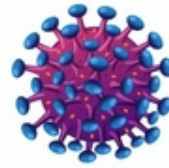


Viruses are small infectious agents that are composed of genetic material inside of a protein shell. Viruses can multiply only in living cells of animals, plants, or bacteria. They invade living cells and use them to multiply and produce more viruses. When this occurs, it can kill, damage, or change the cells leading to a viral infection. Viruses are transmitted in various ways such as through swallowing, inhalation, insect bites, sexual transmission, and contaminated blood transfusions. The most common viruses that infect humans include the influenza virus, hepatitis B, adenovirus, herpes virus, Epstein- Barr virus (EBV), cytomegalovirus, and the human immunodeficiency virus (HIV).



HIV



Hepatitis B



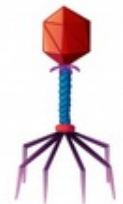
Ebola Virus



Adenovirus



Influenza



Bacteriophage

General features: All viruses contain genetic material and a protein shell, also called a capsid. Some viruses also have an outer envelope that surrounds the capsid that is derived from the host cell membrane with some viral proteins. The genetic material is composed of nucleic acid that takes the form of RNA or DNA and encodes the genetic information that is unique for each type of virus. The protein shell contains one or more different proteins encoded by the virus genome that is assembled in multiple units. The protein shell protects the viral nucleic acid from digestion by extracellular nucleases and attaches the virion to the host cell membrane which allows its penetration into the host cell. The infective extracellular (outside the cell) form of a virus is called a virion. In special cases with a bacteriophage, the virion also allows the injection of the infectious nucleic acid into the host cell. Viruses lack ribosomes which translate mRNA into protein. Therefore, viruses use the ribosomes of their host cells to translate the viral mRNA into viral proteins.

Viruses come in a variety of shapes and sizes. They are tiny and are measured in nanometers. The majority of viruses cannot be seen with a microscope. The criteria for classifying viruses into families and genera are primarily based on structural considerations. The main criteria are the type of nucleic acid (DNA or RNA) and the presence of a lipid envelope in the outer layer of the virion. Viruses consist of RNA virus, DNA virus and retrovirus.

Viruses lack ribosomes which translate mRNA into protein. Therefore, viruses use the ribosomes of their host cells to translate the viral mRNA into viral proteins. Viruses can infect humans through a variety of sources including ingestion or contact with infected animals. Some viruses can cause infections in both animals and humans. These viruses are carried by arthropods which include lobsters, crabs, spiders, mites, insects, centipedes, and millipedes. The infection is typically through ingestion of the infected lobster or crab, contact with the infected animals, or contact with their fresh urine or feces. Some viruses, such as the influenza virus, can spread between people when coughing, sneezing, or talking. The droplets of the infected person land in the mouths or noses of people who are nearby or can possibly be inhaled into the lungs. Blood-borne viruses such as herpes simplex virus, HPV, HIV, and hepatitis B and C, can be spread from person to person by blood and bodily fluids through sexual intercourse, blood transfusions, or contaminated needles.

RNA Viruses

An RNA virus is a virus that has RNA as its genetic material. This nucleic acid is usually a single-stranded RNA which is either a positive-sense or negative-sense but may be a double-stranded RNA. The negative-sense single strand RNA ((-)ssRNA) have to be copied into complementary positive-strand RNA in the host cell which will serve as the templates for protein synthesis. The group of (-)ssRNA viruses have a very complex genome which includes many human pathogens, like influenza, measles, mumps, respiratory syncytial, or Ebola viruses. All which produce frequent epidemics of disease. The positive-sense single strand RNA ((+)ssRNA) viruses usually contain relatively few genes that are ready to be translated into protein after entering into host cells. (+)ssRNA viruses account for a large fraction of known viruses including many human pathogens such as the hepatitis C virus, West Nile virus, dengue virus, coronaviruses, as well as less clinically serious pathogens such as the rhinoviruses that cause

the common cold. Double strand RNA (dsRNA) viruses are a diverse group of viruses that vary widely in host range including human, animals, plants, fungi, and bacteria. Members of this group include the rotaviruses, known globally as a common cause of gastroenteritis in young children, and bluetongue virus, an economically important pathogen of cattle and sheep.

Respiratory: Viruses can attack the respiratory system including infections of the nose, throat, upper airways, and lungs leading to conditions such as a sore throat, sinusitis, and the common cold. These infections can be caused by many different types of viruses such as Influenza viruses (-)ssRNA, coronavirus ((+)ssRNA), or the rhinovirus ((+)ssRNA). Other viral respiratory infections include the flu and pneumonia caused by the influenza virus ((-)ssRNA).

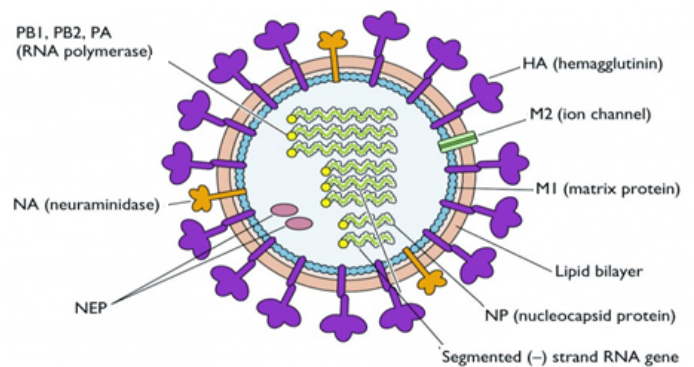
The rhinovirus is a positive-sense single-stranded RNA (+)ssRNA virus. It is the most common viral infectious agent in humans and is the predominant cause of the common cold. Rhinovirus infection proliferates in temperatures of 33–35 °C, the temperatures found in the nose. Rhinoviruses may also cause sore throats, ear infections, sinus infections, pneumonia, and bronchiolitis.

Coronaviruses are also (+)ssRNA viruses that typically affect the respiratory tract of mammals, including humans. They are associated with the common cold, pneumonia, Middle East Respiratory Syndrome (MERS), and Severe Acute Respiratory Syndrome (SARS), and can also affect the gut. The coronavirus disease 2019 (COVID-19) pandemic has caused a sudden and significant increase in hospitalizations for respiratory syndrome with multiorgan disease. COVID-19 is caused by the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). SARS-CoV-2 is a large, enveloped, positive-sense single-stranded RNA virus and belongs to the same *Coronaviridae* family with other viruses like SARS and Middle East respiratory syndrome. The SARS-CoV-2 contains a surface glycoprotein also called spike proteins or S protein that studs the viral envelope and is responsible for the tropism it displays as they bind only with specific receptors on the cell surfaces of target organisms. Such receptors include angiotensin-converting enzyme 2 (ACE2) in the respiratory epithelium and other organs such as the arteries, heart, kidney, and intestines. ACE2 is an enzyme attached to the cell surface of the endothelium and functions to lower blood pressure by catalyzing the conversion of angiotensin II (a vasoconstrictor) into angiotensin 1-7 (a vasodilator). Besides for SARS-CoV-2, ACE2 is also the main entry point into cells for some other coronaviruses, including HCoV-NL63 and SARS-CoV-1. The binding of the spike S1 protein to the ACE2 results in endocytosis and translocation of both the virus and the enzyme into endosomes inside cells. SARS-CoV-2 infection may be asymptomatic in some individual or it may cause a wide spectrum of symptoms, such as mild symptoms of upper respiratory tract infection to life-threatening sepsis.

Influenza viruses are enveloped (-)ssRNA viruses that are transmitted predominantly by aerosol droplets created while talking, coughing, or sneezing. Influenza virus can cause fever, muscle aches, cough, runny nose, headaches, and fatigue and can be deadly in high-risk people. There are three different types of influenza virus: A, B, and C. Type A viruses infect humans and several types of animals, including birds, pigs, and horses. Type B influenza is normally found only in humans, and type C is mostly found in humans but has also been found in pigs and dogs.

The influenza viral genome contains 8 RNA segments that are encircled by the M1 matrix protein with a host-derived lipid bilayer envelope. Within the envelope, the viruses surface contains glycoproteins haemagglutinin (HA) and neuraminidase (NA) as well as an embedded M2 matrix protein. The most outstanding characteristic of the influenza viruses is their rapid evolution which leads to its great variability. This is the case especially with influenza A viruses which cause influenza pandemics and therefore influenza A is the most feared type of influenza virus.

Type A influenza is classified into subtypes depending on which versions of two different proteins are present on the surface of the virus. These proteins are called haemagglutinin (HA) and neuraminidase (NA). There are



17 different versions of HA and 10 different versions of NA. So, for example, a virus with version 1 of the HA protein and version 2 of the NA protein would be called influenza A subtype H1N2 (A H1N2, for short).

Gastrointestinal Tract: Viruses such as the norovirus ((+)ssRNA) and rotavirus (dsRNA) can infect the gastrointestinal tract and lead to gastroenteritis. Gastroenteritis, otherwise known as the stomach flu, is very common and highly contagious. Common symptoms include vomiting and diarrhea.

Nervous System: Some viruses can affect the nervous system, such as rabies ((-)ssRNA) virus and the West Nile ((+)ssRNA) virus. These types of viruses can infect the brain causing encephalitis. Others infect the layers of the tissue that covers the brain and spinal cord, causing meningitis or polio. Common symptoms include flu-like symptoms such as headaches, fever, muscle aches, and fatigue. In rare cases, symptoms can be more severe and include hallucinations, seizures, muscle weakness, loss of consciousness.

Many arenaviruses, such as lymphocytic choriomeningitis virus (LCMV), which is a rodent-borne (-)ssRNA virus, do not kill host cells but instead cause a persistent infection if the host immune system cannot clear the virus. LCMV which can cause neurological diseases is transmitted when exposed to fresh urine, droppings, saliva, or nesting materials from infected rodents such as mice which are the natural host and principal reservoir of LCMV. A much more severe disease ensues when the infection occurs prenatally. LCMV can infect the fetal brain and retina, where it leads to substantial injury and permanent dysfunction.

Marburg virus disease (MVD) is a rare but severe hemorrhagic fever that affects people and non-human primates. It is caused by an infection with (-)ssRNA Marburg virus or Ravn virus, both within genus Marburgvirus. Marburgviruses are zoonotic (or, animal-borne) RNA viruses within the virus family Filoviridae. Ebolaviruses, also filoviruses, are genetically distinct, but closely related to marburgviruses. It is unknown how Marburg virus or Ravn virus, collectively called marburgviruses, first spread from the animal host to people; however, research has shown that virus is shed in oral secretions, urine and feces from infected Egyptian rousette bats. After this initial spillover of virus from host animal to people, transmission occurs through person-to-person contact. The virus spreads through contact.

Chronic RNA Viruses

Of the RNA viruses, some (such as hepatitis C virus (HCV) and human immunodeficiency virus (HIV)) (both are (+)ssRNA viruses) can evade immune control and continuously produce infectious virions. Because these viruses do not cause rapidly lethal disease and can be transmitted over a long period of time, transmission does not need to be efficient.

HCV also can cause both acute and chronic infection in the liver. HCV is most commonly transmitted through exposure to infected blood. Between 15-45% of individuals who contract HCV will clear the virus within 6 months of infection while the remaining 60-80% will develop chronic HCV infection.

HIV is a retrovirus that can occur as two different types, HIV-1 and HIV-2. The HIV-2 is a less common and less severe than HIV-1. It is most common in West Africa. The transmission of HIV requires contact with infected bodily fluids including breast milk. HIV destroys CD4+ lymphocytes and impairs cell-mediated immunity, which can increase the risk of certain infections. The manifestation of HIV can range from asymptomatic to acquired immune deficiency syndrome (AIDS). AIDS is defined as a CD4+ cell percentage of less than 14%. An acute retroviral syndrome usually begins 1 to 4 weeks after infection which can include symptoms of fever, fatigue, sore throat, and septic meningitis. As the CD4+ cell count continues to drop symptoms may worsen and a succession of AIDS-defining illness develop. HIV, as it progresses, can damage the brain, kidneys, and heart.

DNA Viruses

A DNA virus is a virus that has DNA as its genetic material. The nucleic acid is usually a double-stranded DNA (dsDNA) but may also be a single-stranded DNA (ssDNA). The dsDNA viruses include adenovirus, herpes virus, human papillomavirus (HPV), Epstein-Barr virus (EBV) and Cytomegalovirus (CMV) that can infect both humans and animals, as well as bacteriophages which only infect bacteria.

Only a few human and animal pathogenic viruses are known that have a single-stranded DNA genome. Parvovirus B19 is a member in this group and it enters through blood serum and infects red blood cell precursors.

Respiratory: Adenoviruses which are dsDNA viruses are a group of viruses that can infect the membranes (tissue lining) of the respiratory tract, eyes, intestines, urinary tract, and nervous system. They account for about 10% of fever-related illnesses and acute respiratory infections in kids. They are also a frequent cause of diarrhea. Infection by adenovirus may be productive, abortive, or latent.

Human herpesvirus: The Herpes Virus is a family of enveloped dsDNA viruses that consists of an envelope composed of altered host membrane lipid and viral glycoproteins. There are eight types of herpes virus in the herpes family that can infect humans. Herpesviruses cannot survive long outside of a host; therefore, transmission is usually through bodily fluid exchange such as saliva or sexual intercourse. After the initial infection, all herpesviruses remain latent within specific host cells and can reactivate during environmental changes. Herpes infections have declined in the United States in recent years. However, herpes is still very common in the U. S. and the latest statistics show about half of teens and adults under age 50 are infected with the oral herpes virus herpes simplex virus type 1 (HSV-1), and about 1 in 8 have an infection with the genital herpes virus, type 2 (HSV-2).

Herpes simplex virus 1 and 2 (HSV-1 and HSV-2), also known as human herpesvirus 1 and 2 (HHV-1 and HHV-2), are two members of the herpesvirus family that infect humans. HSV-1 produces most cold sores. HSV-2 produces most genital herpes. Herpes zoster virus, also called shingles, is human herpesvirus 3 that causes a painful skin rash with blisters in a localized area.

The Epstein-Barr virus (EBV) is human herpesvirus 4 that can cause infectious mononucleosis. Typical infection of EBV does not display symptoms for around 4-6 weeks and symptoms appear similar to those of a cold or flu virus. These symptoms include fatigue, fever, lack of appetite, swollen glands, and sore muscles.

Cytomegalovirus (CMV) is human herpesvirus 5. CMV is a very common virus that affects over half of adults over the age of 40. Although CMV is usually harmless and typically does not cause any symptoms, it can affect unborn babies and individuals with weakened immune systems. Babies born with congenital CMV can have health problems including hearing loss, and brain, liver, spleen, and lung growth problems. Occasionally, CMV can cause mononucleosis and hepatitis.

Nervous System: Many prominent childhood- and adult-onset neurological and psychiatric diseases are hypothesized to be due to infections by viruses such as the herpes virus and CMV that occurred at a much younger age. Such neurological diseases include Alzheimer disease, Parkinson disease, multiple sclerosis, temporal lobe epilepsy, schizophrenia, bipolar disorder, and autism.

Karposi's sarcoma herpesvirus is human herpesvirus 8 that can cause sarcoma cancer.

Reproductive: human papillomavirus (HPV), a dsDNA virus, is a different virus than HIV and herpes. 79 million Americans, most in their late teens and early 20s, are infected with HPV. There exist more than 100 varieties of HPV. HPV infection commonly causes skin or mucous membrane growths and warts. Certain types of HPV infections cause cervical cancers. Different types of HPV infection cause warts on different parts of the body. For example, some types of HPV infections cause plantar warts on the feet, while others cause warts that mostly appear on the face or neck. Some HPV is transferred primarily by skin-to-skin contact. Another type of HPV is passed through sexual contact and cause genital warts. Some types can cause cervical cancer in women.

Gastrointestinal Tract: There are five common viruses that can remain latent in gastrointestinal tissues and produce chronic disease many years after initial infection. Two major herpes viruses, cytomegalovirus (CMV) and herpes simplex virus, cause ulcerative disease of the gastrointestinal tract. Patients may experience persistent heart burn, abdominal pain and/or chronic diarrhea. This ulcerative disease can occur in immunocompetent persons but is more common and more severe in immunocompromised patients. Three other viruses, Epstein-Barr virus, human papilloma virus (HPV), and human herpesvirus-8, are implicated in benign and malignant proliferative diseases of

the gastrointestinal tract. Epstein-Barr virus may cause small intestinal and colonic lymphoma in healthy adults. Human papillomaviruses can cause anorectal condyloma and anal cancer. Human herpesvirus-8 causes gastrointestinal Kaposi sarcoma.

Kidney: There are many types of viruses that can affect the kidney. Some of them barely cause symptoms, others can cause kidney disease and complications. Common viruses that infect the kidneys include the BK virus (BKV), Parvovirus B19 (B19), Cytomegalovirus (CMV), and Adenovirus.

BK virus (BKV) is a dsDNA virus that belongs to the Papovaviridae family. BKV infections are widespread and is typically acquired in childhood. Approximately 80% of the population is seropositive for BKV by adulthood. The majority of primary infections with BKV in immunocompetent hosts are asymptomatic. Following primary infection, BKV frequently establishes latent infections in renal tubular cells and urinary tract epithelia. The major clinical manifestations appear to result from viral reactivation within the genitourinary tract when the immune system is suppressed.

Parvovirus B19 (B19), a ssDNA virus, is a common pathogen that infects >50% of all individuals by adulthood. Infection is often asymptomatic. But when symptomatic, it typically causes erythema infectiosum in children or arthropathy in adults. It also causes acute glomerulopathy and renal failure.

Heart: There are a wide variety of viruses that can affect the heart. The most common viral heart problem is myocarditis, the inflammation of heart muscle, and other heart problems. Most of the time, the immune system should be able to rid the viruses and heal the condition and patients may never know they were infected. For some people, the only sign of viral heart disease is flu-like symptoms. However, the viral infection and the resulting inflammation can damage and weaken the heart in some people. This can cause persistent premature beat due to the disruption of the electrical pathway that signals the heart to beat properly. The virus can chronically infect the heart muscles and inflict further damage and congestive heart failure. In addition to heart rhythm irregularities, patients may also experience symptoms of heart palpitation, chest discomfort, chest tightness, easily upset and angry, insomnia, excessive dreams, fatigue, and poor appetite.

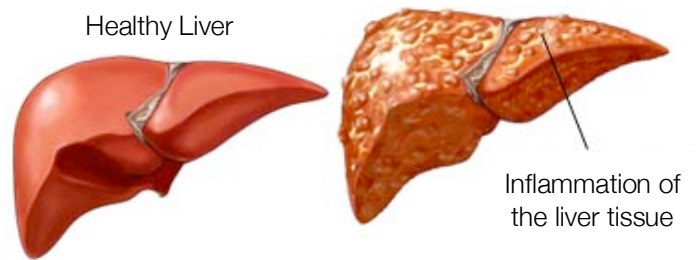
Although a wide variety of viruses may affect the heart including common cold viruses, only a few are more directly linked to myocarditis and other heart problems. The most common types of viruses that can cause chronic heart infections include: Adenovirus, Cytomegalovirus, Coxsackievirus B, Enteric cytopathic human orphan viruses (ECHO), Human parvovirus B19, and Rubella etc.

Cancer: Research has found that there are seven oncoviruses that can cause cancer in humans that include human papillomavirus (HPV), Epstein-Barr virus (EBV), hepatitis B and hepatitis C virus, Human immunodeficiency virus (HIV), Human herpesvirus 8 (HHV-8), Human T-cell leukemia virus type, also called human T-lymphotropic virus (HTLV-1), and Merkel cell polyomavirus.

EBV and HHV-8 (also known as Kaposi sarcoma herpesvirus) are both herpesviruses that possess large double-stranded DNA genomes. As with all herpesviruses, they encode enzymes involved in DNA replication and repair and nucleotide biosynthesis. They also both possess the ability to establish latency in B lymphocytes and reactivate into the lytic cycle. Both also are associated with naturally occurring tumors in humans.

HPV are small non-enveloped DNA tumor viruses that commonly cause benign papillomas or warts in humans. Persistent infection with high-risk subtypes of human papillomavirus (HPV) is associated with the development of cervical cancer. HPV infects epithelial cells, and, after integration in host DNA, the production of oncoproteins, mainly E6 and E7, disrupts natural tumor suppressor pathways and is required for proliferation of cervical carcinoma cells. HPV also is believed to play a role in other human cancers, such as head and neck tumors, skin cancers in immunosuppressed patients, and other anogenital cancers.

Liver: Viruses such as the hepatitis virus (hepatitis A: (+)ssRNA virus; hepatitis B: DNA virus; hepatitis C: enveloped (+)ssRNA virus) can infect the liver leading to liver inflammation. Hepatitis A (HAV) is a part of the picornaviridae genus and its transmission is almost solely through the fecal-oral route. HAV, unlike hepatitis B (HBV) and hepatitis C (HCV), does not cause chronic liver disease. Almost everyone infected with HAV will fully recover with a lifelong immunity. HBV can cause both acute and chronic disease which puts individuals at a high risk of death from cirrhosis and liver cancer. HBV can survive outside the body for up to a week in which the virus can still cause infection if it enters the body of a person who has not been vaccinated. HBV can be detected within 30 to 60 days after infection and can persist to develop into chronic hepatitis B. HCV also can cause both acute and chronic infection in the liver.

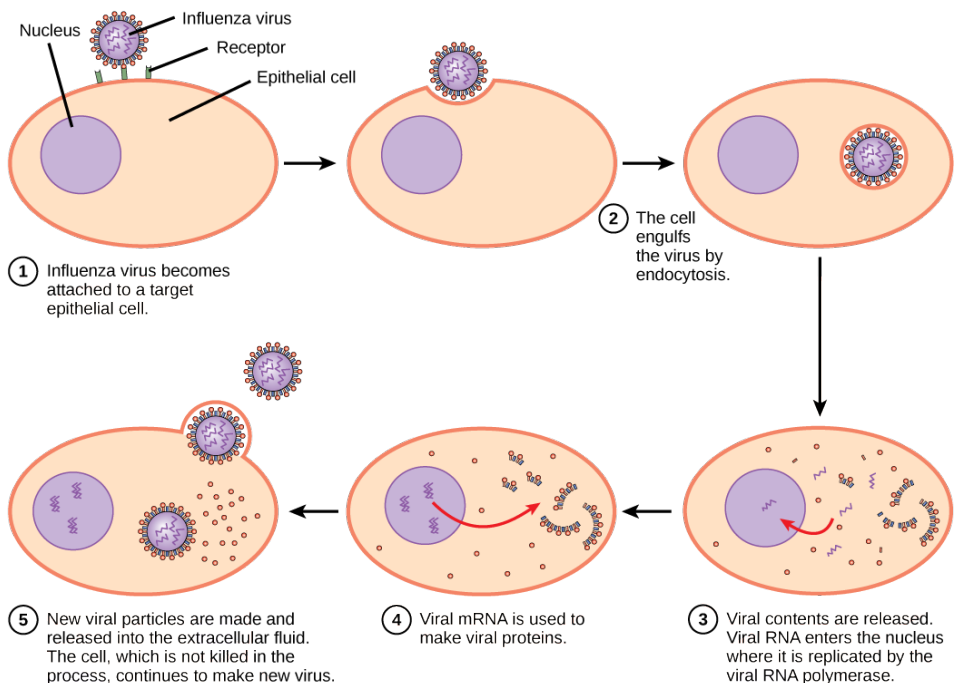


Other viruses can also cause liver inflammation such as cytomegalovirus, Epstein-Barr Virus, and yellow fever. Viral hepatitis affects several hundreds of millions of people worldwide and is a major cause of mortality. Common symptoms include jaundice, nausea, fatigue, and abdominal pain.

Retroviruses

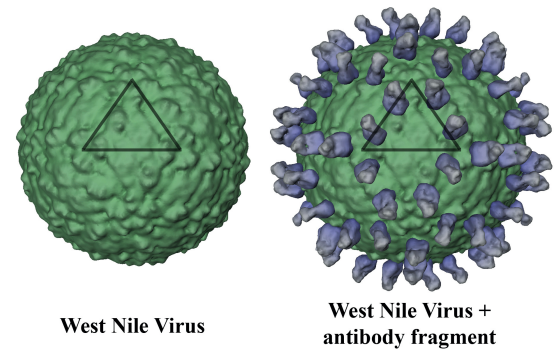
A retrovirus is a type of RNA virus that uses reverse transcriptase to produce DNA from its RNA inside the host cell. The viral DNA is then imported into the host nucleus and integrates into the host genome. Human retroviruses exist in two forms: Endogenous and Exogenous Retroviruses. Endogenous Retroviruses are composed of normal genetic elements in the chromosomal DNA evolved from transposable elements. Transposable elements (TEs), also known as "jumping genes" or transposons, are sequences of DNA that move (or jump) from one location in the genome to another. TE insertion in human genomes produce diversity of the genome and drive evolution. However, it may also cause genetic dysfunction and alteration of gene expression contributing to cancer and other human diseases. Some of the TE gain the ability to package themselves in a virion structure, leave the cell, and infect another cell. Exogenous retroviruses are RNA-containing viruses which are transmitted from human-to-human and include HIV and human T cell leukemia virus, HTLV. HIV is a type of lentivirus within the retrovirus group. The virus can remain latent for approximately 10 years after integration into the host DNA.

Cycle of infection: The virus replicates inside the host cells and gives rise to numerous offspring that are genetically and structurally identical to the original or parent virus. Such multiplication of the virus can be high, resulting in cell death. But this is not always the case. Most viruses lay dormant in tissue without causing any pathological effects and only emerge under environmental changes.



Although reproduction of viruses varies, there are certain basic principles most viruses follow. Using the influenza virus ((-)ssRNA) that infects animals as an example, the first step is that the virion attaches to the surface of the host cell. The second step occurs when the virion either penetrates the outer membrane and enters into the cytoplasm or injects the genetic material of the virus into the cell while the protein capsid remains at the surface. Viruses infect these cells by a process called endocytosis.

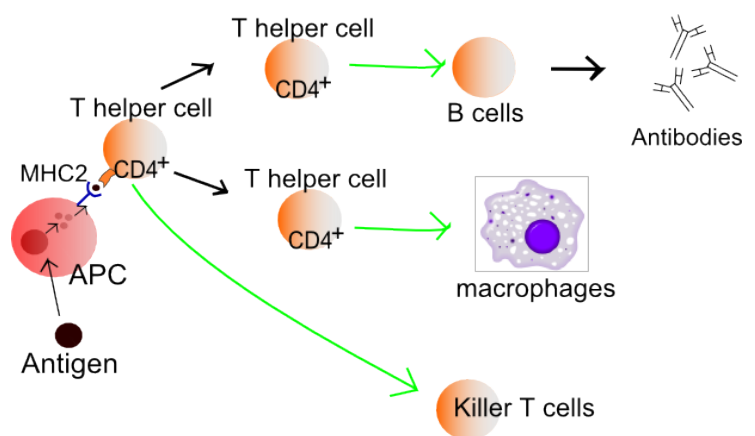
The host membrane engulfs the virus where it is carried into the cytoplasm. The coated vesicle that entered the cell attaches with the cytoplasmic endosomes and lysosomes. After the coated vesicle is broken down by the lysosomes, the viral nucleocapsid is then released into the cytoplasm. The third step is the transcription of the genome of the virus to produce viral mRNA ((+)RNA) which is then followed by the fourth step in which the viral mRNA is translated into proteins. The fifth step in the cycle is the replication of the parent virus into multiple offspring including the assembly of the newly replicated genetic materials with structural shell proteins to make fully formed offspring and release of the newly formed offspring by lysis of the host cell through the processes of extrusion or budding.



The body's defense

The way in which the body clears viruses depends upon the type of virus and whether it creates an acute or persistent infection. When the body is under acute attack from viruses, macrophages seek out and destroy the germs as soon as they are detected. If the viral infection begins to take hold as the macrophages become infected by the virus, the body's immune system utilizes T and B lymphocytes, a more powerful defense to fight back. In an acute infection, B cells produce antibodies that bind to the virus to neutralize the virus so that it is no longer capable of infecting the host cell and activate other cellular defenses and complement systems. T cells have many different functions which include sending out an alarm like signal when they detect viruses, killing the virus-infected cells directly, or help B cells to make more antibodies. Once the virus has been cleared from the body, a few specialized B and T cells retain an accurate memory of the destroyed virus to prevent another infection.

Unlike acute viral infections which are usually resolved within days and can be eliminated by the host immune system, chronic persistent infections last for long periods of time when the primary infection cannot be cleared by the adaptive immune system. Hepatitis B, the herpesviruses, Epstein-Bar virus, cytomegalovirus, and HIV-1 are examples of viruses that cause typical persistent infections. A chronic infection is a type of persistent infection that is eventually cleared from the host. A latent or slow infection, however, lasts the lifetime of the host. A key feature in persistent infections is the reduction in host defenses and the ability of the virus to kill the host cells.



Many persistent viral infections remain dormant in the host body before the immune system can destroy it and only become reactivated late in life by physical and emotional stress. The reactivation of these viruses can lead to transmission of the infection to a new host.

In some persistent viral infections, there are alternate cycles of virion production and quiescence. An example is Epstein-Bar virus, the agent of infectious mononucleosis. After the initial bout of fever, sore throat, and swollen lymph glands, the virus establishes a dormant infection in which the viral genome persists in cells of the immune system. Periodically the infection is reactivated and infectious virions are shed in the absence of clinical symptoms. These reactivations lead to transmission of the infection to new hosts.

Wellness Recommendation

Acute viral infections and the immune response is viewed as an Evil Qi invasion and Heat in the blood in TCM. When the virus has already infected the host cell and becomes a persistent infection, it is view as an Evil Qi settled inside the tissues.

RNA Viruses

For RNA viral infections in the respiratory tract caused by influenza or coronaviruses, the recommended protocol is to enhance Qi and clear heat to defend the Evil Qi from settling in the body from a TCM point of view. The recommendation includes Silver Flower. Silver Flower formula exhibits a dual function in immune regulations. While calming down the overwhelming immune system and avoiding the damage to the epithelial cells, it also helps to enhance the cellular immunity to maintain healthy levels of T cells to help the body eradicate the viral infection. It also helps improve blood circulation to support the anticoagulation function and dissolve the blood clots as well as helps repair the epithelial damage. CL is required if there is lung inflammation and infection especially for patients with a severe cough and phlegm or have a persistent cough with phlegm that won't resolve after the cold and flu is over. CL is also recommended for susceptible patients who are prone to develop bronchitis and pneumonia. Patients can experience symptom improvement in their cough, sore throat, fever, and fatigue within 1-3 days. 1-2 weeks of the protocol is recommended for significant and sustained results.

Soup A is recommended for patients who have weak lungs (lung yin deficiencies). Golden Flower may be needed after treatment with Silver Flower. Golden Flower works to clear the residual Heat in the respiratory tract after the virus has been cleared. 1-2 weeks of the Golden Flower capsules or Golden Flower tea is recommended to clear the residual Heat following the treatment with the Silver Flower.

If patients have developed bronchitis or pneumonia when the viral infections spread from the upper respiratory tract to the lower respiratory tract and triggers the inflammation of the bronchial wall or lung tissue, CL and Jade are recommended. CL helps to remove lung Heat and reduce inflammation and pro-inflammatory cytokines in the bronchial tubes and air sacs. Jade helps to enhance lung Qi and boost the cell-mediated immunity of the lungs.

If the viral infection also affects the neurological system, Linguicin is also recommended to help expel the evil Qi from the neurological system and clear the viral infection. Patients can experience symptom improvement within 1-3 days in their chronic fatigue, fibromyalgia, muscle weakness and tightness, feeling of body coldness, numbness or pain, anxiety, depression, and loss of smell or taste. 1-2 weeks of protocol is recommended to have a significant improvement.

For the common cold caused by the adenovirus, Golden Flower is recommended to help clear heat and expel the evil Qi from the respiratory tract to clear the viral infections. Patients should experience symptom improvement in their cough, sore throat, fever, and fatigue within 1-2 day. 1-2 week of protocol is recommended to have a significant improvement.

For the stomach flu caused by acute GI viral infections by the norovirus and rotavirus, Clove is recommended to help expel the cold evil Qi and enhance the immune activity to clear up the viral infections. Patients can experience symptom improvement in their vomiting, diarrhea, and abdominal pains within 1 days. 3 days to 1 week of protocol is recommended to have a significant improvement.

For hemorrhagic fever caused by Marburg virus, the recommendation includes Silver Flower, Trinicin, Bitter, Brown, Qi Booster, and LC Balancer. Silver Flower is recommended to help expel the evil Qi and clear the viral infections. Trinicin removes heat and toxins from the three burners which include the upper, middle, and lower burners resulting from the viral infections. It helps clear acute and chronic bacterial infections in the internal organs such as the brain, lungs, digestive tract, kidneys, liver, and blood. It also helps to clear the toxicity and allergic reactions caused by the microbial toxins, as well as reduce inflammation and fevers. Brown, LC Balancer, Qi Booster, and Bitter help to enhance the liver's innate immune function and improve the immune system's ability to clear acute infections as well as reduce pro-inflammatory cytokines in the blood. Patients can experience symptom improvement within 3 days. 1-2 weeks of the protocol is recommended for significant and sustained results.

DNA Viruses & Chronic RNA Viruses

For DNA viral infections caused by herpes virus, Hep B virus, cytomegalovirus (CMV), Epstein-Barr virus, human papilloma virus (HPV), or chronic RNA viruses such as Hep C virus in which the virus has infected the host cell and the immune system cannot clear the virus, the recommendation is to start with Woad, Woad-R, Bitter, Brown, Qi Booster, and LC Balancer to clear the extracellular virus and enhance innate immunity. Woad helps enhance the humoral immunity that includes antibodies, complement proteins, and certain antimicrobial peptides in the extracellular fluids to kill the virion that is circulating in the blood or in the extracellular space and prevent the virus from entering into the host cell. It also helps clear Heat and toxins resulting from the viral infections. Infections from pathogens such as viruses can cause severe stress to the body and can cause reduced blood flow from the hepatic artery to the liver. The liver has a strong innate immunity and reduced blood flow can substantially weaken the liver's innate immune function. This compromises enrichment of innate immune cells such as macrophages and natural killer T cells.

After 2-6 weeks, it is recommended to use the formula that is location specific listed in the table below to remove the Evil Qi from the body. These formulas enhance the local cell-mediated immunity including T cells, natural killer cells, and macrophages to kill the virus-infected cells as well as the free-floating viruses. Brown, LC Balancer, and Xcel are also required in combination with the specific virus clearing formula to support the liver and kidneys for effective waste removal. If patients experience acute viral infection flare-ups with these formulas, this is due to the viruses inside the host cell being released in large amounts into the extracellular space and the cellular immunity is not sufficient to clear all the free-floating viruses. CL may be required if the acute symptoms are mainly in the respiratory tract and Woad, Woad-R, Bitter, Brown, LC Balancer, and Qi Booster are required if the acute symptoms are systemic to further enhance the humoral immunity for more antibody and complementary protein productions to clear the extracellular viruses.

The toxins and waste generated from the dying virus and virus-infected cells can be irritating to the kidneys and cause kidney inflammation. If patients experience symptoms of kidney inflammation including pain or tightness under the skull, hot sensation, sweating, and tightness in the stomach or burning at the lower back, KS should be added to the protocol right away. If patients experience constipation or nausea, it is because the viral removal formula may have upset the digestive tract. Spring Capsule, SJ, and Formula B at 1/3 to 1/2 dose is required to improve the blood flow to the digestive tract and improve digestive tract contraction.

Location	Product	Description
All viruses in acute phase	Woad	Clears extracellular viruses systemically
All viruses in acute phase	Bitter, Brown, Qi Booster, LC Balancer	Enhance innate immunity
Liver in acute phase	Woad-R	Clears extracellular viruses in liver
Nervous system	Linguicin	Clears persistent viral infections in nervous system
Nerve Ending / Neuromuscular Junction / Synapse	Stephania	Clears persistent viral infections in nerve ending / neuromuscular junction / synapse
Liver/Blood	Pleurum	Clears persistent viral infections in liver and blood
Kidneys / Urinary Tract	Pleurum-K	Clears persistent viral infections in the kidneys and urinary tract
Lymphatic system	Indigo Indigo-2	Clears persistent viral infections in lymphatic system
GI Tract	Musk	Clears persistent viral infections in the stomach and digestive tract
Heart	Amber	Clears persistent viral infections in the heart
Respiratory in acute phase	CL	Clears extracellular viruses in the lungs

Lung, (Lower Respiratory)	Perilla	Clears persistent viral infections in the lungs
Throat/ Nasal (Upper Respiratory)	Perilla-R	Clears persistent viral infections in throat/ nasal (upper respiratory)
Respiratory	Jade	Enhances lung immunity
Blood Vessels	Sophia	Clears persistent viral infections in the blood vessels
Brain	Almond	Clears persistent viral infections in the brain
Brain Neuron	Folia	Clears persistent viral infections in the brain neuron
Brain and Lung	Mint	Clears persistent viral infections in the brain and lung
Brain	Gold	Clears brain scar tissue caused by viruses
GI Tract	Musk	Clears persistent viral infections in the GI tract
Skin	Saponin	Clears persistent viral infections in the skin
Skin	Jade-R	Enhances skin immunity
Kidney	Vine	Clears persistent viral infections in the kidney
Bladder / Renal Pelvis	Bean	Clears persistent viral infections in the bladder / renal pelvis
Prostate	Thunb	Clears persistent viral infections in the prostate
Muscle	Dandelion	Clears persistent viral infections in the muscle
Fenugreek	Bone Marrow	Clears persistent viral infections in the bone marrow
Bone	Pueria	Clears persistent viral infections in the bone
Microcapillary	Pterin	Clears persistent viral infections in the Microcapillary

Selected Case Studies

Case 1: Complete Symptom Resolution in Positive Coronavirus Patient

Dr. Anish Bajaj

A 25-year-old female patient who was a very active restaurant worker, started experiencing flu-like symptoms on March 15th, 2020. The patient had lost her sense of smell and taste. She was tested on the 24th for COVID-19 and was confirmed positive on the 27th. Her primary care doctor gave her Tylenol with codeine for her fever and body aches. She was experiencing difficulty and painful breathing, headache, dry cough, congestion, and difficulty speaking. Everything was labored. By the 30th, the Tylenol and Codeine helped the fever subside. However, there was no improvement in body aches, breathing, cough, and congestion.

The patient started taking Silver Flower (three capsules, three times daily) and Golden Flower (one teaspoon, two times daily) from Wei Labs. Within two days, her body aches had improved by 50%. By the third morning, she started to expel chest congestion and after day three, the patient's body aches/pains and congestion were almost completely gone. All symptoms were resolved by day six however, the patient is finishing their two-week course of Silver Flower and will continue taking Golden Flower for further support.

Case 2: Near Resolution of Symptoms in COVID-19 Positive Patient with Use of Silver Flower Formula

Chris Aragona, L.Ac, FL

A 62-year old male patient, with a history of previous health concerns (overweight, diabetes), tested positive for COVID-19 and double pneumonia on Wednesday, April 1st. Days prior to testing, the patient had begun experiencing cold/flu-like symptoms; fever, fatigue, chest tightness, and a persistent dry cough. Upon leaving the hospital on April 1st, he was administered a 5-day Z-pack antibiotic and recommended Tylenol for relief. Over the following days, (Thursday April 2nd - Friday, April 3rd), the patients' symptoms continually worsened.

On Saturday, April 4th, the patient started on the Silver Flower formula from Wei Labs and by Monday, April 6th, saw a significant turn and improvement in his symptoms - a reduction in chest tightness, dry cough, and fatigue. By Wednesday, April 8th, the patient no longer had a fever and described himself as feeling “the best I’ve felt since my initial symptoms 1.5 weeks ago”. As of Thursday, April 9th, the patient feels close to “asymptomatic” and was even able to go outside on a 20-minute walk. The patient is still taking Silver Flower at full dosage, and will continue for his remaining 2 weeks (2 bottles).

Case 3: Improved Shortness of Breath in Suspected COVID-19

Laisha Canner-Ward, AP

An eleven-year-old female patient was experiencing symptoms of fever, headache, dry cough, shortness of breath, and abdominal pain. It was suspected that she had COVID-19. On March 21st, the practitioner started the patient on Silver Flower from Wei Labs, 2 caps 3x/day. The next day, the patient was feeling “fine” and was riding her skateboard for an extended time. On March 29th, the patient was still a little tired but the mother contributed that to having to be inside for most the day because of the quarantine. The patient’s symptoms continued to improve over the course of the next week. By April 7th, the patient was feeling good and experiencing no shortness of breath at all. She has been playing soccer and tennis in the driveway with no issues.

Case 4: Increased Lung Inspiration & Elimination of Cough with Silver Flower

Jen Gayaut, AP

A 40-year-old female patient contacted my office after experiencing flu-like symptoms persisting for 3 weeks. The patient’s main complaint was the inability to hold her breath for longer than 2 seconds without coughing. Her coughing spells were so violent that she felt like she was going to pass out or lose consciousness. The patient’s oxygen saturation was at 93 and pulse rate at 78.

After doing some research, we started the patient on Silver Flower from Wei Labs. The first day she took 6 capsules at 8 am, 3 capsules at 12 pm, and another 3 capsules at 4 pm. By 8 pm that same day, the patient was able to hold her breath for 10 seconds without an interruption of coughing. The patient continued on with the formula at 3 capsules 3x/day to clear all remaining lung congestion. All of her symptoms were gone within three days of starting the formula and she reduced her dose to 2 capsules 2x/day until the bottle was empty. We started the patient on Golden Flower from Wei Labs to continue to support her immune system and lung function.

Case 5: Symptom Reduction in 74-Year-Old Respiratory Viral Infection Patient

Wei Labs Practitioner

A 74-year-old male, non-smoker, in general good health, developed an abrupt dry cough, headaches, aggressive onset of fatigue; began expectorating blood-tinged sputum, and a fever of 100.5. The patient was referred to a local Conventional Medical System for Coronavirus testing and imaging studies. A complete blood count revealed normal WBC count but depleted percentage of lymphocytes, characteristic of early viremia. CXR was 'normal'. The patient was discharged from the ER with no Coronavirus testing done. In addition to his home-care of Vit C and Vit D3, the patient began taking Silver Flower Caps, 3 TID. After 2.5 days, the patient stated he was asymptomatic. He was instructed to reduce Silver Flower to 1 cap TID and continue Vit C and D3. Hours later, the patient stated his cough had relapsed and was instructed to return to 3 caps TID.

Case 6: Natural Improvement for Systemic Inflammation and Viral Infections

Tim Blee, Lac, AZ

A 52-year-old female presented with extreme fatigue, poor sleep quality, a depressed mood, brain fog, and generalized body and joint aches with inflamed feet and legs causing mobility issues. She also experienced an intermittent and transient rash on her neck. Occasional chills were also noted. No fever presented due to the depletion of her immune system. She tested positive for HHV6, Dengue Fever, Chikungunya, and Epstein Barre viral loads. Her primary care physician diagnosed her with systemic inflammation, that was addressed through tamoxifen

and antidepressants. The patient did not tolerate these medications well, noting an increase in both overall symptoms and severity. Subsequently, in September 2017 a different course of action was advised by her Acupuncturist (Timothy Blee L.Ac.). The protocol consisted of using Wei Lab formulations concurrently with acupuncture to effectively treat the roots of her condition. She was directed to confer with Wei Labs, relay her lab results, and to follow the product recommendations.

The patient started taking the Wei Laboratories chronic infection protocol consisting of LC Balancer, Brown, Bitter and Qi Booster at one-half dose. She was also doing acupuncture several times a month and taking turmeric, zinc, and magnesium. By the end of the first month, the patient stated that she could feel the difference. She was still experiencing some aches and pains but noticed she was moving better and feeling less tired on a daily basis, she stated it was a 75% improvement in overall quality of life. Unfortunately, on October 6th the patient was asked to stop taking all her medication and supplements to undergo more in-depth testing at Mayo Clinic. She noticed that this time of stress aggravated her symptoms and she started to feel worse again. She did Electromyogram testing which caused so much inflammation in her legs she was unable to walk again for several days.

On October 23rd, the Mayo clinic cleared the patient to restart her herbal formulations. She continued on the chronic infection protocol as outlined before. The protocol was modified on Dec 7th, when patient consult revealed emotional lability with anxiety and depression. Hepavin was added to the Bitter, Brown, LC Balancer, and Qi Booster to help decrease the anxiety and depression. These formulas continued to be administered at half normal dose.

During a Jan 1, 2018 consult, the patient inferred significant improvement since the last contact. The severity of fatigue was reduced from 10/10 to 4/10. Overall Pain decreased from 10/10 to 7/10 with an emphasis on overall leg improvement. She had previously had a hard time wearing shoes and used physio tape to walk semi-comfortably. The patient is now able to wear shoes and inflammation is contained to the bottom of her feet only. The patient has noted she is emotionally more stable, more social and feeling like she is coming out of her cocoon. She has never reacted poorly to the herbal products, is happy with her results, and excited to continue reclaiming her life.

Case 7: Successful Resolution of Grand Mal Seizures with Emphasis on Infection Clearing

Dr. Marilyn Coady, DC, NM

A 13 y.o. boy had been suffering from severe grand mal seizures since he was 8 months old following vaccinations. He was having 5-6 episodes every night. The patient also suffered from severe acne on his face as well as a lack of mental clarity, poor muscle tone, and academically was severely behind.

Dr. Coady believed that there was brain inflammation involved and recommended Wei Lab's Platinum at ½ dose with LC balancer to improve his kidney health. The first three days after using the formulas, there was only one mild seizure on the first night, no seizure on the second night, and one mild one until 6 am. Then on the following night, he started to have seizures again in an even bigger intensity. Dr. Coady then added Hepavin which removes liver heat. The seizures became less severe, lighter and less frequent. However, the improvement quickly plateaued.

Dr. Coady added Brown and Qi Booster to help improve liver function and enhance immunity. The patient started progressing again, but there was still sometimes seizure spikes. Dr. Coady started working on the patient's digestive tract because he had indigestion, constipation, brain fog, and short memory. After adding Luminen which also helps remove liver heat and improve digestion, the patient's seizures become lighter in intensity, but still had not gone away completely. His digestion had much improved with regular bowel movements and he had less brain fog with improved cognition. Also, in the following week, he had two nights with no seizures. But again, his improvement plateaued.

Dr. Coady thought there may be an infection going on which was caught after the vaccination. Bitter, Brown, LC Balancer, and Qi Booster were recommended at ½ dose. The patient was doing much better with the new protocol

that addressed general infections. After two weeks, his drilling was completely stopped and in four nights of the second week, there are no seizures at all.

Unfortunately, the progress plateaued again. In the next two years, the patient had gone through many protocols that address gram-negative germs, mycobacteria, fungus, and parasites using Wei Laboratories formulas. Although the patient is continuing to improve, the seizures still persist with 2-3 mild seizures each night. Dr. Coady then believed that there may be a viral infection as well. Following lab tests showed that the patient was hepatitis A positive. An MRI found lesions at the cerebellum, which is the bottom of the brain. Then the patient got a dog bite and the seizures relapsed.

In the following protocols, Dr. Coady focused on clearing the virus. The first protocol using Woad and Woad-R together with Bitter, Brown, Qi Booster, and LC Balancer. The patient is also using a drug, Dilantin based his MD's prescription. After 3 weeks of treatment, the patient saw a great improvement. There were almost no seizures except on a couple of days with an occasional seizure.

Dr. Coady added Gingko and Deer to the protocol to nurture the neurons and nervous system. After 2 weeks, it was reported that the fine tremor on both hands had completely diminished with zero seizures, better cognition, and more focus on school work as well as more alert and conversational. Before the patient was very weak and could not even throw a basketball to hit the board, now he is shooting the ball to the basket. The patient's hand eye coordination has much improved. He is participating in a welding class. Also, he can now participate in PE class without problems. The patient is also doing better in math class. The patient's cognitive function has much improved. However, his hands and feet are cold to touch with no changes. It still takes about an hour after waking to be fully functional.

Dr. Coady then recommended Pleurum, Pleurum-K, Brown, LC Balancer, and Xcel to clear the virus-infected cells in his blood, liver, and kidneys. After 3 weeks, his acne had almost gone away completely. Then Dr. Coady recommended Almond with Brown, LC Balancer, and Xcel to clear the virus-infected cells in the brain. After 3 weeks, his acne was completely gone. The patient is now continuing treatment with Wei Lab formula for further improvement.

Case 8: Natural Formulas for Pneumonia

Dr. John Filippini, DC, CA

An 82 y.o. female patient suffered from Pneumonia and was dying. The ER did everything they could but could not stop the worsening of the condition. The patient was released to hospice on 6/30/2017 to wait to die. The daughters of the patient asked if Dr. Filippini, DC could do anything. Dr. Filippini, DC prescribed Rife treatment and Wei Laboratories formulas (ClearLung, LC Balancer, Bitter capsules and Brown Juice) that target the infections. The formulas were brought to her on Friday 7/7/2017, and were given to the patient by the nurses at Hospice as prescribed. The daughter of the patient gave her the first Rife treatments during that weekend. On the following Monday 7/10/2017, the patient was sitting up and wanting to go outside. (She previously was too weak to sit up and speak). She went through the 10-day protocol of formulas and used the Rife treatment the following weekend again, and was so much better: she was no longer at the brink of death, and was laughing and back to her old self.

Below is the narrative of the two daughters of the patient.

Sarai: Our Mother suffered a stroke about 12 years ago, and is paralyzed on half of her body. She was 82 years old and in a nursing home. I (Jane) was checking on her and noticed there was noise in her chest. I could hear it and feel it. I finally got the nurses to admit her to the ER, where they took X-rays and diagnosed her with pneumonia and dehydration. She also had not eaten in a week. She was admitted for a week, putting her on aggressive antibiotics. Pneumonia continued to spread to the other lobes of her lungs, and they continued to increase her antibiotics, and the third set of X-rays showed further spreading of the infection in the lungs.

I asked if they could put her on stronger antibiotics, but they said they could not because she could not expel the fluids up due to her paralysis. The doctor that was overseeing her case called me that Friday and told me he was

releasing her from care to palliative care...and not to bring her back to the hospital. There was nothing more they could do for her, so just take her back and let her die with dignity.

I purchased an urn, as she wanted to be cremated, and contacted my family, making arrangements for her funeral. I called my sister, Rachel to let her know our mom was dying. Rachel works with Dr. Filippini, DC at Abundant Life Health and Wellness, and she asked Dr. Filippini, DC if there was anything we could do for her.

Dina: Dr. Filippini, DC replied "sure - no problem" and he sent me with several Wei Laboratories formulas (ClearLung, LC Balancer, Bitter capsules and Brown Juice) that specifically targets the infections. The medical doctor allowed the alternative care formulas as part of the palliative care, and the nurses at Hospice gave them to her as prescribed by Dr. Filippini, DC. I went down on the weekends and took our Rife equipment and ran the various pneumonia programs on her, and since she couldn't sit up, I placed her hand in the foot bath to pull out the toxins. She started refusing any more supplements after the 10 days, however, so I continued to Rife her on the weekends. After the Wei products and Rife treatments, she started to improve.

I would listen to her chest, and I could hear the gurgling diminish significantly...to the point that she's back to her old self - laughing and sneaking bad food (she's a diabetic and was caught eating sweetbread).

Sarai: Mom had not been out of bed for three weeks. She was too weak, and didn't have the energy, and very severely depressed. But after Rachel did the Rife treatments on Saturday, she wanted to get up on Sunday. So, we got her up into her wheelchair and took her outside for some sunshine. She was still on Hospice care because that's the doctor's order...but she's completely healed! And it only took 2 weeks.