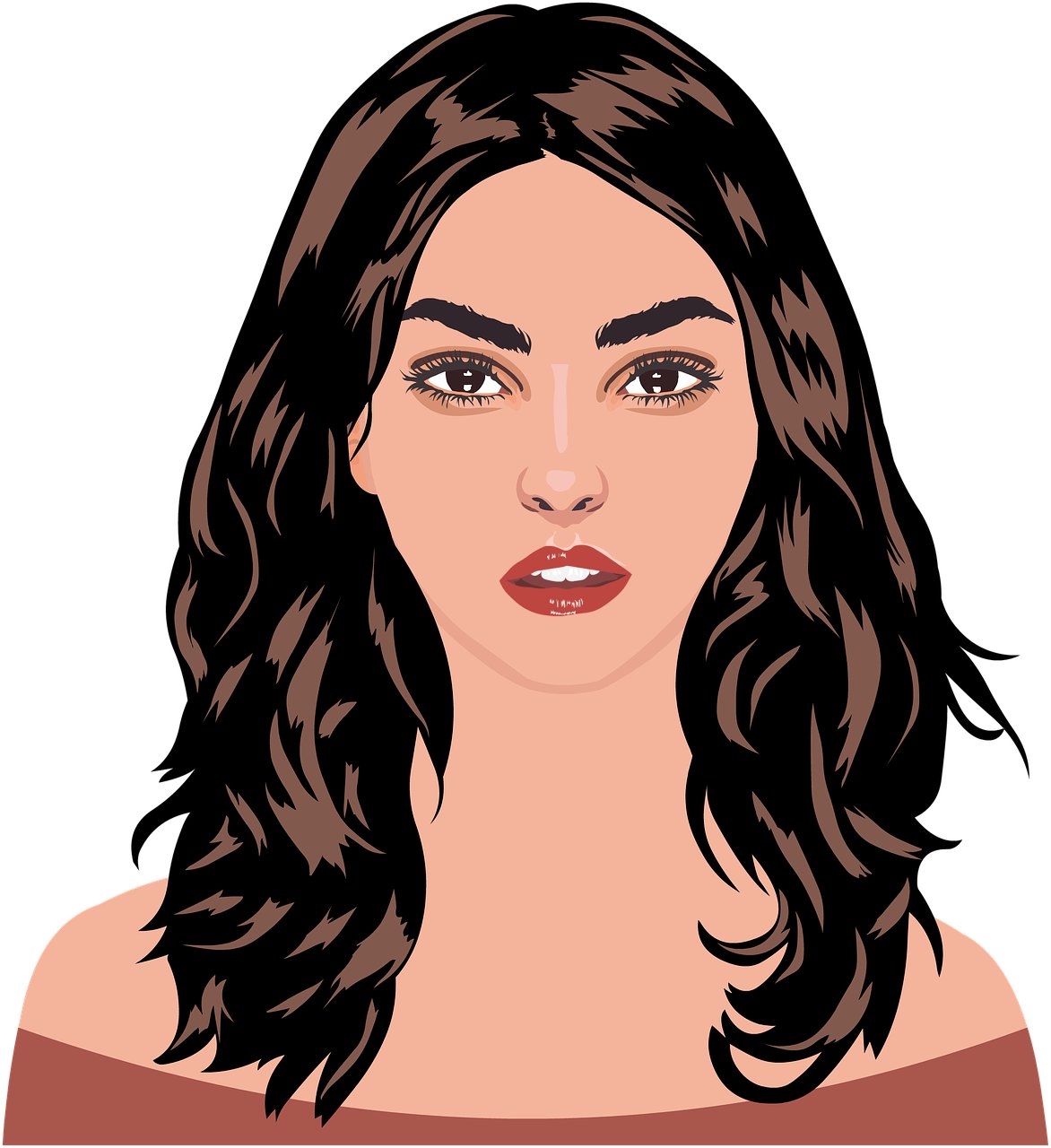
Antibiotics are a type of medicine.

Read the information about the three people, below.



**Emily**

Has a disease caused by a virus.



**Imogen**

Has a disease caused by information in her genome.



**Riley**

Has a disease caused by bacteria.

1. Who should be treated using antibiotics?

|  |  |
| --- | --- |
| **A** | Only Emily |
| **B** | Only Riley |
| **C** | Only Emily and Riley |
| **D** | Emily, Imogen and Riley |

1. How would you explain your answer to question 1?

|  |  |
| --- | --- |
| **A** | Antibiotics only work for diseases caused by bacteria. |
| **B** | Antibiotics only work for diseases caused by viruses. |
| **C** | Antibiotics only work for diseases caused by germs. |
| **D** | Antibiotics work for all diseases. |

**Antibiotics**

**Part 2**

Antibiotics are a type of medicine.

Riley has been treated using antibiotics.



**Riley**

Has a disease caused by bacteria.



1. Will the antibiotics cure Riley’s disease?

|  |  |
| --- | --- |
| **A** | Yes, definitely |
| **B** | Maybe |
| **C** | No, definitely not |

1. How would you explain your answer to question 1?

|  |  |
| --- | --- |
| **A** | Antibiotics kill bacteria. |
| **B** | Antibiotics do not work against bacteria. |
| **C** | Some bacteria are resistant to antibiotics. |
| **D** | Some people are resistant to antibiotics. |

*Biology > Big idea BHD: Health and disease > Topic BHD1: What are health and disease? > Key concept BHD1.2: Disease*

|  |
| --- |
| **Diagnostic question** |
| **Antibiotics** |

**Overview**

|  |  |
| --- | --- |
| Learning focus: | The good health of organisms can be compromised by infectious and non-infectious diseases, which can be caused by germs, lifestyle, environment, or information in the genome. |
| Observable learning outcome: | Explain that medicines, including antibiotics, can be used to treat the cause or symptoms of some diseases. |
| Question type: | Two-tier multiple choice |
| Key words: | Health, disease |

**What does the research say?**

Antibiotic resistance is currently one of the biggest threats to global health, food security and development (World Health Organization, 2018a), and high levels of resistant bacteria have been found in high- and low-income countries all around the world (World Health Organization, 2018b). Antibiotic-resistant ‘superbugs’ and government plans to tackle them have made news headlines (e.g. BBC News, 2019 - see references).

Understanding how to use medicines appropriately is part of a person’s health literacy. Health literacy at the individual level enables a person to access, understand, appraise and use information to make informed decisions about their health. Extensive empirical research shows that increased health literacy can lead to changes in behaviour and decision-making that improve health outcomes (e.g. Pelikan, Ganahl and Roethlin, 2018), and that efforts to improve the health literacy of school children can have impacts on their behaviour (e.g. Park et al., 2017).

**Ways to use this question**

Students should complete the questions individually. This could be a pencil and paper exercise, or you could use the PowerPoint presentation with an electronic voting system or mini white boards.

*Differentiation*

You may choose to read the questions and answers to the class, so that everyone can focus on the science. In some situations it may be more appropriate for a teaching assistant to read for one or two students.

**Expected answers**

*Part 1*

1. **B** – Only Riley
2. **A** – Antibiotics only work for diseases caused by bacteria.

*Part 2*

1. **B** – Maybe
2. **C** – Some bacteria are resistant to antibiotics.

**How to respond - what next?**

If there is a range of answers, you may choose to respond through structured class discussion. Ask one student to explain why they gave the answer they did; ask another student to explain why they agree with them; ask another to explain why they disagree, and so on. This sort of discussion gives students the opportunity to explore their thinking and for you to really understand their learning needs. Responses often work best when the activities involve paired or small group discussions, which encourage social construction of new ideas (meaning making) through dialogue.

If students have misunderstandings about what kinds of ill health can be treated with antibiotics, or about the importance of using antibiotics responsibly to help reduce the spread of antibiotic resistance, the following BEST ‘response activity’ draws upon video and poster resources from the World Health Organization to challenge their thinking, and could be used in follow-up to this diagnostic question:

* Response activity: Antibiotics and resistance

**Acknowledgments**

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Images: bottles of pills – pixabay.com/Clker-Free-Vector-Images (309927); portraits adapted by USEG from pixabay.com/heblo (1089433, 2792142, 1087036, 1999710)

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