

Use the *Your Health: The Science Inside* to answer the questions on this sheet.

<http://sciencenetlinks.com/pdfs/yourhealth9-21.pdf>

To begin, read pages 9-12. As you read this resource, think about answers to these questions:

What causes infectious diseases?

Viruses and bacteria known as germs or pathogens cause infectious diseases.

What is a virus? Is it a living thing?

This is up for debate.

What is a bacterium? How is it different from a virus?

A bacterium is larger and responds differently to medication such as antibiotics.

Who first discovered what causes illness?

French chemist, Louis Pasteur, first popularized the "germ theory" of disease.

What did he hypothesize?

He hypothesized that molds, fungi, and bacteria were actually present in the air and that they wouldn't grow on anything they couldn't touch.

How does a virus get itself into the human immune system? How does it make us sick?

We can catch a virus from particles in the air, human contact with someone who is infected, eating meat from infected animals, being stung or bitten by insects carrying these particles—such as mosquitoes carrying West Nile Virus or deer ticks carrying Lyme Disease.

Now, students should read pages 13-15. As they read these pages, they should think about answers to these questions:

What are vectors?

Middlemen that can spread viruses to humans, such as mosquitoes spreading malaria by biting humans, or deer carrying Lyme disease.

What exactly is our immune system?

It is our body's natural defense to fight off disease.

What are antibodies?

They are cells that our bodies develop when they are exposed to harmful germs or pathogens. These cells help to fight these germs.

How can we fight back against these invisible invaders?

We can fight back by taking health precautions, getting vaccinated, taking medicine for bacterial infections, and using insect repellent.

What simple preventative measures can we take to avoid getting sick?

Some measures include washing our hands frequently, being sure our fruit and vegetables are washed, and making sure our doctors and healthcare givers wash their hands before touching us.

What are some of the older viruses?

They are polio, influenza, cholera, tuberculosis, and the common cold.

What are some of the newer viruses and infectious diseases?

They are HIV, Ebola, West Nile, SARS, and AIDS.

What are some of the myths surrounding getting these diseases?

HIV can be caught by just casual contact, West Nile virus is only in Egypt, polio does not exist anymore, and tuberculosis exists only where there are really poor people.

Why is it so hard to cure viruses such as the common cold?

Colds may be caused by a variety of viruses and do not respond to antibiotics since they are not caused by bacteria.

Finally, students should read pages 16-18. As they are reading these pages, they should think about answers to these questions:

What are the two most important tools we have now to fight against contagious diseases?

They are antibiotics and vaccines.

What are antibiotics?

Antibiotics are a class of drugs created to kill germs, usually unwanted bacteria that make us sick.

What are vaccines?

Vaccines are made from either live or dead versions of the bacteria or viruses that can make us sick. The vaccine triggers our immune systems to prevent us from getting sick from specific diseases such as mumps, rubella, chicken pox, tuberculosis, polio, and smallpox.

What is penicillin and who discovered it?

Penicillin is an antibiotic made from mold. Alexander Fleming discovered it accidentally.

Which vaccinations have you had? Are they up-to-date?

Answers will vary.

Why are some people allergic to antibiotics?

There are certain components in the drugs that trigger an allergic reaction in the body.

What types of vaccines are there and why is it so important to get vaccinated?

There are vaccines to prevent measles, mumps, rubella, chicken pox, small pox, hepatitis, and human papilloma virus (HPV).