

HOW TO FIGHT INFECTIONS



Many human infections are caused by either bacteria or viruses.

Bacteria are tiny single-celled organisms, bacteria can be beneficial – for instance, gut bacteria help us to digest food – but some are responsible for a range of infections. These disease-causing varieties are called pathogenic bacteria. Many bacterial infections can be treated successfully with appropriate antibiotics, although antibiotic-resistant strains are beginning to emerge. Immunization is available to prevent many important bacterial diseases.

A virus is an even smaller micro-organism that can only reproduce inside a host's living cell. It is very difficult to kill a virus. That's why some of the most serious communicable diseases known to medical science are viral in origin.

How bacteria and viruses enter the body?

To cause disease, pathogenic bacteria must gain access into the body. The range of access routes for bacteria includes:

- Cuts
- Contaminated food or water
- Close contact with an infected person
- Contact with the faeces of an infected person
- Breathing in the exhaled droplets when an infected person coughs or sneezes

Indirectly, by touching contaminated surfaces – such as taps, toilet handles, toys and nappies

Viruses are spread from one person to another by:

- Coughs
- Sneezes
- Vomits
- Bites from infected animals or insects
- Exposure to infected bodily fluids through activities such as sexual intercourse or sharing hypodermic needles.

Forgetting to wash your hands after handling pets and animals is another way for germs to be taken in by mouth.

Infections types:

- **Respiratory diseases:** and meningitis are commonly acquired by contact with aerosolized droplets, spread by sneezing, coughing & talking
- **Gastrointestinal diseases:** are often acquired by ingesting contaminated food and water

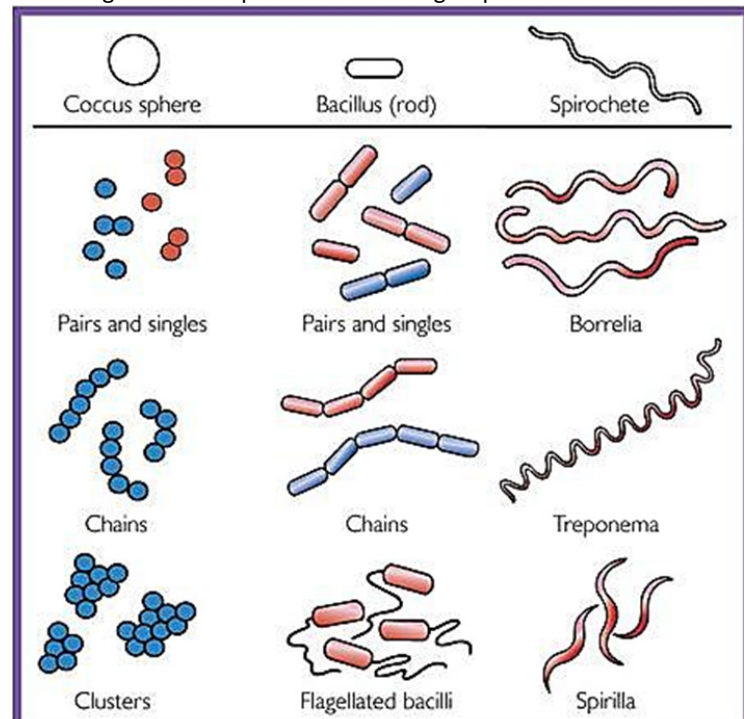
- **Sexually transmitted diseases:** are acquired through contact with bodily fluids, generally as a result of sexual activity.
- **Some infectious agents:** Some infectious agents may be spread as a result of contact with a contaminated, inanimate object, such as a coin passed from one person to another, while other diseases penetrate the skin directly.
- **Vector:** Transmission of infectious diseases may also involve a "vector".

What does vector mean?

- **Mechanical vector:** picks up infectious agent on the outside of its body and transmits it in a passive manner. E.g. Housefly
- **Biological vectors:** harbor pathogens within their bodies and deliver pathogens to new hosts in an active manner, usually a bite are often responsible for serious blood-borne diseases, such as malaria, viral encephalitis, such as mosquitoes, ticks, fleas and lice.

Bacteria Types:

Bacteria that cause disease are broadly classified according to their shape. The four main groups include:



HOW TO FIGHT INFECTIONS



Characteristics of the bacterium

Most bacteria, apart from the cocci variety, move around with the aid of small lashing tails (flagella) or by whipping their bodies from side to side. Under the right conditions, a bacterium reproduces by dividing in two. Each 'daughter' cell then divides in two and so on, so that a single bacterium can bloom into a population of some 500,000 or more within just eight hours.

If the environmental conditions don't suit the bacteria, some varieties morph into a dormant state. They develop a tough outer coating and await the appropriate change of conditions. These hibernating bacteria are called spores. Spores are harder to kill than active bacteria because of their outer coating.

Curing a bacterial infection

The body reacts to disease-causing bacteria by increasing local blood flow (inflammation) and sending in cells from the immune system to attack and destroy the bacteria. Antibodies produced by the immune system attach to the bacteria and help in their destruction. They may also inactivate toxins produced by particular pathogens, for example tetanus and diphtheria.

Serious infections can be treated with antibiotics, which work by disrupting the bacterium's metabolic processes, although antibiotic-resistant strains are starting to emerge. Immunization is available to prevent many important bacterial diseases such as Hemophilus influenza Type b (Hib), tetanus and whooping cough.

Virus types

A virus is a miniscule pocket of protein that contains genetic material. If you placed a virus next to a bacterium, the virus would be dwarfed. For example, the polio virus is around 50 times smaller than Streptococci bacterium, which itself is only 0.003mm long. Viruses can be described as either RNA or DNA viruses, according to which type of nucleic acid forms their core.

	Enveloped	Nonenveloped
DNA	<p>dsDNA</p> <p><i>Poxviridae, Chordopoxvirinae</i></p> <p><i>Herpesviridae</i></p> <p><i>Hepadnaviridae</i></p>	<p>dsDNA</p> <p><i>Adenoviridae</i></p> <p><i>Papovaviridae</i></p> <p>ssDNA</p> <p><i>Parvoviridae</i></p>
RNA	<p>ssRNA</p> <p><i>Coronaviridae</i></p> <p><i>Paramyxoviridae</i></p> <p><i>Bunyaviridae</i></p> <p><i>Toroviridae</i></p> <p><i>Orthomyxoviridae</i></p> <p><i>Arenaviridae</i></p> <p><i>Togaviridae</i></p> <p><i>Flaviviridae</i></p> <p><i>Retroviridae</i></p> <p><i>Rhabdoviridae</i></p> <p><i>Filoviridae</i></p> <p>100 nm</p>	<p>dsRNA</p> <p><i>Reoviridae</i></p> <p><i>Birnaviridae</i></p> <p>ssRNA</p> <p><i>Picornaviridae</i></p> <p><i>Caliciviridae</i></p>

The four main types of virus include:

- Icosahedral – the outer shell (capsid) is made from 20 flat sides, which gives a spherical shape. Most viruses are icosahedral.
- Helical – the capsid is shaped like a rod.
- Enveloped – the capsid is encased in a baggy membrane, which can change shape but often appears spherical.
- Complex – the genetic material is coated, but without a capsid.

The body's response to viral infection

Viruses pose a considerable challenge to the body's immune system because they hide inside cells. This

HOW TO FIGHT INFECTIONS



makes it difficult for antibodies to reach them. Some special immune system cells, called T-lymphocytes, can recognize and kill cells containing viruses, since the surface of infected cells is changed when the virus begins to multiply. Many viruses, when released from infected cells, will be effectively knocked out by antibodies that have been produced in response to infection or previous immunization.

Curing a viral infection

Antibiotics are useless against viral infections. This is because viruses are so simple that they use their host cells to perform their activities for them. So antiviral drugs work differently to antibiotics, by interfering with the viral enzymes instead.

Antiviral drugs are currently only effective against a few viral diseases, such as influenza, herpes, hepatitis B and C and HIV – but research is ongoing. A naturally occurring protein, called interferon (which the body produces to help fight viral infections), can now be produced in the laboratory and is used to treat hepatitis C infections.

Immunization against viral infection is not always possible

It is possible to vaccinate against many serious viral infections such as measles, mumps, hepatitis A and hepatitis B. An aggressive worldwide vaccination campaign, headed by the World Health Organization (WHO), managed to wipe out smallpox. However, some viruses – such as those that cause the common cold – are capable of mutating from one person to the next. This is how an infection with essentially the same virus can keep dodging the immune system. Vaccination for these kinds of viruses is difficult, because the viruses have already changed their format by the time vaccines are developed.

SEDICO Antibiotics

Ultracillin (Suspension, Tablets & Vials)

What are the indications of Ultracillin?

Sultamicillin is indicated for infections caused by susceptible microorganisms e.g.

- ▶ Upper respiratory tract infections including sinusitis, otitis media and tonsillitis.
- ▶ Lower respiratory tract infections including bacterial pneumonias and bronchitis.
- ▶ Urinary tract infections and Pyelonephritis.
- ▶ Skin and soft tissue infections and gonococcal infections
- ▶ Sultamicillin injection is also used for intra-abdominal infections including peritonitis, cholecystitis, endometritis, pelvic Cellulitis, bacterial septicemia.
- ▶ Pre-operatively to reduce the incidence of postoperative wound infections



Venaxan (Tablets & Vial)

What are the indications of Venaxan?

Treatment of bacterial infections due to Levofloxacin susceptible micro-organisms:

- ▶ Sinusitis due H.influenza, pneumonia, S.aureus.,M.catarrhails, E.coli, H.parainfluenzae and k pneumonia.
- ▶ Community Acquired pneumonia:due to H.influenza, S.aureus, M.catarrhails, K.pneumonia, E.coli,Mycoplasma, chlamydia and legionella pneumphila.
- ▶ Complicated urinary tract infections and acute pyelonephritis due to: E.coli, K.pneumoniae, S.faecalis,



HOW TO FIGHT INFECTIONS



P.mirabilis, Enterobacter cloacae, p.aeruginosa.

- ▶ Uncomplicated skin and skin structure infections: due to S.pyogenes, P.mirabilis, P.aeruginosa, E.coli, K.pneumoniae, S.fecalis.
- ▶ Complicated skin and skin structure: due to S.pyogenes, P.mirabilis, E.coli, S.fecalis. E.colaceae.
- ▶ Intra_abdominal infections: due to E.coli and anaerobic micro-organisms.

Ofloxacin (Tablets)

what are the indications of Ofloxacin?

Ofloxacin is indicated for the treatment of infections caused by susceptible micro-organisms such as:



- ▶ Infections of the urinary tract, genital organs, prostatitis, as well as gonorrhoea.
- ▶ Acute, chronic or recurrent respiratory tract infections.
- ▶ Chronic and recurrent E.N.T. infections.
- ▶ Infections of the abdominal cavity.
- ▶ Infections of skin and soft tissue.

Magnabiotic (Tablets & Powder For Oral Suspension)

What are the indications of Magnabiotic?

Respiratory tract infections:
Pneumonia, Chronic Bronchitis, Bronchiectasis (due to susceptible microorganisms).

E.N.T infections:

Sinusitis, Otitis media, Pharyngitis, Tonsillitis, Epiglottitis.

Gastrointestinal tract infections:

Enteritis, Bacillary dysentery, Typhoid, Paratyphoid, Biliary tract infections.

Genitourinary tract infections:



Cystitis, Pyelonephritis, Gonorrhoea, Puerperal sepsis.

Skin and soft tissue infections:

Cellulitis Boils, Carbuncles, Abscesses, Wound infections.

Biomox (Capsules-Powder for oral suspension-Vials)

what are the indications of Biomox?

- **Respiratory tract infections:**
Pneumonia, Bronchitis, Bronco-pneumonia, Bronchiectasis, Sinusitis, Otitis media, Tonsillitis, Pharyngitis, Laryngitis.
- **Gastro-intestinal tract infections:**
Enteritis, biliary tract infections
- **Genito-urinary tract infections:**
Cystitis, Urethritis, Gonorrhoea.
- **Skin and soft tissues infections:**
Cellulitis, Erysipelas, Boils, Carbuncles



Osteomyelitis, Septicemia.

Where to get help

Your doctor
Your pharmacist

Things to remember

Many human illnesses are caused by infection with either bacteria or viruses.

Most bacterial diseases can be treated with antibiotics, although antibiotic-resistant strains are starting to emerge.

Viruses pose a challenge to the body's immune system because they hide inside cells.

It is possible to be vaccinated against some of the major disease-causing viruses (such as measles and polio), as well as bacterial diseases such as Hemophilus influenza Type b (Hib), tetanus and whooping cough.