

## Lesson 4: Pathologies

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### Learning Goals

By the end of this lesson you will know:

- The difference between an illness and a condition.
- Whether all diseases come from infections.
- How bacteria and viruses differ, and the ways medical professional treat them.



Retrieved from: <http://blogberlinmd.com/photorii/mononucleosis-virus-cells>

- *Mononucleosis Virus Cell*

### Introduction

Sickness. Illness.

Just the very thought of these things is enough to make you feel yucky! Can you remember the last time you started to feel sick? Did you end up spending a day in bed? Maybe you had to miss a sporting, dance, or other event? Or were you lucky and felt better quickly?



Retrieved from: <http://www.scienceclarified.com/Ma-Mu/Muscular-System.html>

*Healthy Muscle Tissue*

Unfortunately, everyone gets sick, there just isn't a way around it! However, that doesn't mean that you don't need to know how it happens! After all, by learning HOW sicknesses happen, you can take some steps to keep yourself healthy. Beyond that, you can even discover how these illnesses are spread, what the different terms and names given to sicknesses mean, and get a leg up on figuring out how your doctor is going to recommend

treating them! Sounds like a lot to learn, so you better get started!

As you read this lesson you'll encounter several lists of terms that are full of important information you need to remember. Copy out each of the **bold** words from these lists (plus any other bolded words you find), and in your own words write a 1 – 2 sentence summary of what that word means, and how it applies to the topic of this lesson.

### What's in a Name?

In the last couple of lessons you've been watching a lot of videos, so you are probably getting a bit tired of them. Well, I've got good news for you: in this lesson you're mostly going to be reading – and I'll do my best to keep things interesting!

For example, did you know that the first thing you need to learn is all about names?

Yup, the names doctors, nurses, scientists, and other medical professionals use to talk about sicknesses all mean something different; like it's their own private language! Some people take the time to learn this language, and that helps them understand what exactly is going on inside their bodies, but most people don't seem to care. It's kind of like being a spy... okay maybe it isn't... but you still need to learn it!

- 1) **Disease:** A disease is anything that causes your body to stop working in the normal, proper way. This can be as simple as causing trouble with a function (like eating), or as complex as an entire body system not working (like heart disease). Also, the word disease means that there is a set of symptoms that is consistent – even if the reason for those symptoms is unknown.
- 2) **Illness:** This means anything that causes the physical, emotional, intellectual, or social aspects of your life and health to be diminished. So, instead of things working like they used to, they just aren't performing properly. What makes this different from a disease is that an illness can refer to the way you feel and think; and the symptoms aren't always going to be consistent.
- 3) **Disorder:** A disorder is a break in the normal behavior of your body or mind, usually caused by internal factors – not the result of outside things or infections.
- 4) **Medical Condition:** To put it simply, a Medical Condition is a large term used to lump together anything that falls outside the realm of normal body and mind function. In other words, illnesses and diseases can both be called Medical Conditions. This is a word that is mostly used by medical professionals and researchers when they are talking to each other.
- 5) **Syndrome:** A syndrome is a set of symptoms that appear together and are part of a disease, illness, or medical condition. For example, AIDS is considered a syndrome because it is a symptom of being infected by the HIV virus.

- 6) **Abnormal Condition:** Any condition that is outside of the normal functioning of your body or mind. In other words, this is exactly the same as having a disease, illness, disorder, or medical condition.

**Stop and Think:** List and explain the 6 difference names for sicknesses.

### Who comes up with this stuff?

Well, have you got your head around the different terms medical professionals use to describe sicknesses? It can seem a little overwhelming, but this system is actually is less complicated than other classifications that can have up to 140,000 different codes for each type of sickness! Aren't you glad you don't need to know that?



Retrieved from:

<http://www.coldsorehomeremedies.com/cold-sore-causes-symptoms-and-treatment/>

*Virus Skin Infection (Cold Sore)*

Still, before you can officially say you know everything for this lesson, you have to take a very short look at the one particular type of sickness: diseases. Since this is a very wide category, it is broken down into 4 main groups that describe exactly WHY you are sick.

- 1) **Pathogenic-** This means any disease that is caused by a **pathogen**; in other words a virus, bacteria, parasite, or other infection. Catching a cold or the flu is this type of disease.
- 2) **Deficiency-** Members of this category happen because your body is lacking something, usually a nutrient. An example would be scurvy which is caused by a Vitamin C deficiency.
- 3) **Hereditary-** You've probably already guessed, but these diseases are caused by genetics that come from your parents and ancestors. This can mean things like your blood having trouble clotting (haemophilia), or more deadly diseases like Sickle Cell.
- 4) **Physiological-** The last group is any disease that happens because one (or more) of your internal organs stops working properly. A serious example would be strokes (caused by blood clots), but it can also mean asthma or diabetes.

Got all that?

Good!

However, I have one last thing to tell you: all diseases can also be either **communicable** or **non-communicable**.

What's the difference?

Communicable diseases can be passed from one person to another, meaning that it is contagious. If you've ever had one family member get the flu or a cold, and then everyone else get sick a couple days later, then you have seen a communicable disease in action.

On the other hand, non-communicable diseases can't be spread from one person to another, meaning they aren't contagious. Usually, these are diseases that last a long time, and many of them come from the physiological family with asthma, diabetes, heart disease, Alzheimer's, and cancers being well known examples.

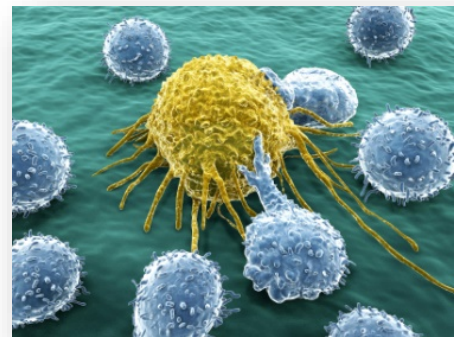
A final word of caution: Non-Communicable diseases are NEVER contagious. Don't get confused and think that something like chicken pox – which is only contagious for a little while – starts out communicable and then transforms into a non-communicable illness. Diseases' can't flip and flop between groups like that; if they are EVER contagious (if you can catch it from someone else who has that disease) than it is *always* considered communicable.

**Stop and Think:** What is the difference between communicable and non-communicable?

### The Best Offense is a Good Defense

Has all this talk about diseases, pathogens, and sicknesses got you wondering how humans have managed to stay alive at all? It can seem daunting when you start thinking about just how many different illnesses there are; but thankfully you are equipped with a top-of-the-line defense system that keeps you up and running. Of course that is your **immune system**, whose job is to fight off invaders to your body.

Is the word invaders a little too over-dramatic? Well, if you thought *that* was too much, then this might make you cringe:



Retrieved from: [http://www.healthy-diet-healthy-you.com/Cancer\\_Fighting\\_Diet.html](http://www.healthy-diet-healthy-you.com/Cancer_Fighting_Diet.html)

*White Blood Cells Attacking a Cancer Cell*



Retrieved from: [https://en.wikipedia.org/wiki/File:Necrotizing\\_fasciitis\\_left\\_leg.JPG](https://en.wikipedia.org/wiki/File:Necrotizing_fasciitis_left_leg.JPG)

*Necrotizing Fasciitis (Flesh Eating Disease)*

<Deep Narrators Voice> There are villains in the world that seek to make you sick, and they come in many different shapes and sizes. Some of them invade your body and attack the very cells that you are made of, while others seek to find a home so they can sabotage the normal behavior of your organs and systems. What they both have in common is that they come from the outside world, to wage war against your immune system.

Who are these villains? **Bacteria** and **Viruses!**

Are you interested? Was that a little too cheesy for you? Either way, watch this <LINK: <http://youtu.be/3xRttWuf3wQ> > very dramatic video about how this fearsome duo interact with your body. Once you survive that, take a quick glance at the 2 pages here <LINK: <http://www.webmd.com/a-to-z-guides/bacterial-and-viral-infections> >, paying special attention to the second page where it talks about how bacterial and virus infections are treated. Then, you're done!

**Stop and Think:** What is the difference between bacterial and viral infections?

### **Conclusion**

There are many different types of sicknesses in the world, which attack your body in a variety of different ways. To keep things organized, different classification systems are used that help medical professionals and researchers keep track of how you are affected, and what caused this sickness. Thankfully, the fight against pathogens/diseases/etc. doesn't depend completely on technology, as your body comes equipped with an immune system which has a variety of different tactics it can use to help keep you healthy. Most often this means ridding the body of bacteria and viruses that seek to harm it, though sometimes help is needed in the form of antibiotics, vaccines, and medical interventions. In the end, the combination of all these tools is usually successful in keeping you healthy, happy, and alive.

**Did You Know?** There are currently 216 different types of infectious diseases on Earth.

## Quiz 1

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For each of the following, select the correct answer:

- 1) Viral infections are treated by antibiotics? (True/False)
- 2) Deficiency diseases are passed down from parents and ancestors by your genetics? (True/False)
- 3) Disorders are a breakdown in the way your body usually functions, caused by internal factors? (True/False)
- 4) Physiological diseases are some of the most contagious? (True/False)
- 5) Another word for infection is pathogen? (True/False)
- 6) It is impossible for you to catch a non-communicable disease from someone else? (True/False)
- 7) AIDS is an example of a disease? (True/False)
- 8) Your immune system uses fevers as one way to fight of infections? (True/False)
- 9) All bacteria is harmful and hurts your body? (True/False)

## Quiz 2

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For each of the following, select the correct answer:

- 1) A break in the normal behavior of your body or mind, usually caused by internal factors, is known as a? (Disease; Syndrome; **Disorder**; Illness)
- 2) A set of symptoms that appear together and as part of a disease, illness, or medical condition, is known as a? (**Syndrome**; Disorder; Abnormal Condition; Disease)
- 3) Illnesses and Diseases can both be lumped together into which group? (Syndrome; Virus; Disorder; **Medical Condition**)
- 4) Any disease caused by a virus, bacteria, parasite, or other infection is referred to as? (**Pathogenic**; a Deficiency; Hereditary; Physiological)
- 5) Disease caused by genetics are known as? (Pathogenic; a Deficiency; **Hereditary**; Physiological)
- 6) If a disease can't be spread from person to person, it is called? (Non-Transferable; **Non-Communicable**; Non-Mobile; Non-Existent)
- 7) Invading cells that are not part of normal body functions are known as? (Bacteria; **Viruses**; Syndromes; Carcinogens)
- 8) Invading organisms that seek to find a home inside you and sabotage the normal behavior of your organs and systems are known as? (**Bacteria**; Viruses; Syndromes; Carcinogens)

## Assignment: Unit 2 – Lesson 4

- 1) List and explain each of the terms used to describe sicknesses. Give a non-lesson examples of each. (6 marks)
- 2) List and explain the four different ways diseases are classified. Give a non-lesson example of each. (4 marks)
- 3) Write one paragraph explaining the difference between communicable, and non-communicable diseases. (5 marks)
- 4) In two paragraphs, compare and contrast bacterial and viral infections. (10 marks)
- 5) Select any one of the examples you provided in questions 1 and 2, and research the following:
  - Whether it is communicable or non-communicable?
  - How can you become sick with it?
  - How does it affect your body systems and organs?
  - Anything else you feel is interesting.

Write a 1.5 page, properly organized (into, body, and conclusion), research essay on what you learn. (25 marks)

Total: /50 marks