Viral, Bacterial, And Fungal Sexually Transmitted Diseases

Sexually transmitted diseases, or also known as STDS for short, are diseases that are passed from an infected person to an uninfected person through sexual contact. Sexually transmitted diseases are caused by a few cases such as bacteria, viruses, yeasts or parasites. Overall, there is a sum of over 20 kinds of sexually transmitted diseases such as chlamydia, human immunodeficiency virus, genital herpes, syphilis, and gonorrhea. Syphilis is a prevalent bacterial infection that is spread during sexual intercourse and is easily cured with antibiotic medicine. Syphilis is easily spread due to the sores on your genitals and spreads with skin to skin contact. Most choose to say that not all kinds of sexually transmitted diseases are harmful, but that simply is not true. There is no such thing as a 'safe' sexually transmitted disease. Even those that have a cure can cause serious health problems if left untreated. In particular, human immunodeficiency virus, a viral sexually transmitted disease and also known as HIV, can be dormant for many years until symptoms appear. HIV harms your immune system by destroying white blood cells that your body uses to fight infections. Due to this, individuals who have human immunodeficiency are at a greater risk for serious diseases and certain cancers. A majority of sexually transmitted diseases affect both men and women fairly but in many cases, the health problems that arise from sexually transmitted diseases can be more severe for women. If a pregnant woman has a sexually transmitted disease, it can cause dangerous health predicaments for the baby. Most sexually transmitted diseases caused by bacteria, yeasts or parasites can be treated with antibiotics. Unfortunately, there is no cure for sexually transmitted diseases caused by a virus, but medicines have been successfully proven to help with the symptoms and keep the disease under control for a long period of time. There are several ways to prevent yourself and others from catching sexually transmitted diseases. Tools to prevent sexually transmitted diseases such as vaccines, topical microbicides, and barrier methods are some of the popular options due to their practicability. They play an essential role in protecting you and your partners against these transmitted diseases. Used correctly and consistently these tools may reduce an individual's risk of acquiring or transmitting a majority of sexually transmitted diseases. Candidiasis, a fungal sexually transmitted disease, is a fungal infection due to any type of candida. It is properly prevented by using barrier methods such as condoms and dental dams. It is easily spread through unprotected sexual activity and can form white patches on the mouth or on the genitals of individuals.

The relation between humans and bacteria is not always bad – they are helpful in some situations such as helping our digestive system break down enzymes. Just as they are helpful, they can bring on extremely destructive diseases such as pneumonia or syphilis. Bacteria are microscopic, single-celled organisms that live in obscure environments such as the ocean, earth's dirt and even inside the human digestive organs. Bacteria are categorized as prokaryotes – a single-celled organism with a simple inner structure that lacks a nucleus and holds DNA that floats freely in a braided, thread-like mass called a nucleoid, or in a separate, round piece called plasmids. Bacteria organisms can be distinguished by their shape, cell walls, or by simple differences in their genetic composition. The Gram stain is a test that is frequently used to identify bacteria by the composition of their cell walls by observing bacteria that do not possess an outer membrane. Bacteria are known to be generally encompassed by two protective coverings – an outer cell wall and inner cell membrane. Bacteria are categorized into 5 groups according to their shapes: round bacteria called cocci, capsule-shaped bacteria called

bacilli, comma-shaped bacteria called vibrios, corkscrew-shaped bacteria called spirochaetes, and spiral bacteria called spirilla. They can exist as single cells, in sets, or groups. A majority of bacteria reproduce by an asexual process called binary fission. An individual bacterial cell becomes big enough to replicate its DNA and then divides the replicated self from the original in which it creates two identical 'daughter' cells. In other cases, bacteria can also reproduce via budding. In this case, the daughter cell grows inside the parent cell until it becomes identical to its parent and detaches itself. When the circumstances are just right, some bacteria can divide or multiply every 20 minutes while others take days.

Syphilis is a notably common bacterial infection that is spread during sexual intercourse. Syphilis can have extremely serious complications if left untreated but can be cured with the right treatment. Syphilis can be transmitted from person to person through vaginal, anal, and oral sex. Formerly thought to be a rare disease in developed countries, modern data suggest that there is a surge in episodes involving syphilis in North America and Europe (Leong 2018). Most commonly, Syphilis is transferred by direct contact with a sore, also known as a chancre. Symptoms may arise within 10 to 90 days from being infected. Syphilis mimics a series of stages that can last for weeks, months, or even years. Symptoms may vary by stage but involve sores or rashes on the genitals, rectum or mouth. There may not be any symptoms until the final stage, in that case, it can result in damage to important organs such as the brain, heart, or eyes. Syphilis can be detected using the Gram stain due to the walls of the bacteria. According to the CDC, the suggested treatment is Benzathine penicillin G 2.4 million units administered intramuscularly in a single dose.

A virus is a small parasite that replicates inside the living cells of an organism considering it cannot replicate on its own. Viruses are able to infect all sorts of species, ranging from animals to plants and even to bacteria. Once it infects a cell body, a virus attacks the genetic material of the cell by injecting its nucleic acid into the cell body. A virus can reproduce in two ways – the Lytic cycle and Lysogenic cycle. In the Lyric Cycle, the nucleic acid takes over the normal operation of the host cell and produces multiple copies of the virus's protein coat and nucleic acid (Lodish 2000). The host cell gets injected with the new virus and explodes while the virus looks for a new host cell to attack. A simple virus may contain only enough RNA or DNA to encode about four proteins but the most complex can encode about 100 to 200 proteins. Some viruses, such as herpes and HIV, enter the host cell but stays dormant for years. Even if the viral nucleic acid becomes a part of the host cell, it does not manage to affect the functions of the cell. Eventually, the nucleic acid will become active and take over the host cell's functions. This type of viral reproduction is called the Lysogenic cycle. The life cycle time of a virus ranges from days to a month. Viruses come in a variety of shapes and sizes. They are very small and are measured in nanometers. The basic structure of a virus is made up of a genetic information molecule and a protein layer that protects that information molecule (Morgridge Insitute for Research). A virus comes in 4 different structures: icosahedral, enveloped, complex, or helical.

HIV is a virus that is spread through body fluids that attack the body's immune system, specifically T cells, also known as CD4. HIV stands for human immunodeficiency virus. It weakens your immune system by destroying white blood cells that are essential to fighting off diseases and infections. Due to this, if you are HIV positive you are at high risk for serious infections and cancers. AIDS stands for acquired immunodeficiency syndrome and is the final stage of infection with HIV. Not everyone who is HIV positive will develop AIDS. There is no effective cure for HIV but with medical care, someone with HIV can live a long and healthy life. HIV is most commonly spread through unprotected sex with a person who is HIV positive. It can

also be spread by sharing needles or through contact with the blood of a person who is infected. Women can also give their children HIV through pregnancy or childbirth. For those who are left untreated, there are three stages. In the first stage, within a month of getting infected people may experience a flu-like illness which can last for weeks. In stage two, HIV is still active but reproduces in low amounts so many may not experience any symptoms. For those who are not being treated, this period may last a decade or longer. In the final stage, the virus has transformed from HIV to AIDS. This stage is the most severe phase of the virus. Those with AIDS have an extremely damaged immune system that they are constantly fighting off severe illnesses. Without treatment, people with AIDS typically live for about 3 years. Symptoms of AIDS include sweats, chills, fever, swollen lymph glands, and weight loss. To be diagnosed with AIDS, those infected have a CD4 cell count that is below 200 cells/mm. The only treatment that is effective in controlling the symptoms of HIV and AIDS is antiretroviral therapy or ART. ART is used to lower the amount of HIV in their system so it can become undetectable.

A fungus is a unicellular or multicellular eukaryotic organism. Yeasts, probiotics, and mushrooms are commonly known examples of fungi. Like animals, fungi are heterotrophs which means that they receive their energy by eating organic substances like decaying matter. Fungal cells contain a membrane-bound nucleus where the DNA is wrapped around histone proteins (Boundless). Fungal cells contain mitochondria and a complex system of internal organelles. A fungus has rigid layers of cell walls that contain a complex carbohydrate polysaccharide called chitin and glucans. Chitin gives structural strength to the cell walls that protect the cell from predators. Fungi can be found to thrive in a moist and slightly acidic environment in which they can grow or reproduce without light or oxygen. Fungi can change from a unicellular to multicellular state depending on its environment. Candida is a prime example of a unicellular fungus. Fungi are able to reproduce both asexually or sexually. They are able to reproduce asexually by fragmentation, budding, or producing spores. They can also reproduce sexually with homothallic or heterothallic mycelia (Lumen Learning). Asexual spores are genetically identical to the parent cell. In both sexual and asexual reproduction, fungi produce spores that scatter from the parent by either hitching a ride on an animal or floating in the wind. The life cycle of a fungus begins as a spore and last until germination. Some may live for as short as a day or as long as a month.

Candidiasis is a fungal infection due to any type of Candida or any type of yeast. There are over hundreds of Candida species, but only some can actually cause infections in humans. Candida normally tends to live in places such as the mouth, throat or vagina in the human body without causing many problems. Candida yeasts cause infections once they grow out of control or if they have entered the bloodstream or internal organs such as the heart or brain. Candidiasis that develops in the mouth is called oropharyngeal candidiasis. Candidiasis in the vagina is commonly referred to as a 'yeast infection.' An abnormal vaginal discharge is a common complaint in women and can be a major sign of Candidiasis (Kalaivani, Rajalakshmi 2016). Yeast infections often cause thick, white and clumpy vaginal discharge that smells slightly different than normal. In women, a creamy whitish coating around the vagina. Yeast infections most commonly lead to itching, burning, and redness in or around the vagina. Candidiasis can be cured easily within a few days with anti-fungal medication. Topical medication that is used to cure yeast infections can be bought over the counter or with a prescription. Oral medication such as Diflucan or Fluconazole can also be prescribed by a licensed professional. If Candidiasis is not treated, susceptibility to other sexually transmitted diseases increases. Complications such as infertility, ectopic pregnancy, and low birth weight can occur.

The Centers for Disease Control and Prevention estimates that in 2007 there were approximately 24,000 HIV infected youth between the ages of 13 and 24 in the United States. All sexually transmitted diseases should be treated with the same importance whether it is HIV or Syphilis. If left untreated, all of these sexually transmitted diseases will come with consequences. It does matter whether it is a bacteria, virus, or fungus. Depending on the type of disease STDs can be spread with any type of sexual activity. STDs are most often caused by viruses and bacteria but can be cured with antibiotics. Sexually transmitted diseases are extremely common, and lots of people who have them show no symptoms. Sometimes they can be transmitted nonsexual, such as during pregnancy or childbirth. Luckily, most can be easily treated and prevented. Tools to prevent sexually transmitted diseases such as vaccines, topical microbicides, and barrier methods are some of the common options due to their practicability. They play a vital role in protecting you and your partners against these transmitted diseases. Used correctly and consistently these tools may reduce an individual's risk of acquiring or transmitting a majority of sexually transmitted diseases.

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