CRISIS CABINET (INTERNATIONAL FEDERATION OF PHARMACEUTICAL MANUFACTURERS & ASSOCIATIONS)

Study Guide

Open Agenda

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#inthepathofscienceanddiplomacy

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Letter from Secretary General

Dear Delegates,
I would like to welcome you all to the 2nd official session of Izmir Science High School Model United Nations Conference as the Secretary General. I am a sophomore in our school and this conference was actually a dream for me when I first came to this school as a freshman student last year. I had no idea about MUN conferences then. I was just a girl who wanted to do something to improve myself and I joined our school's MUN club, not really expecting anything. But I found out that it is what I want to do in high school. In this conference, our aim is to welcome you all and provide you with anything you need. We will be sure that all your needs are provided, you are having fun, and most importantly you are learning about politics and diplomacy.
As the executive team, we try to make sure that our conference has everything you need. With our incredible academic team, prepare yourselves for the best committees you have ever been in. And with our organization team, you can be sure that all of your needs will be covered patiently from top to bottom. As the secretary general of this conference, I suggest you to read your study guides properly and do research about your agenda item. I hope you all have a productive conference full of unforgettable memories at MUNIFL'25.

All The Best!

Hazal Kuş
Secretary General

Letter from Under Secretary General

Dear delegates,

I am happy to welcome you to Izmir Fen High School Model United nations conference. I'm Kaan Şenel and I'll be your under secretary general for the next 3 days.
My purpose is to keep the committee functioning and make sure you have an enjoyable 3 days. This committee will be really different from your past committees because it's really different in terms of how it works. Unlike normal committees, here your allocations in the simulation are pharmaceutical companies. Your ultimate goal is to protect the world from future and current crises, while strengthening the economic dimension of your company and strengthening the public opinion.

Without further delays, I leave you alone with the study guide, if you have any questions, do not hesitate to contact me.

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Kaan Şenel

Introduction to the Committee

Humanity has faced many threats of extinction throughout its history. The most dangerous of these were epidemics and plagues. These invisibly small creatures have challenged humans many times, but humans have still been able to win against them. This was mainly due to improved scientific technology, new treatment methods and techniques such as quarantine. Various scenarios in which these

methods do not work have shown their dystopian presence on the agenda of popular culture. With the recent COVID-19 pandemic, it has been a subject of debate whether humanity will continue to exist in the future. Here, as your USG, I have to remind you that although the option that covid can bring the descendants of humans seems funny, it was a terrible situation for everyone when it first appeared.

The number one organization to prevent these epidemics is the WHO committee under the United Nations. The WHO's main goal is to make human health, both physical and mental, sovereign. Alongside these organizations, there are subsidiary organizations that our committee will work with.

The IFPMA is the common community that looks after the common interests of companies that make money by selling human health. IFPMA was founded in 1968, Geneva, Switzerland, and since then has created trade networks and collaboration opportunities for member companies. Then the Trump Tariff crisis struck, and some of the companies really affected by the situation, just like previous Great Recession. Although some companies made their way up to signing new contracts and boosting their reputation, and improved their economic standards, unfortunately, some companies couldn’t do the same. By the end of the year 2025, the Medical supplies and drugs needed couldn’t be restored properly in the requested areas, which resulted in the spread of diseases more often. The companies began to trade less globally and started trading in their regions to avoid these harsh payments.

Our comitee is a simulation of the IFPMA and your alloctions will be pharmaceutical companies. Your main purpose is to increase the worth of your company and fight against the global upcoming health problems. As a little suggestion make plans before entering the conference, as this comitee will include diffrent types of plot twists.

Past Pandemic Crisis on Earth

Pandemics are not new. They have happened many times in history and have always changed how people live.

The Plague of Justinian started in the year 541 and killed millions of people in the Byzantine Empire. People did not understand how diseases spread. Today, we know much more about viruses and bacteria, but fast action is still very important in any outbreak.

In 1347, the Black Death spread across Europe. It killed one-third of the population. People were afraid and didn’t know what to do. Now, we have doctors, medicine, and science to help us, but fear still spreads quickly during health crises, just like we saw with COVID-19.

In 1918, the Spanish Flu infected around 500 million people. Many were young and healthy, yet still died. This reminds us today that even strong people can be affected by viruses. During COVID-19, many young people also got sick, and some died. It showed again that no one is completely safe.

The HIV/AIDS crisis began in the 1980s. It was different because it spread slowly and mostly through blood. At first, people were scared and some groups were blamed. Today, we try to avoid that kind of discrimination, especially during new pandemics. COVID-19 taught us again that kindness and understanding are very important.

In 2009, the H1N1 or swine flu spread across the world. It was not very deadly, but it moved fast. It showed that even small viruses can cause big fear and panic. We saw the same thing with COVID-19, where information and misinformation spread quickly online.

The most recent pandemic, COVID-19, started in 2019. It changed the whole world. Schools closed, travel stopped, and people lost jobs. But we also saw the power of science, such as BioNTech. (we are also deep□□)

COVID-19 map at its peak period, 2022

Biological Symptoms

There are some classic and extraordinary symptoms that specific diseases show specific symptoms which we can use to diagnose patients according to them.

Nausea:
Nausea is a diffuse sensation of unease and discomfort, sometimes perceived as an urge to vomit. It can be a debilitating symptom if prolonged and has been described as placing discomfort on the chest, abdomen, or back of the throat. Nausea is a non-specific symptom, which means that it has many possible causes. Some common causes of nausea are gastroenteritis and other gastrointestinal disorders, food poisoning, motion sickness, dizziness, migraine, fainting, low blood sugar, anxiety, hyperthermia, dehydration and lack of sleep. Nausea is a side effect of many medications including chemotherapy, or morning sickness in early pregnancy. Can be treated with promethazine, metoclopramide, and ondansetron.

Coughing:
A cough is a sudden expulsion of air through the large breathing passages which can help clear them of fluids, irritants, foreign particles and microbes. Frequent coughing usually indicates the presence of a disease. Many viruses and bacteria benefit, from an evolutionary perspective, by causing the host to cough, which helps to spread the disease to new hosts. Irregular coughing is usually caused by a respiratory tract infection but can also be triggered by choking, smoking, air pollution, asthma, gastroesophageal reflux disease, post-nasal drip, chronic bronchitis, lung tumors, heart failure and medications such as angiotensin-converting-enzyme inhibitors (ACE inhibitors) and beta blockers. To prevent, cough suppressants such as codeine and dextromethorphan can be used.

Rash:

A rash is a change of the skin that affects its color, appearance, or texture.

A rash may be localized in one part of the body, or affect all the skin. Rashes may cause the skin to change color, itch, become warm,

bumpy, chapped, dry, cracked or blistered, swell, and may be painful. The causes, and therefore treatments for rashes, vary widely. Diagnosis must take into account such things as the appearance of the rash, other symptoms, what the patient may have been exposed to, occupation, and occurrence in family members. The diagnosis may confirm any number of conditions. The presence of a rash may aid diagnosis; associated signs and symptoms are diagnostic of certain diseases. Can be treated with steroid topical creams such as hydrocortisone.

Insomnia:

Insomnia, also known as sleeplessness, is a sleep disorder where people have difficulty sleeping. Insomnia can occur independently or as a result of another problem. Conditions that can result in insomnia include psychological stress, chronic pain, heart failure, hyperthyroidism, heartburn, restless leg syndrome, menopause, certain medications, and drugs such as caffeine, nicotine, and alcohol. Insomnia is also common in people with ADHD, and children with autism. Other risk factors include working night shifts and sleep apnea. Diagnosis is based on sleep habits and an examination to look for underlying causes. Can be treated via sleep hygiene, cognitive behavioral therapy and sleeping pills. If it is not treated correctly, it can lead to decrease in performance, slower reaction time, risk of anxiety and depression, obesity, poor immune system function, high blood pressure, risk of diabetes and heart disease.

Cysts:

A cyst is a closed sac, having a distinct envelope and division compared with the nearby tissue. Once formed, a cyst may resolve on

its own. When a cyst fails to resolve, it may need to be removed surgically, but that would depend upon its type and location. Cancer-related cysts are formed as a defense mechanism for the body following the development of mutations that lead to an uncontrolled cellular division. Once that mutation has occurred, the affected cells divide incessantly and become cancerous, forming a tumor. The body encapsulates those cells to try to prevent them from continuing their division and contain the tumor, which becomes known as a cyst. That said, the cancerous cells still may mutate further and gain the ability to form their own blood vessels, from which they receive nourishment before being contained. Once that happens, the capsule becomes useless, and the tumor may advance from benign to cancerous. Some cysts are neoplastic, and thus are called cystic tumors.

Anaemia:

Anemia is a blood disorder in which the blood has a reduced ability to carry oxygen. This can be due to a lower than normal number of red blood cells, a reduction in the amount of hemoglobin available for oxygen transport, or abnormalities in hemoglobin that impair its function. When anemia comes on slowly, the symptoms are often vague, such as tiredness, weakness, shortness of breath, headaches, and a reduced ability to exercise. When anemia is acute, symptoms may include confusion, feeling like one is going to pass out, loss of consciousness, and increased thirst. Anemia must be significant before a person becomes noticeably pale. Additional symptoms may occur depending on the underlying cause. Anemia can be temporary or long term and can range from mild to severe. Anemia can be caused by blood loss, decreased red blood cell production, and increased red blood cell breakdown. Causes of blood loss include bleeding due to inflammation of the stomach or intestines, bleeding from surgery, serious injury, or blood donation. Causes of decreased

production include iron deficiency, folate deficiency, vitamin B_{12} deficiency, thalassemia and a number of bone marrow tumors. Causes of increased breakdown include genetic disorders such as sickle cell anemia, infections such as malaria, and certain autoimmune diseases like autoimmune hemolytic anemia.

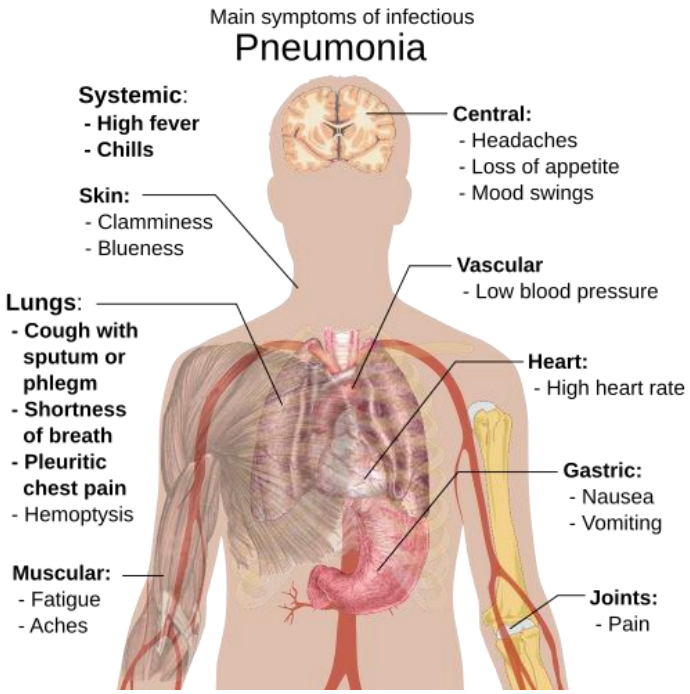
Vomiting:

Vomiting (also known as emesis, puking and throwing up) is the forceful expulsion of the contents of one's stomach through the mouth and sometimes the nose. Vomiting can be the result of ailments like food poisoning, gastroenteritis, pregnancy, motion sickness, or hangover; or it can be an after-effect of diseases such as brain tumors, elevated intracranial pressure, or overexposure to ionizing radiation. The feeling that one is about to vomit is called nausea; it often precedes, but does not always lead to vomiting. Impairment due to alcohol or anesthesia can cause inhalation of vomit. In severe cases, where dehydration develops, intravenous fluid may be required. Antiemetics are sometimes necessary to suppress nausea and vomiting.

Pneumonia:

Pneumonia is an inflammatory condition of the lung primarily affecting the small air sacs known as alveoli. Symptoms typically include some combination of productive or dry cough, chest pain, fever, and difficulty breathing. The severity of the condition is variable. Pneumonia is usually caused by infection with viruses or

bacteria, and less commonly by other microorganisms. Identifying the responsible pathogen can be difficult. Diagnosis is often based on symptoms and physical examination. Chest X-rays, blood tests, and culture of the sputum may help confirm the diagnosis. The disease may be classified by where it was acquired, such as community- or hospital-acquired or healthcare-associated pneumonia. Risk factors for pneumonia include cystic fibrosis, chronic obstructive pulmonary disease (COPD), sickle cell disease, asthma, diabetes, heart failure, a history of smoking, a poor ability to cough (such as following a stroke), and immunodeficiency. Vaccines to prevent certain types of pneumonia (such as those caused by *Streptococcus pneumoniae* bacteria, influenza viruses, or SARS-CoV-2) are available. Other methods of prevention include hand washing to prevent infection, prompt treatment of worsening respiratory symptoms, and not smoking. Treatment depends on the underlying cause. Pneumonia believed to be due to bacteria is treated with antibiotics. If the pneumonia is severe, the affected person is generally hospitalized. Oxygen therapy may be used if oxygen levels are low.



Sneezing:

A sneeze (also known as sternutation) is a semi-autonomous, convulsive expulsion of air from the lungs through the nose and mouth, usually caused by foreign particles irritating the nasal mucosa. A sneeze expels air forcibly from the mouth and nose in an explosive, spasmodic involuntary action. This action allows for mucus to escape through the nasal cavity and saliva to escape from the oral cavity. It can be caused by viral infections. Sneezes can spread disease through infectious aerosol droplets, it is recommended to cover one's mouth and nose with the forearm, the inside of the elbow, a tissue while sneezing. In addition to covering the mouth, looking down is also recommended to change the direction of the droplets spread and avoid high concentration in the human breathing heights.

Paranoia:

Paranoia is an instinct or thought process that is believed to be heavily influenced by anxiety, suspicion, or fear, often to the point of delusion and irrationality. Paranoid thinking typically includes persecutory beliefs, or beliefs of conspiracy concerning a perceived threat towards oneself. Paranoia is distinct from phobias, which also involve irrational fear, but usually no blame. A paranoid reaction may be caused from a decline in brain circulation as a result of high blood pressure or hardening of the arterial walls. Paranoid delusions are often treated with antipsychotic medication, which exert a medium effect size.

Hypersensitivity:

Hypersensitivity (also called hypersensitivity reaction or intolerance) is an abnormal physiological condition in which there is an undesirable and adverse immune response to an antigen. It is an

abnormality in the immune system that causes immune diseases including allergies and autoimmunity. It is caused by many types of particles and substances from the external environment or from within the body that are recognized by the immune cells as antigens. The immune reactions are usually referred to as an over-reaction of the immune system and they are often damaging and uncomfortable. In 1963, Philip George Houthem Gell and Robin Coombs introduced a systematic classification of the different types of hypersensitivity based on the types of antigens and immune responses involved. According to this system, known as the Gell and Coombs classification or Gell-Coombs's classification, there are four types of hypersensitivity, namely: type I, which is an Immunoglobulin E (IgE) mediated immediate reaction; type II, an antibody-mediated reaction mainly involving IgG or IgM; type III, an immune complex-mediated reaction involving IgG, complement system and phagocytes; and type IV, a cytotoxic, cell-mediated, delayed hypersensitivity reaction involving T cells. The treatment of immediate hypersensitivity reactions includes the management of anaphylaxis with intramuscular adrenaline (epinephrine), oxygen, intravenous (IV) antihistamine, support blood pressure with IV fluids, avoid latex gloves and equipment in patients who are allergic, and surgical procedures such as tracheotomy if there is severe laryngeal edema. Allergic bronchial asthma can be treated with any of the following: inhaled short- and long-acting bronchodilators (anticholinergics) along with inhaled corticosteroids, leukotriene antagonists, use of disodium cromoglycate, and environmental control. Experimentally, a low dose of methotrexate or cyclosporin and omalizumab (a monoclonal anti-IgE antibody) has been used.Treatment of autoimmune disorders (e.g., SLE) include one or a combination of NSAIDs and hydroxychloroquine, azathioprine, methotrexate, mycophenolate, cyclophosphamide, low dose IL-2, intravenous immunoglobulins, and belimumab. Omalizumab is a monoclonal antibody that interacts with the binding site of the high-affinity IgE receptor on mast cells. It is an

engineered, humanized recombinant immunoglobulin. Moderate to severe allergic bronchial asthma can improve with omalizumab. For delayed hypersensivity treatment, 4 types of HR involves the treatment of the eliciting cause. The most common drugs to treat tuberculosis include isoniazid, rifampin, ethambutol, and pyrazinamide. For drug-resistant TB, a combination of antibiotics such as amikacin, kanamycin, or capreomycin should be used. The most common drugs to treat leprosy include rifampicin and clofazimine in combination with dapsone for multibacillary leprosy. A single dose of antimicrobial combination to cure single lesion paucibacillary leprosy comprises ofloxacin, rifampicin, and minocycline. Praziquantel can be useful for treating infections caused by all *Schistosoma* species. Hydroxychloroquine and chloroquine can use in the therapy of sarcoidosis involving the skin, lungs, and the nervous system. The use of anti-TNF monoclonal antibodies such as adalimumab and certolizumab have been approved for Crohn's disease.

Abscesses:

An abscess is a collection of pus that has built up within the tissue of the body, usually caused by bacterial infection. Signs and symptoms of abscesses include redness, pain, warmth, and swelling. The swelling may feel fluid-filled when pressed. The area of redness often extends beyond the swelling. They are usually caused by a bacterial infection. Often many different types of bacteria are involved in a single infection. In many areas of the world, the most common bacteria present is *methicillin-resistant Staphylococcus aureus*. Rarely, can cause abscesses; this is more common in the developing world. Diagnosis of a skin abscess is usually made based on what it looks like and is confirmed by cutting it open. Ultrasound imaging may be useful in cases in which the diagnosis is not clear. In

abscesses around the anus, computer tomography (CT) may be important to look for deeper infection. Standard treatment for most skin or soft tissue abscesses is cutting it open and drainage. There appears to be some benefit from also using antibiotics. A small amount of evidence supports not packing the cavity that remains with gauze after drainage. Closing this cavity right after draining it rather than leaving it open may speed healing without increasing the risk of the abscess returning. Sucking out the pus with a needle is often not sufficient.

Haemophilia:

Haemophilia is a mostly inherited genetic disorder that impairs the body's ability to make blood clots, a process needed to stop bleeding. This results in people bleeding for a longer time after an injury, easy bruising, and an increased risk of bleeding inside joints or the brain. Those with a mild case of the disease may have symptoms only after an accident or during surgery. Bleeding into a joint can result in permanent damage while bleeding in the brain can result in long term headaches, seizures, or an altered level of consciousness. It can be treated by replacing missing blood clotting factors if possible.

Pulmonary Oedema:

Pulmonary Oedema, also known as pulmonary congestion, is excessive fluid accumulation in the tissue or air spaces (usually alveoli) of the lungs. This leads to impaired gas exchange, most often leading to shortness of breath (dyspnea) which can progress to hypoxemia and respiratory failure. Pulmonary edema has multiple causes and is traditionally classified as cardiogenic (caused by the heart) or noncardiogenic (all other types not caused by the heart).

Various laboratory tests (CBC, troponin, BNP, etc.) and imaging studies (chest x-ray, CT scan, ultrasound) are often used to diagnose and classify the cause of pulmonary oedema. Pulmonary oedema can cause permanent organ damage, and when sudden (acute), can lead to respiratory failure or cardiac arrest due to hypoxia.

Fever:

Fever or pyrexia in humans is a symptom of an anti-infection defense mechanism that appears with body temperature exceeding the normal range due to an increase in the body's temperature set point in the hypothalamus. There is no single agreed-upon upper limit for normal temperature: sources use values ranging between 37.2 and 38.3 °C (99.0 and 100.9 °F) in humans. A fever can be caused by many medical conditions ranging from non-serious to life-threatening. This includes viral, bacterial, and parasitic infections such as influenza, the common cold, meningitis, urinary tract infections, appendicitis, Lassa fever, COVID-19, and malaria. Non-infectious causes include vasculitis, deep vein thrombosis, connective tissue disease, side effects of medication or vaccination, and cancer. It differs from hyperthermia, in that hyperthermia is an increase in body temperature over the temperature set point, due to either too much heat production or not enough heat loss. Symptoms of fever are primarily shivering and feeling cold in the first stage, and then being flushed and sweating. It can be treated with paracetamol or ibuprofen. If it is not treated correctly can lead to febrile seizure.

Inflammation:

Inflammation is part of the biological response of body tissues to harmful stimuli, such as pathogens, damaged cells, or irritants. The five cardinal signs are heat, pain, redness, swelling, and loss of function. Inflammation is a generic response, and therefore is

considered a mechanism of innate immunity, whereas adaptive immunity is specific to each pathogen. Inflammation is a protective response involving immune cells, blood vessels, and molecular mediators. The function of inflammation is to eliminate the initial cause of cell injury, clear out damaged cells and tissues, and initiate tissue repair. Too little inflammation could lead to progressive tissue destruction by the harmful stimulus (e.g. bacteria) and compromise the survival of the organism. However inflammation can also have negative effects. Too much inflammation, in the form of chronic inflammation, is associated with various diseases, such as hay fever, periodontal disease, atherosclerosis, and osteoarthritis. Inflammation can be classified as *acute* or *chronic*. Acute inflammation is the initial response of the body to harmful stimuli, and is achieved by the increased movement of plasma and leukocytes (in particular granulocytes) from the blood into the injured tissues. A series of biochemical events propagates and matures the inflammatory response, involving the local vascular system, the immune system, and various cells in the injured tissue. Prolonged inflammation, known as *chronic inflammation*, leads to a progressive shift in the type of cells present at the site of inflammation, such as mononuclear cells, and involves simultaneous destruction and healing of the tissue.

Neoplasms:

A neoplasm is a type of abnormal and excessive growth of tissue. The process that occurs to form or produce a neoplasm is called **neoplasia**. The growth of a neoplasm is uncoordinated with that of the normal surrounding tissue, and persists in growing abnormally, even if the original trigger is removed. This abnormal growth usually forms a mass, which may be called a **tumour** or **tumor**. ICD-10 classifies neoplasms into four main groups: benign neoplasms, in situ neoplasms, malignant neoplasms, and neoplasms of uncertain or

unknown behavior. Malignant neoplasms are also simply known as cancers and are the focus of oncology. When cancer begins, it produces no symptoms. Signs and symptoms appear as the mass grows or ulcerates. The findings that result depend on cancer's type and location. Few symptoms are specific. Many frequently occur in individuals who have other conditions. Cancer can be difficult to diagnose and can be considered a "great imitator".

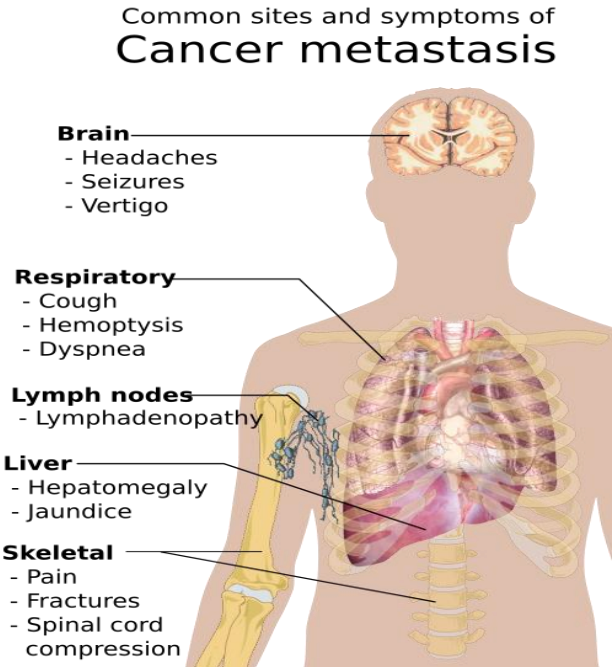
Local symptoms may occur due to the mass of the tumor or its ulceration. For example, mass effects from lung cancer can block the bronchus resulting in cough or pneumonia; esophageal cancer can cause narrowing of the esophagus, making it difficult or painful to swallow; and colorectal cancer may lead to narrowing or blockages in the bowel, affecting bowel habits. Masses in breasts or testicles may produce observable lumps. Ulceration can cause bleeding that can lead to symptoms such as coughing up blood (lung cancer), anemia or rectal bleeding (colon cancer), blood in the urine (bladder cancer), or abnormal vaginal bleeding (endometrial or cervical cancer). Although localized pain may occur in advanced cancer, the initial tumor is usually painless. Some cancers can cause a buildup of fluid within the chest or abdomen.

Systemic symptoms may occur due to the body's response to the cancer. This may include fatigue, unintentional weight loss, or skin changes. Some cancers can cause a systemic inflammatory state that leads to ongoing muscle loss and weakness, known as cachexia. Some cancers, such as Hodgkin's disease, leukemias, and liver or kidney cancers, can cause a persistent fever. Shortness of breath, called dyspnea, is a common symptom of cancer and its treatment. The causes of cancer-related dyspnea can include tumors in or around the lung, blocked airways, fluid in the lungs, pneumonia, or treatment reactions including an allergic response. Treatment for dyspnea in patients with advanced cancer can include fans, bilevel ventilation,

acupressure/reflexology and multicomponent nonpharmacological interventions. Some systemic symptoms of cancer are caused by hormones or other molecules produced by the tumor, known as paraneoplastic syndromes. Common paraneoplastic syndromes include hypercalcemia, which can cause altered mental state, constipation and dehydration, or hyponatremia, which can also cause altered mental status, vomiting, headaches, or seizures. For diagnosing most cancers are initially recognized either because of the appearance of signs or symptoms or through screening. Neither of these leads to a definitive diagnosis, which requires the examination of a tissue sample by a pathologist. People with suspected cancer are investigated with medical tests. These commonly include blood tests, X-rays, (contrast) CT scans and endoscopy.

The tissue diagnosis from the biopsy indicates the type of cell that is proliferating, its histological grade, genetic abnormalities and other features. Together, this information is useful to evaluate the prognosis and to choose the best treatment.

Cytogenetics and immunohistochemistry are other types of tissue tests. These tests provide information about molecular changes (such as mutations, fusion genes and numerical chromosome changes) and may thus also indicate the prognosis and best treatment. There are some ways to try to taking control of the canser tissue and the most known ways are chemotherapy, radiation therapy, surgery, palliative care,immunotherapy, laser therapy, and alternative medicines.



Diarrhoea:

Diarrhoea is the condition of having at least three loose, liquid, or watery bowel movements in a day. It often lasts for a few days and can result in dehydration due to fluid loss. Signs of dehydration often begin with loss of the normal stretchiness of the skin and irritable behaviour. This can progress to decreased urination, loss of skin color, a fast heart rate, and a decrease in responsiveness as it becomes more severe. Loose but non-watery stools in babies who are exclusively breastfed, however, are normal. The most common cause is an infection of the intestines due to a virus, bacterium, or parasite—a condition also known as gastroenteritis. These infections are often acquired from food or water that has been contaminated by feces, or directly from another person who is infected. The three types of diarrhea are: short duration watery diarrhea, short duration bloody diarrhea, and persistent diarrhea (lasting more than two weeks, which can be either watery or bloody). The short duration watery diarrhea may be due to cholera, although this is rare in the developed world. If blood is present, it is also known as dysentery. Diarrhea can be prevented by improved sanitation, clean drinking water, and hand washing with soap. Breastfeeding for at least six months and

vaccination against rotavirus is also recommended. Oral rehydration solution (ORS)—clean water with modest amounts of salts and sugar—is the treatment of choice. Zinc tablets are also recommended. These treatments have been estimated to have saved 50 million children in the past 25 years. When people have diarrhea it is recommended that they continue to eat healthy food, and babies continue to be breastfed. If commercial ORS is not available, homemade solutions may be used. In those with severe dehydration, intravenous fluids may be required. Most cases, however, can be managed well with fluids by mouth. Antibiotics, while rarely used, may be recommended in a few cases such as those who have bloody diarrhea and a high fever, those with severe diarrhea following travelling, and those who grow specific bacteria or parasites in their stool. Loperamide may help decrease the number of bowel movements but is not recommended in those with severe disease.

Pulmonary Fibrosis:

Pulmonary fibrosis is a condition in which the lungs become scarred over time. Symptoms include shortness of breath, a dry cough, feeling tired, weight loss, and nail clubbing. Complications may include pulmonary hypertension, respiratory failure, pneumothorax, and lung cancer. Causes include environmental pollution, certain medications, connective tissue diseases, infections, and interstitial lung diseases. But in most cases the cause is unknown (idiopathic pulmonary fibrosis). Diagnosis may be based on symptoms, medical imaging, lung biopsy, and lung function tests. No cure exists and treatment options are limited. Treatment is directed toward improving symptoms and may include oxygen therapy and pulmonary rehabilitation. Certain medications may slow the scarring. Lung transplantation may be an option. At least 5 million people are affected globally. Life expectancy is generally less than five

years.Symptoms of pulmonary fibrosis are mainly: Shortness of breath, particularly with exertion, Chronic dry, hacking coughing, Fatigue and weakness, Chest discomfort, including chest pain, Loss of appetite and rapid weight loss. Pulmonary fibrosis is suggested by a history of progressive shortness of breath (dyspnea) with exertion. Sometimes fine inspiratory crackles can be heard at the lung bases on auscultation. A chest X-ray may not be abnormal, but high-resolution CT will often show abnormalities.

Immunosuppression:

Immunosuppression is a reduction of the activation or efficacy of the immune system. Some portions of the immune system itself have immunosuppressive effects on other parts of the immune system, and immunosuppression may occur as an adverse reaction to treatment of other conditions. In general, deliberately induced immunosuppression is performed to prevent the body from rejecting an organ transplant. Additionally, it is used for treating graft-versus-host disease after a bone marrow transplant, or for the treatment of auto-immune diseases such as systemic lupus erythematosus, rheumatoid arthritis, Sjögren's syndrome, or Crohn's disease. This is typically done using medications, but may involve surgery (splenectomy), plasmapheresis, or radiation. A person who is undergoing immunosuppression, or whose immune system is weak for some other reasons (such as chemotherapy or HIV), is said to be *immunocompromised*.

Skin Lesions:

A lesion is any damage or abnormal change in the tissue of an organism, usually caused by injury or diseases. Skin lesions breaks

down in the epidermis causing large open wounds which significantly increase infectivity.

Non-Epiletic Seizures:

Non-epileptic seizures (NES) are paroxysmal events that resemble epileptic seizures but are not caused by abnormal electrical discharges in the brain. They are not a single condition, but a descriptive category encompassing multiple disorders that can produce seizure-like episodes without the electrical activity that defines epilepsy. Some arise from functional disruptions in brain activity, as seen in psychogenic non-epileptic seizures (PNES) – a common subtype classified under functional neurological disorders. Others result from physiological causes, including fainting, sleep disorders, or movement disorders, which can mimic epileptic seizures despite distinct mechanisms. Non-epileptic seizures do not respond to anti-seizure medications. The gold standard for distinguishing them from epilepsy is video-electroencephalographic (video-EEG) monitoring. Management depends on the underlying cause: functional seizures are treated with psychological and rehabilitative therapies, while physiological mimics require targeted medical care.

Paralysis:

Paralysis is a loss of motor function in one or more muscles. Paralysis can also be accompanied by a loss of feeling (sensory loss) in the affected area if there is sensory damage. Paralysis is most often caused by damage in the nervous system, especially the spinal cord. Other major causes are stroke, trauma with nerve injury, poliomyelitis, cerebral palsy, peripheral neuropathy, Parkinson's disease, ALS, botulism, spina bifida, multiple sclerosis, and Guillain–

Barré syndrome. Temporary paralysis occurs during REM sleep, and dysregulation of this system can lead to episodes of waking paralysis. Drugs that interfere with nerve function, such as curare, can also cause paralysis.

Systemic Infection:

A systemic infection is an infection that affects the entire body, rather than just a single organ or part. It typically occurs when pathogens (such as bacteria, viruses, or fungi) enter the bloodstream or lymphatic system and spread throughout the body.

Internal Haemorrhaging:

Internal haemorrhage is a loss of blood from a blood vessel that collects inside the body, and is not usually visible from the outside.It can be a serious medical emergency but the extent of severity depends on bleeding rate and location of the bleeding (e.g. head, torso, extremities). Severe internal bleeding into the chest, abdomen, pelvis, or thighs can cause hemorrhagic shock or death if proper medical treatment is not received quickly.

Internal bleeding can be caused by a broad number of things. We can break these up into three large categories:

Trauma, or direct injury to blood vessels within the body cavity

Genetic and acquired conditions, along with various medications, that result in an increased bleeding riskBlood loss can be estimated based on heart rate, blood pressure, respiratory rate, and mental status. Blood is circulated throughout the body and all major organ systems through a closed loop system. When there is damage to the blood vessel or the blood is thinner than the physiologic consistency, blood

can exit the vessel which disrupts this close-looped system. The autonomic nervous system (ANS) responds in two large ways as an attempt to compensate for the opening in the system. These two actions are easily monitored by checking the heart rate and blood pressure. Blood pressure will initially decrease due to the loss of blood. This is where the ANS comes in and attempts to compensate by contracting the muscles that surround these vessels. As a result, a person who is bleeding internally may initially have a normal blood pressure. When the blood pressure falls below the normal range, this is called hypotension. The heart will start to pump faster causing the heart rate to increase, as an attempt to get blood delivered to vital organ systems faster. When the heart beats faster than the healthy and normal range, this is called tachycardia. If the bleeding is not controlled or stopped, a patient will experience tachycardia and hypotension, which altogether is a state of shock, called hemorrhagic shockFluid replacement

If a patient has low blood pressure (hypotension), intravenous fluids can be used until they can receive a blood transfusion. In order to replace blood loss quickly and with large amounts of IV fluids or blood, patients may need a central venous catheter. Patients with severe bleeding need to receive large quantities of replacement blood via a blood transfusion. As soon as the clinician recognizes that the patient may have a severe, continuing hemorrhage requiring more than 4 units in 1 hour or 10 units in 6 hours, they should initiate a massive transfusion protocol. The massive transfusion protocol replaces red blood cells, plasma, and platelets in varying ratios based on the cause of the bleeding (traumatic vs. non-traumatic). Stopping the bleeding

It is crucial to stop the internal bleeding immediately (achieve hemostasis) after identifying its cause. The longer it takes to achieve

hemostasis in people with traumatic causes (e.g. pelvic fracture) and non-traumatic causes (e.g. gastrointestinal bleeding, ruptured abdominal aortic aneurysm), the higher the death rate is.

Dysentery:

Dysentery historically known as the **bloody flux**, is a type of gastroenteritis that results in bloody diarrhea. Other symptoms may include fever, abdominal pain, and a feeling of incomplete defecation. Complications may include dehydration.

The cause of dysentery is usually the bacteria from genus *Shigella*, in which case it is known as shigellosis, or the amoeba *Entamoeba histolytica*; then it is called amoebiasis. Other causes may include certain chemicals, other bacteria, other protozoa, or parasitic worms. It may spread between people. Risk factors include contamination of food and water with feces due to poor sanitation. The underlying mechanism involves inflammation of the intestine, especially of the colon. Efforts to prevent dysentery include hand washing and food safety measures while traveling in countries of high risk. While the condition generally resolves on its own within a week, drinking sufficient fluids, such as oral rehydration solution is important. Antibiotics such as azithromycin may be used to treat cases associated with travelling in the developing world. While medications used to decrease diarrhea such as loperamide are not recommended on their own, they may be used together with antibiotics.

Necrosis:

Necrosis is a form of cell injury which results in the premature death of cells in living tissue by autolysis. Necrosis is caused by factors external to the cell or tissue, such as infection, or trauma which result

in the unregulated digestion of cell components. In contrast, apoptosis is a naturally occurring programmed and targeted cause of cellular death. While apoptosis often provides beneficial effects to the organism, necrosis is almost always detrimental and can be fatal.

Cellular death due to necrosis does not follow the apoptotic signal transduction pathway, but rather various receptors are activated and result in the loss of cell membrane integrity and an uncontrolled release of products of cell death into the extracellular space. This initiates an inflammatory response in the surrounding tissue, which attracts leukocytes and nearby phagocytes which eliminate the dead cells by phagocytosis. However, microbial damaging substances released by leukocytes would create collateral damage to surrounding tissues. This excess collateral damage inhibits the healing process. Thus, untreated necrosis results in a build-up of decomposing dead tissue and cell debris at or near the site of the cell death. A classic example is gangrene. For this reason, it is often necessary to remove necrotic tissue surgically, a procedure known as debridement.

Hypovolemic Shock:

Hypovolemic shock is a form of shock caused by severe hypovolemia (insufficient blood volume or extracellular fluid in the body). It can be caused by severe dehydration or blood loss. Hypovolemic shock is a medical emergency; if left untreated, the insufficient blood flow can cause damage to organs, leading to multiple organ failure. In treating hypovolemic shock, it is important to determine the cause of the underlying hypovolemia, which may be the result of bleeding or other fluid losses. To minimize ischemic damage to tissues, treatment involves quickly replacing lost blood or fluids, with consideration of both rate and the type of fluids used. Tachycardia, a fast heart rate, is typically the first abnormal vital sign. When resulting from blood

loss, trauma is the most common root cause, but severe blood loss can also happen in various body systems without clear traumatic injury. The body in hypovolemic shock prioritizes getting oxygen to the brain and heart, which reduces blood flow to nonvital organs and extremities, causing them to grow cold, look mottled, and exhibit delayed capillary refill. The lack of adequate oxygen delivery ultimately leads to a worsening increase in the acidity of the blood (acidosis). The "lethal triad" of ways trauma can lead to death is acidosis, hypothermia, and coagulopathy. It is possible for trauma to cause clotting problems even without resuscitation efforts. It can only be managed with blood recovery.

Coma:

A coma is a deep state of prolonged unconsciousness in which a person cannot be awakened, fails to respond normally to painful stimuli, light, or sound, lacks a normal sleep-wake cycle and does not initiate voluntary actions. The person may experience respiratory and circulatory problems due to the body's inability to maintain normal bodily functions. People in a coma often require extensive medical care to maintain their health and prevent complications such as pneumonia or blood clots. Coma patients exhibit a complete absence of wakefulness and are unable to consciously feel, speak or move. Comas can be the result of natural causes, or can be medically induced, for example, during general anesthesia.Many types of problems can cause a coma. Forty percent of comatose states result from drug poisoning. Certain drug use under certain conditions can damage or weaken the synaptic functioning in the ascending reticular activating system (ARAS) and keep the system from properly

functioning to arouse the brain. Secondary effects of drugs, which include abnormal heart rate and blood pressure, as well as abnormal breathing and sweating, may also indirectly harm the functioning of the ARAS and lead to a coma. Given that drug poisoning is the cause for a large portion of patients in a coma, hospitals first test all comatose patients by observing pupil size and eye movement, through the vestibular–ocular reflex.

The second most common cause of coma, which makes up about 25% of cases, is lack of oxygen, generally resulting from cardiac arrest. The central nervous system (CNS) requires a great deal of oxygen for its neurons. Oxygen deprivation in the brain, or cerebral hypoxia, causes sodium and calcium from outside of the neurons to decrease and intracellular calcium to increase, which harms neuron communication. Lack of oxygen in the brain also causes ATP

exhaustion and cellular breakdown from cytoskeleton damage and nitric oxide production.

Twenty percent of comatose states result from an ischemic stroke, brain hemorrhage, or brain tumor. During a stroke, blood flow to part of the brain is restricted or blocked. An ischemic stroke, brain hemorrhage, or brain tumor may cause restriction of blood flow. Lack of blood to cells in the brain prevents oxygen from getting to the neurons, and consequently causes cells to become disrupted and die. As brain cells die, brain tissue continues to deteriorate, which may affect the functioning of the ARAS, causing unconsciousness and coma.

Comatose cases can also result from traumatic brain injury, excessive blood loss, malnutrition, hypothermia, hyperthermia, hyperammonemia, abnormal glucose levels, and many other biological disorders. Furthermore, studies show that 1 out of 8 patients with traumatic brain injury experience a comatose state.

Heart-related causes of coma include cardiac arrest, ventricular fibrillation, ventricular tachycardia, atrial fibrillation, myocardial infarction, heart failure, arrhythmia when severe, cardiogenic shock, myocarditis, and pericarditis. Respiratory arrest is the only lung condition to cause coma, but many different lung conditions can cause decreased level of consciousness, but do not reach coma.Injury to either or both of the cerebral cortex or the reticular activating system (RAS) is sufficient to cause a person to enter coma.

The cerebral cortex is the outer layer of neural tissue of the cerebrum of the brain. The cerebral cortex is composed of gray matter which consists of the nuclei of neurons, whereas the inner portion of the cerebrum is composed of white matter and is composed of the axons of neurons. White matter is responsible for perception, relay of the sensory input via the thalamic pathway, and many other neurological functions, including complex thinking.

The RAS, on the other hand, is a more primitive structure in the brainstem which includes the reticular formation (RF). The RAS has two tracts, the ascending and descending tract. The ascending tract, or ascending reticular activating system (ARAS), is made up of a system of acetylcholine-producing neurons, and works to arouse and wake up the brain. Arousal of the brain begins from the RF, through the thalamus, and then finally to the cerebral cortex. Any impairment in ARAS functioning, a neuronal dysfunction, along the arousal pathway stated directly above, prevents the body from being aware of its surroundings.Kaan and Oğuzhan won awards in cov which are best and outstanding. Without the arousal and consciousness centers, the body cannot awaken, remaining in a comatose state.

The severity and mode of onset of coma depends on the underlying cause. There are two main subdivisions of a coma: structural and diffuse neuronal. A structural cause, for example, is brought upon by a mechanical force that brings about cellular damage, such as physical

pressure or a blockage in neural transmission. By contrast, a diffuse cause is limited to aberrations of cellular function which fall under a metabolic or toxic subgroup. Toxin-induced comas are caused by extrinsic substances, whereas metabolic-induced comas are caused by intrinsic processes, such as body thermoregulation or ionic imbalances (e.g. sodium). For instance, severe hypoglycemia (low blood sugar) or hypercapnia (increased carbon dioxide levels in the blood) are examples of a metabolic diffuse neuronal dysfunction. Hypoglycemia or hypercapnia initially cause mild agitation and confusion, but progress to obtundation, stupor, and finally, complete unconsciousness. In contrast, coma resulting from a severe traumatic brain injury or subarachnoid hemorrhage can be instantaneous. The mode of onset may therefore be indicative of the underlying cause

Structural and diffuse causes of coma are not isolated from one another, as one can lead to the other in some situations. For instance, coma induced by a diffuse metabolic process, such as hypoglycemia, can result in a structural coma if it is not resolved.

Treatment for coma patients starts with making sure the patient is in an actual comatose state and is not in a locked-in state or experiencing psychogenic unresponsiveness. Patients with locked-in syndrome present with voluntary movement of their eyes, whereas patients with psychogenic comas demonstrate active resistance to passive opening of the eyelids, with the eyelids closing abruptly and completely when the lifted upper eyelid is released (rather than slowly, asymmetrically and incompletely as seen in comas due to organic causes). Find the site of the brain that may be causing coma (e.g., brainstem, back of brain...) and assess the severity of the coma with the Glasgow Coma Scale. Take blood work to see if drugs were involved or if it was a result of hypoventilation/hyperventilation. Check for levels of serum glucose, calcium, sodium, potassium, magnesium, phosphate, urea, and creatinine. Perform brain scans to observe any abnormal brain

functioning using either CT or MRI scans. Continue to monitor brain waves and identify seizures of patient using EEGs. Once a patient is stable and no longer in immediate danger, there may be a shift of priority from stabilizing the patient to maintaining the state of their physical wellbeing. Moving patients every 2–3 hours by turning them side to side is crucial to avoiding bed sores as a result of being confined to a bed. Moving patients through the use of physical therapy also aids in preventing atelectasis, contractures or other orthopedic deformities which would interfere with a coma patient's recovery.

Pneumonia is also common in coma patients due to their inability to swallow which can then lead to aspiration. A coma patient's lack of a gag reflex and use of a feeding tube can result in food, drink or other solid organic matter being lodged within their lower respiratory tract (from the trachea to the lungs). This trapping of matter in their lower respiratory tract can ultimately lead to infection, resulting in aspiration pneumonia.

Multiple Organ Dysfunction Syndrome:

Multiple organ dysfunction syndrome (MODS) is altered organ function in an acutely ill patient requiring immediate medical intervention.

There are different stages of organ dysfunction for certain different organs, both in acute and in chronic onset, whether or not there are one or more organs affected. Each stage of dysfunction (whether it be the heart, lung, liver, or kidney) has defined parameters, in terms of laboratory values based on blood and other tests, as to what it is (each of these organs' levels of failure is divided into stage I, II, III, IV, and V). The word "failure" is commonly used to refer to the later stages, especially IV and V, when artificial support usually becomes

necessary to sustain life; the damage may or may not be fully or partially reversible.Multiple organ dysfunction syndrome can trigger a variety of symptoms throughout the body. Because MODS can impact any organ system, the specific symptoms experienced will depend on which organs are affected. Initially, these signs may be mild as the underlying illness progresses towards MODS. However, as the condition worsens, the symptoms can become more severe.

These symptoms include low urine output, nausea, vomiting, and loss of appetite. Some patients experience mental symptoms like confusion and may feel fatigued. Symptoms like fever, chills, irregular heartbeat, and quick/shallow breathing are also common. Multiple cases of MODS also suffer chest and abdominal pain, and patients may even lose consciousness. The condition results from infection, injury (accident, surgery), hypoperfusion and hypermetabolism. The primary cause triggers an uncontrolled inflammatory response.

Sepsis is the most common cause of multiple organ dysfunction syndrome and may result in septic shock. In the absence of infection, a sepsis-like disorder is termed systemic inflammatory response syndrome (SIRS). Both SIRS and sepsis could ultimately progress to multiple organ dysfunction syndrome. In one-third of the patients, however, no primary focus can be found. Multiple organ dysfunction syndrome is well established as the final stage of a continuum: SIRS + infection → sepsis → severe sepsis → Multiple organ dysfunction syndrome.A definite explanation has not been found. Local and systemic responses are initiated by tissue damage. Respiratory failure is common in the first 72 hours. Subsequently, one might see liver failure (5–7 days), gastrointestinal bleeding (10–15 days) and kidney failure (11–17 days).

The most popular hypothesis by Deitch to explain MODS in critically ill patients is the gut hypothesis. Due to splanchnic hypoperfusion and

the subsequent mucosal ischaemia there are structural changes and alterations in cellular function. This results in increased gut permeability, changed immune function of the gut and increased translocation of bacteria. Liver dysfunction leads to toxins escaping into the systemic circulation and activating an immune response. This results in tissue injury and organ dysfunction.

Gram-negative infections in MODS patients are relatively common, hence endotoxins have been advanced as principal mediator in this disorder. It is thought that following the initial event cytokines are produced and released. Tissue hypoxia-microvascular hypothesis is a result of macro- and microvascular changes insufficient supply of oxygen occurs. Hypoxemia causes cell death and organ dysfunction.

Mitochondrial DNA hypothesis, mitochondrial DNA is the leading cause of severe inflammation due to a massive amount of mitochondrial DNA that leaks into the bloodstream due to cell death of patients who survived major trauma. Mitochondrial DNA resembles bacterial DNA. If bacteria triggers leukocytes, mitochondrial DNA may do the same. When confronted with bacteria, white blood cells, or neutrophil granulocytes, behave like predatory spiders. They spit out a web, or net, to trap the invaders, then hit them with a deadly oxidative blast, forming neutrophil extracellular traps (NETs) This results in catastrophic immune response leading to multiple organ dysfunction syndrome. Integrated hypothesis, since in most cases no primary cause is found, the condition could be part of a compromised homeostasis involving the previous mechanisms.The European Society of Intensive Care organized a consensus meeting in 1994 to create the "Sepsis-Related Organ Failure Assessment (SOFA)" score to describe and quantitate the degree of organ dysfunction in six organ systems. Using similar physiologic variables the Multiple Organ Dysfunction Score was developed.

Four clinical phases have been suggested:

Stage 1: the patient has increased volume requirements and mild respiratory alkalosis, which is accompanied by oliguria, hyperglycemia and increased insulin requirements.

Stage 2: the patient is tachypneic, hypocapnic and hypoxemic; develops moderate liver dysfunction and possible hematologic abnormalities.

Stage 3: the patient develops shock with azotemia and acid–base disturbances; has significant coagulation abnormalities.

Stage 4: the patient is vasopressor dependent and oliguric or anuric; subsequently develops ischemic colitis and lactic acidosis.

Ways of Disease Transmission

Air:
Some diseases spread through the air. When a sick person coughs or sneezes, tiny droplets go into the air. Other people can breathe in these droplets and get sick. This is how diseases like the flu or COVID-19 spread. Good ventilation and wearing masks can help stop this.

Water:
Dirty or unsafe water can carry many diseases. People can get sick by drinking or washing with it. Cholera is one example of a waterborne disease. Floods and poor sanitation increase the risk. Clean drinking water and good hygiene are very important for health.

Rodents:
Rodents like rats and mice can carry dangerous germs. These animals often live in dirty places like garbage areas or old buildings. They can spread diseases through their bites or their droppings. One example is

the plague, which came from rats and fleas. Keeping homes clean can help prevent rodent problems.

Insects:
Insects such as mosquitoes and ticks can carry diseases. They bite people and pass germs through their saliva. Malaria and dengue fever are spread by mosquitoes. These diseases are more common in warm and tropical areas. Using insect repellent and sleeping under nets can reduce the risk.

Animals:
Some diseases can pass from animals to humans. This is called zoonosis. People who work with animals have a higher risk, like farmers or veterinarians. Rabies is one disease that spreads from animals like dogs or bats. Vaccinating pets and avoiding wild animals can help protect us.
Blood:
Diseases can also spread through contact with infected blood. This can happen through shared needles or during blood transfusions. HIV and hepatitis B are two serious blood-borne diseases. Hospitals use clean tools to stop this kind of spread. It’s important not to share sharp objects like razors or syringes.

The United Nations’ Role in Disease Prevention and Fighting

During global pandemics, the United Nations (UN) and the World Health Organization (WHO) play an important role. They do not use force, but they give strong advice to governments. In many cases, their words lead to lockdowns, travel bans, and emergency laws. Some countries follow these rules with heavy control. Police and military are used to make people obey. Streets are watched, and

personal freedom becomes smaller. WHO says it is for public health, but many people feel afraid. In some places, information is hidden, and speaking against the rules is not allowed. These actions show how fast normal life can change when fear and power come together. (el yıkama doktrini)

Past Economic Crisis

Between 2020 and 2026, many healthcare and pharmaceutical companies around the world lost value. One main reason was the political decisions made by the United States, especially during Donald Trump's leadership.

Trump's policies in the U.S. affected global companies. Since the U.S. is one of the biggest markets for medicine, meant less profit for international companies. Investors around the world reacted, and healthcare stocks dropped.

Also, Trump's trade war with countries like China made it harder to get important medical supplies. Many global companies needed these materials. As a result, production slowed down in many countries, not just in the U.S.

During the COVID-19 pandemic, Trump's government did not cooperate well with global health organizations. This caused confusion and slowed down global health efforts. Some companies

that were waiting for U.S. approvals or partnerships suffered financial losses.

By 2026, the world was still feeling the effects of these policies. The healthcare market became more unstable, and trust in the U.S. as a leader in global health was damaged.