

*Treponema*

*Trep-O-Nee-Ma*

Bacterium

Syphilis is an extremely contagious disease, caused by Treponema bacteria. In severe cases syphilis can lead to brain damage or death. Syphilis can be cured with antibiotics however resistant strains are becoming more frequent.

Max size (nm)

2,000

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

3

115

8

50

Max size (nm)

1,000

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

21

50

75

50



*Streptococcus*

*Strep-Toe-Coccus*

Bacterium

Many *Streptococcus* species are harmless to humans and are the normal flora of the mouth and hands. However, Group A *Streptococcus* bacteria cause about 15% of sore throats.



*Escherichia coli*

*Esh-Er-lc-E-Ah*

Bacterium

Many strains of *E. coli* are harmless, and huge numbers are present in the human and animal gut. In some cases, however, *E. coli* cause both urinary infections and food poisoning.

Max size (nm)

2,000

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

7

70

184

80



*Chlamydia*

*Clam-id-E-A*

Bacterium

Chlamydia is a sexually transmitted infection (STI) that is caused by the bacteria *Chlamydia trachomatis*. Although symptoms are generally mild i.e. discharge from the penis or vagina, it can lead to infertility.

Max size (nm)

1,000

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

3

37

1

70



*Simplex Virus*

*Sim-Plex Virus*

Herpes simplex is one of the oldest known sexually transmitted infections. In many cases, Herpes infections produce no symptoms, but scab-like symptoms do occur in about one third of people infected.

Max size (nm)

200

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

2

64

2

n/a

Max size (nm)

90

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

1

146

12

n/a

*Influenza A*

*In-Flu-En-Za A*

Virus

The flu is an infection caused by Orthomyxoviridae. Every year 5 – 40% of the population get the flu but most people recover completely in a couple of weeks.

*Lyssavirus*

*Lice-A-Virus*

Virus

The Lyssavirus infect both plants and animals. The most common Lyssavirus is the Rabies virus and is usually associated with dogs. Rabies results in over 55,000 deaths worldwide every year but can be prevented by vaccination.

Max size (nm)

180

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

10

74

5

n/a

*Tobamovirus*

*Tob-A-Mo-Virus*

Virus

Tobamovirus are a group of viruses that infect plants, the most common being tobacco mosaic virus, which infects tobacco and other plants. This virus has been very useful in scientific research.

Max size (nm)

18

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

125

12

34

n/a



*Zika*

*Zee-ka*

Virus

The Zika virus is spread by mosquitoes. Zika can be passed from a pregnant woman to her fetus. Infection during pregnancy can cause certain birth defects. There is no vaccine or medicine for Zika.

Max size (nm)

40

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

1

98

0

n/a

*Varicellovirus*

*Var-E-Cell-O-Virus*

Virus

Chickenpox is caused by the *Varicella-Zoster* virus. It is highly contagious although rarely serious and is spread through direct contact (or coughing and sneezing). Almost everyone caught chickenpox in their childhood prior to the discovery of the chickenpox vaccine.

Max size (nm)

200

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

2

21

7

n/a

Max size (nm)

35

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

8

25

0

n/a

*Norovirus*

*Nor-o-virus*

Virus

*Norovirus*, known as the winter vomiting bug, is the most common cause of gastroenteritis causing symptoms of diarrhoea, vomiting and stomach pain. The virus is highly contagious and can be prevented through hand washing and disinfection.

*Papillomavirus*

*Pap-ill-O-Ma-virus*

Virus

*Human papillomavirus* (HPV) is a sexually transmitted infection (STI) which can cause genital warts. It is the most common cause of cervical cancer in women but there is now a vaccine available for teenagers which protects against this.

Max size (nm)

55

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

170

130

0

n/a



Max size (nm)

4,000

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

5

150

0

100

*Mycobacterium*

*My–co–back–tear–e–um*

Bacteria

Tuberculosis (TB) is caused by the bacterium Mycobacterium tuberculosis and is one of the top 10 causes of death worldwide. Although treatable with antibiotics, many strains of TB are becoming resistant to multiple antibiotics.

*Filovirus*

*File-o-vi-rus*

Virus

Filovirus causes a disease more commonly known as Ebola. It is one of the more dangerous viruses known to humans. 25 – 90% of victims died from the disease before the development and approval of a vaccine in 2019.

Max size (nm)

1,500

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

1

200

0

n/a

*Neisseria*

*Nai–sheer–e-a*

Bacterium

Neisseria meningitidis is a bacterium that can cause meningitis, a life threatening disease. A vaccine is available to protect against the 4 main types of this bacteria A, C, W and Y.

Max size (nm)

800

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

13

120

0

20

*Lymphocryptovirus*

*Lim-Foe-Cryp-Toe Virus*

Virus

The Epstein-Barr virus, a type of Lymphocryptovirus, causes an illness known as the Kissing Disease or Glandular fever. Symptoms include sore throats and extreme tiredness. Transmission requires close contact such as kissing.

Max size (nm)

110

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

7

37

2

n/a



Max size (nm)

25

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

2

28

14

n/a

*Rhinovirus*

*Rhino-virus*

Virus

There are over 250 different kinds of cold viruses but Rhinovirus is by far the most common. Rhinovirus can survive three hours outside someone’s nose. If it gets on your fingers and you rub your nose, you’ve caught it!

*HIV*

*HIV*

Virus

The human immunodeficiency virus (HIV) is a sexually transmitted infection (STI) which leads to acquired immunodeficiency syndrome (AIDS). Individuals with this condition are more at risk of infection and cancer.

Max size (nm)

120

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

2

150

0

n/a



*Cryptococcus*

*Cryp-Toe-Coccus*

Fungus

*Cryptococcus* is a fungus which grows as a yeast. It is known for causing a severe form of meningitis in people with HIV/AIDS. The majority of Cryptococci live in the soil and are not harmful to humans.

Max size (nm)

7,500

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

37

98

37

n/a

*Penicillium*

*Pen-Ee-Sil-Ee-Um*

Fungus

Penicillium is a fungus that naturally produces the antibiotic penicillin. Since this discovery, the antibiotic has been mass produced to fight bacterial infections. Unfortunately, due to its overuse many bacterial species have become resistant to this antibiotic.

Max size (nm)

332,000

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

16

64

198

n/a

Max size (nm)

1,000

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

19

1

184

n/a

*Saccharomyces*

*Sac-A-Row-My-Sees*

Fungus

For at least 6,000 years, Saccharomyces cerevisiae (Brewers yeast) has been used to make beer and bread! It is also used to make wine and it is widely used in biomedical research. One yeast cell can turn into 1,000,000 in only six hours.

*Candida*

*Can-Did-a*

Fungus

Candida is naturally found living in the human mouth and gastrointestinal tract. Under normal circumstances these fungi live in 80% of the human population with no harmful effects, although overgrowth results in candidiasis (Thrush).

Max size (nm)

10,000

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

44

74

175

n/a



*Salmonella*

*Sam-on-ella*

Bacterium

Salmonella are most commonly known for causing food poisoning. Symptoms range from vomiting to diarrhoea. Salmonella is becoming resistant to antibiotics with an estimated 6,200 resistant cases per year in the US.

Max size (nm)

1,000

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

3

89

15

60

*Pseudomonas*

*Sued-O-Moan-Us*

Bacterium

Pseudomonas are one of the most common microbes found in almost all environments. Although some may cause disease in humans, other species are involved in decomposition. Some Pseudomonas species are becoming resistant to multiple antibiotic treatment.

Max size (nm)

5,000

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

126

50

150

90

*Lactobacillus*

*Lac-Toe-Ba-Sil-Us*

Bacterium

Lactobacilli are very common and usually harmless to humans; they make up a small portion of the gut flora. These bacteria have been extensively used in the food industry - in yoghurt and cheese making.

Max size (nm)

1,500

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

125

0

195

10

Max size (nm)

1,000

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

19

174

20

90

*Staphyloccus*

*Staff-ill-O-coccus*

Bacterium

Meticillin resistant Staphylococcus aureus (MRSA) are a type of Staphylococcus aureus that have mutated to become resistant to most antibiotics. They can cause severe infection in humans.



*Verticillium*

*Ver-Tee-Sil-Ee-Um*

Fungus

*Verticillium* is a widely distributed fungus that inhabits decaying vegetation and soil. Some may be pathogenic to insects, plants, and other fungi but very rarely cause human disease.

Max size (nm)

8,500,000

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

4

1

18

n/a

*Aspergillus*

*Ass-Per-Gill-Us*

Fungus

Aspergillus is both beneficial and harmful to humans. Many are used in industry and medicine. It accounts for over 99% of global citric acid production and is a component of medications which manufacturers claim can decrease flatulence!

Max size (nm)

101,000,000

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

200

47

124

n/a

*Tinea*

*Tin-Ea-A*

Fungus

Although a variety of fungi can cause foot rashes, Tinea cause the itchy, cracked skin between toes known as Athlete’s foot, which is the most common fungal skin infection. Athlete’s foot affects nearly 70% of the population.

Max size (nm)

110,000

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

12

43

14

n/a

Max size (nm)

72,000

Number of species

Danger to humans

Usefulness to humans

Antibiotic resistance

2

83

2

n/a

*Stachybotrys*

*Stack-Ee-Bo-Trys*

Fungus

Stratchybotrys (or straw mould) is a black toxic fungus that although itself is not pathogenic, it does produce a number of toxins that can cause rashes or life-threatening reactions for those with respiratory problems.