

Our Battle against Bacteria, and stories of treatment of infectious disease

Presentations

Using an Interactive White Board, projector, or large printout, introduce the topic through the presentation "Our battle against bacteria" or "Ellie's Medicine". Either can be used to introduce the material and to show the importance of medicines in our lives.

Either work through the other presentations with the whole class, following the story through and talking about each of the topics, or, having introduced the topic, let groups of children investigate a particular aspect of it.

The stories can be divided – printed out or on computer screens – between groups of children. Each group works with their material and prepares to share and explain what they have discovered with their class mates. Differentiation within the class can be achieved by careful allocation of the stories – most able groups would do best with "Penicillin - the story of a medicine" or "Medicines for the future", while weaker groups may cope better with "Fighting disease through the ages" or "Our battle against bacteria" which has already been explained and which they could revisit.

Animations

The animations demonstrate the absorption of medicines and drugs into the blood, and the way they travel round the body to reach all organs. They can be used in different ways:

- They show clearly that a medicine taken for one symptom goes all around the body – not just to the head or stomach as many adverts for over-the-counter medicines seem to show.
- They show that most medicines end up in the blood and so reach everywhere in your body – which is why it is so dangerous to take too much medicine, or to take someone else's medicine.
- They are very useful for giving and reinforcing the safety message.
- They revise the main organ systems of the body. The animations deal with the breathing system, the circulation of the blood and the digestive system.
- They can be used to link medicines and drugs education – an understanding of the way medicines are taken into the body can be used to foster understanding of how legal and illegal drugs have their effects.

The asthma animation shows a person breathing in and out – encourage children to notice that as the diaphragm goes up and down and the lungs get bigger and smaller. Not seen on this diagram, the ribs move up and out as you breathe in, and down and in as you breathe out – children can feel this happening on themselves if they put their hands on their ribs.

Some children may have an inhaler which they use regularly, not just when they are having an asthma attack. This works in the same way – the medicine is taken down into the breathing tubes and the lungs. But this time it contains a medicine which reduces inflammation in the lining of the breathing tubes, making it less likely that they will actually have an asthma attack.

Injections are always used when doctors want to get a medicine into your body really quickly, or when it would be broken down by the stomach or in the intestine if you swallowed it. This is why injections are used for treatment of some diseases, such as insulin to control the sugar levels in the blood of people with diabetes.

Most children will have taken medicine by mouth, either as a syrup or a tablet – both are shown in the animations. Common medicines taken in this way are paracetamol (eg Calpol™) which is a painkiller and reduces fever in young children, and antibiotics to treat bacterial infections. Most medicines are absorbed into the blood in the small intestine, but some can be absorbed through the stomach wall.

Tobacco smoke contains about 4000 different chemicals – we are concentrating on two of them. Once the smoke is in your lungs two things happen, shown in animations of the whole body and in close-up section of the lungs. The tar in the tobacco does not go into your blood – it coats the surfaces of the tiny air sacs in the lungs (seen in exaggerated form in the animation). Tar contains chemicals which can cause cancer, and so many people who have smoked for a long time end up with lung cancer. At least 90% of people who get lung cancer are cigarette smokers. This is shown in the whole lungs. Then when the detail of the lungs are shown, pupils can see how the tiny air sacs in the lungs themselves turn black, which makes the whole lung itself look black.

Cigarette smoke also contains a drug called nicotine. This passes out through the lungs into the blood stream just like the oxygen does. The nicotine is carried all around the body. It is a drug which affects your brain. It makes you feel relaxed, but it is also addictive. Drugs change the chemical processes in your body so that you may become addicted to them (dependent on them). If you are addicted to a drug you cannot manage properly without it. Once you are addicted to a drug, you generally need more and more of it to keep you feeling normal. When addicts try to stop using drugs they usually feel very unwell. They often have aches and pains, sweating, shaking, headaches and cravings for their drug. These are known as withdrawal symptoms. So smokers quickly become addicted to nicotine and find it very difficult to stop smoking.

Nicotine doesn't just affect your brain. It also affects the blood supply to your skin, so skin wrinkles and looks old. It can also affect your heart. People who smoke are much more likely to have heart disease than people who don't smoke.

Much more Information on smoking, alcohol and illegal drugs can be found in the interactive resource [Drugs of Abuse](#).

Activities

Three activities are suggested which could be used after pupils have seen and discussed the animations showing the different ways medicines can be taken into the body.

Activity 1

It is very important to take the right dose of medicine. It is just as important to make sure you only take medicines which are meant for you. Too much medicine, or the wrong medicine, can make you very ill. It can damage different organs in your body like your liver, your kidneys or your brain.

There is a lot of information about medicines on the posters and in the animations. Use it to help you make a simple leaflet explaining how to use medicines safely. The leaflet could be used by parents in the doctor's waiting room and by teachers in school with younger pupils. Make sure it is bright, colourful and fun to look at – but make sure it gets the right messages across as well!

Activity 2

Often television adverts for headache tablets show the painkiller going straight to your aching head and nowhere else. You know that isn't right!

Make up an advert for a new painkiller – "Paino!". This new medicine helps children feel better fast if they have a headache, or are teething, or have a fever. Use the information you have got from the animations to help you with this. Make sure your advert gets the science facts right about how the medicine gets into your body and does its job!

Activity 3

Your class is going to plan an assembly for children of a similar age at another local school. The assembly is going to be about the problems of taking illegal drugs. You need to make sure that everyone understands how the drugs get into your body, why they can affect all the different organs of the body and the problems they can cause.