Manlius Pebble Hill Model United Nations

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World Health Organization (WHO)

Chairs:

Maya Geiss

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Preface

Welcome to the World Health Organization at MPHMUN 2020! Your chairs are Maya Geiss, from Christian Brothers Academy, and Barrett Howard, from Manlius Pebble Hill. Maya enjoys painting and softball, and Barrett enjoys Boy Scouts and hiking. This committee will be run resolution-style, so delegates should write and submit resolutions for each topic before committee begins. In order to qualify for an award, delegates must submit a position paper for at least one topic and resolutions for both topics to whomphmun@gmail.com by 11:59 PM on Thursday, October 22nd. Guidelines for submission can be found here. **Anything received after this time will not be eligible for an award.** This year, our conference will be run virtually. For more information on this, please refer to our website here. Feel free to contact us through our committee email with any questions or concerns. We look forward to seeing you all at MPHMUN 2020!

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Introduction to Committee

The World Health Organization (WHO) was established in 1948 and is a specialized agency under ECOSOC. It currently includes all United Nations member states except Lichtenstein. WHO is governed by the World Health Assembly (WHA), a body composed of the top health officials from WHO member countries that meets yearly in Geneva Switzerland, where it is headquartered. The WHO's purpose is to fight global diseases both infectious and non-communicable diseases and promote global health. They do this mainly by serving as the UN main health body and coordinating international health initiatives, particularly within the UN. It has been serving a significant role in the global battle against COVID-19 declaring a pandemic on January 30, 2020.

Topic 1: Safety and Ethics Around Infectious Disease research

Introduction

Research into infectious diseases can do enormous good for the entire globe, and during the SARS-CoV-2 pandemic, this research has become all the more urgent. Despite the obvious importance of this kind of research, as it can deal with diseases that pose a large risk to the entire global population and entails direct research on humans, the field faces serious safety concerns and ethical issues. As infectious disease research is pushed by governments and companies to accelerate in response to SARS-CoV-2, safety and ethics issues can potentially do serious damage.

In the process of conducting disease research, extremely dangerous pathogens often have to be collected, transported, or even produced. During gain-of-function (GOF) research, scientists work to increase the transmissibility or potency of pathogens, particularly pathogens with pandemic potential, to study how to combat more dangerous diseases. Alarmingly, GOF studies have made blueprints for and produced several viruses that are extremely transmissible killers of rodents that could theoretically be adapted to infect humans. GOF research has intermittently faced global and national bans due to its dangerous nature, but its potential to improve pandemic surveillance and even treatments has led to its continuing in Europe, the United States, China, and many others. GOF research could also theoretically be used as a blueprint to create synthetic viruses, even very dangerous ones.

There has been controversy around several nations holding stores of extremely dangerous pathogens that don't already circulate in the global population, either because the pathogen was altered through GOF research or because it is very rare or extinct in humans. Probably the most

notable example of this is the Variola virus, also known as the smallpox virus. Smallpox has been one of the most influential viruses on humanity, killing up to 300 million people between 1900 and 1980 when it was eradicated in humans by a global vaccine campaign. Currently, only two known labs have stores of smallpox: one in Atlanta in the United States and one in Koltsovo, Russia. The WHO has been consistently pushing the Variola stores to be destroyed due to the danger these stockpiles pose in the event of an accidental release. Both the US and Russia have delayed destroying them, saying more research needs to be done and that the stockpiles could be useful in the event of the virus beginning to circulate again. Both the US and Russia have had recent accidents around their stockpiles, and the virus has been accidentally released before. Still, both nations continue to protect their stockpiles despite the WHO's requests.

Nations, universities, and even companies use biosecurity labs to contain and research dangerous pathogens that are designed to prevent accidental releases. They have been criticized for being poorly regulated and becoming a status symbol for prestigious institutions, even when not necessary. There have been close to 400 accidents at these facilities or in transport between 2003 and 2009 in the United States alone. Real global numbers on conditions in biosecurity labs are difficult to find because there is no authoritative count of them in most countries.

The global scramble to create a vaccine or treatment to COVID-19 is causing a risk that unsafe or ineffective medicine will be distributed. Testing periods for vaccinations have been shortened to speed their production around the world. While these efforts have radically decreased the time needed to produce a vaccine, there is concern that human subjects in rushed large trials could be surprised by side effects. The risk to people in trials increases with challenge trials during which people are intentionally exposed to SARS-Cov-2 or other viruses to test

vaccines or treatments. Studies that put their subjects in danger need to be carefully considered as they can easily become exploitative, especially when carried out on lower-income people or in developing countries. Infectious disease research is an increasingly relevant global issue as it is essential to combat future public health crises, yet its potential for manipulation of test subjects, accidental release of dangerous pathogens, lack of research capacity in underdeveloped nations, and other concerns, threaten to outweigh the current benefits.

History

During the late 20th century, as the understanding of infectious disease progressed, the potential for accidents around this research increased dramatically. In May of 1977, an emerging strain of H1N1 influenza was isolated in the USSR and Northern China. It quickly spread around the world in a global epidemic reaching six continents and infecting millions. Bizarrely, the virus affected people under 23 almost exclusively and had a mortality rate significantly lower than the seasonal flu, which is unusual for a newly emerged influenza virus. The virus turned out to be nearly identical genetically to an H1N1 flu, which circulated between 1947-1957 that had since disappeared in humans, so most people over the age of 20 had antibodies to the virus. The similarity between the two viruses would be impossible due to the natural angiogenic drift, the process of the virus gradually mutating over time, unless the virus had been frozen in a lab and released two decades later. The genetic resemblance and lack of evolution over several decades means the two viruses are the same and the 1977 Russian flu was a human-caused global epidemic, and even though it was rarely severe or fatal because of the high number of people infected, thousands died in the United States alone. The virus was probably released during

research or in a vaccine trial designed to combat the remerging H1N1 flu variant though the exact source of the release is unknown.

This Russian flu epidemic is one of the numerous incidences of disease outbreaks related to an accidental release of a pathogen. In the United Kingdom in the 70s, at least 80 people were infected, and three died of smallpox due to 3 separate accidental releases. A version of Venizalian Equine Encephalitis (VEE), a mosquito-borne virus in the western hemisphere that is only occasionally fatal but leads to severe permanent neurological disablement in up to 14 percent of cases, caused repeated outbreaks in the 60s and 70s that was identical to the 1938 version of the virus, likely due it being poorly disabled in animal vaccines or in research labs. In 1995, there was a massive outbreak of the virus in Colombia and Venezuela, which infected around 85,000 people, killed 300, led to 10 miscarriages, and disabled over 3000. The strain that caused this virus was identical to a strain that had disappeared 28 years before, and studies argued it was likely that it was released from a lab setting. With many instances of a breach in infectious disease lab security, the accessibility of dangerous pathogens to be exposed to the public, or those with cruel intentions, constantly imposes on public safety.

In 2001, an attack was launched with unknown motives when two US senators and several news media members were mailed letters laced with live anthrax spores that resulted in five deaths. Whether procured illicitly or from a biosecurity lab, this occurrence showed how acquiring deadly diseases is not a difficult task. In 2004 the first SARS (severe acute respiratory syndrome) virus, an extremely dangerous pathogen with pandemic potential that had a significant outbreak in 2003, escaped labs six times in Beijing, once in Taiwan, and once in Singapore. These SARS accidents infected 12 people, killing one and quarantining dozens across

China and Taiwan. In another instance, in 2007, foot and mouth disease (FMD), a virus that rarely affects people yet is considered one of the most deadly livestock diseases with the capability to devastate hoofed livestock populations, escaped a level 4 biosecurity lab and infected livestock miles away. The outbreak, which infected 278 animals and led to 1578 animals being culled, was frantically contained and caused 200 million pounds in damages. In 2014, 75 employees of the Atlanta CDC level 4 biosecurity lab were potentially exposed to aerosolized anthrax spores because inactivation procedures were performed incorrectly, and adequate personal protective equipment was not utilized.

Lack of adequate lab security is a vector for biosecurity accidents, which can be minimized by a standardization of procedural and precautionary measures. Building off of their role in global disease surveillance, alert, and response, the WHO released a revised International Health Regulations (IHR) in 2007, an international legal instrument that is binding to 196 nations including all 194 Member States of the WHO, that defined the rights and obligations of countries to report public health events and establish a number of procedures for WHO to follow in its work to uphold global public health security. The goal of country implementation is to limit the spread of health risks to neighboring countries by implementing disease surveillance systems, assess the public health risk and report to WHO through national IHR focal points. In 2009, the WHO worked to create an international network of high-security laboratories called the Emerging and Dangerous Pathogens Laboratory Network for Response and Readiness (EDPLN). It was established to assist WHO in enhancing the readiness and response of countries for timely laboratory detection and management of outbreaks of novel, emerging, or re-emerging pathogens, while facilitating the transfer of safe diagnostic technologies, practices, and training

to laboratories in affected countries as outlined by the IHR. The WHO Emerging and Dangerous Pathogens Network consists of global and regional EDPLN networks of high security labs collaborating and sharing knowledge, biological materials, and experimental research results, with organized regional networks in the African and South-East Asian regions. It also promotes the development of External Quality Assurance programmes to evaluate laboratory capacities at regional and global levels, engage in operational research to review or confirm prevention and control strategies, and support international and regional training workshops. These initiatives are essential to disease identification, containment, and control, but do not regulate the practices of biosecurity labs formed on the pretenses of education, only those created in response to a public health crisis which will not be able to increase biosecurity in labs before a possible unexpected breach of security.

Aside from accidentally released pathogens, there is a long history of medical testing causing harm to its subjects and rushed treatments hurting the public, destroying trust in medical institutions for many. In 1955 during the frantic rollout of the polio vaccine, the Cutter Incident occurred. A vaccine was improperly deactivated, and rushed safety trials missed this, leading to 200,000 doses of the vaccine being administered to children in the US. Forty thousand children were infected, 200 children were paralyzed, and ten were killed. Experts have argued that much of the modern resistance to vaccines stems from this event. Studies that exploited their participants had similar damaging effects. The Nazis and Imperial Japan both carried out horrifying experiments on civilians during the second world war. These actions were deemed human rights abuses after the war, but that in no way ended unethical human experimentation. One of the most notorious examples of unethical studies was the Tuskegee Syphilis study in

Alabama. Between 1932 and 1972, 600 black rural lower-income men enrolled in the study were not treated for Syphilis even as treatment became available. The men were actively misled about their diagnosis and denied treatment, so many of their cases of Syphilis became end-stage and fatal. The study badly damaged trust in medical institutions in African-American communities, exemplifying how disease research trials prey on lower-income or minority populations who are often unable to receive expensive medical treatment otherwise and are actively ignored or mistrusted by local governments. Taking advantage of a population and creating a lack of confidence in the healthcare system emphasizes the need for regulation of clinical trials and to improve the integrity of disease research and increased protection of the individuals.

Current Situation

Infectious disease research, mostly prevalent in developed nations, is essential to combating future outbreaks but facilitates the maintenance or even advancement of deadly pathogens that could endanger people through clinical trial exploitation and unintentional release due to lack of standardized biosecurity measures. The global health community must recognize the possibility of a human-caused infectious disease outbreak, either from the accidental release of infectious agents from a research facility or an international biological attack. Although SARS-Cov-2 is almost certainly not a manmade virus, there's potential for an accidental release pandemic. Currently, there are only a few known operational BSL-4 labs globally amongst developed nations such as the United States or China. These labs operate at the highest level of biological safety, level four, where exotic agents with a high risk of life-threatening disease, due to lack of vaccine or therapy and aerosol transmission, are examined. Over the past few decades,

several alarming but contained incidents have occurred, possibly due to accidental release, so as long as stores of dangerous pathogens, such as smallpox and anthrax, are maintained, significant human health risks remain. Despite international regulations on signs of outbreak, disease control and preparedness, and lab security practices, these come into effect in the event of a public health crisis, when the disease has already been exposed to the population. The need for global standardized regulations on educational and research motivated disease research is an ongoing issue in order to ensure dangerous pathogens are handled correctly and safely. In a world with a constantly growing network of communication, highly contagious pathogens have growing pandemic potential due to increased transmissibility. These threats could be amplified by advancements in gene editing and the termination of a US government-imposed suspension of funding probable risky research, including the genetic editing of deadly viruses. In 2002, researchers established the ease of chemically synthesizing highly infectious agents, and even more recently, another team of researchers was able to synthesize a relative of smallpox harmless to humans, horsepox. This experiment's significance suggests that with fundamental scientific knowledge and a relatively small budget, one with criminal intentions could quickly synthesize smallpox and without considerable difficulty.

Most infectious disease research is privately owned within a few developed nations, allowing for highly contagious disease knowledge to be unequally spread amongst countries. Developing nations have been under-represented within the field of infectious disease research at the institutional and researcher level. TDR, the Special Programme for Research and Training in Tropical Diseases, is a global initiative of scientific cooperation that helps facilitate, support, and influence efforts to combat diseases of poverty. TDR has been a leader in strengthening the

capacity to conduct research and utilize research evidence in low and middle-income countries while implementing strategies and policies through various approaches such as improving the capacity of individual researchers with training courses, supporting partnerships, and developing leadership skills. Recent years have seen the proliferation of academic health research in developing countries, and TDR works to help researchers and research sites meet international good practice standards and efficiently manage and organize research projects. Establishing infectious disease research initiatives worldwide will help create a global pool of researchers able to take advantage of current techniques and knowledge to develop strategies to attack diseases that satisfy the demands of their local setting and needs.

An emerging and therefore mysterious class of diseases deriving from animal transmissions to humans, referred to as zoonoses, have the potential for human destruction since their human effects are unknown and therefore do not have any preventative vaccine. As human activities continue to encroach into the living environment, the likelihood of zoonoses developing to pandemic potential increases and causes infectious disease manipulatory research to be essential to combating these potentially life-threatening pathogens, an accidental release from biocontainment labs would be deadly. In 2019, the emergence of SARS-CoV-2 in Wuhan, China, sparked controversy about the pandemic's origin, whether through cross-contamination amongst animals at an open-air wet market or inadvertent release from the local biocontainment level four laboratory. Wuhan scientists were studying SARS-like coronaviruses isolated from bats, although none were deadly to humans unless given permission from a designated commission. Officials from the United States, upon visitation in 2018, reported that the Wuhan labs had a serious shortage of appropriately trained technicians and investigators needed to safely

operate the high-containment lab, which is a challenge facilities worldwide face. However, China's history of censoring information and healthcare providers' voices regarding the outbreak of SARS-CoV-2 shows a lack of transparency and global cooperation against the current pandemic.

Besides insufficient data being shared throughout the global community, the same absence of knowledge occurs amongst clinical trial subjects who are often deceived into placing trust in institutions that are not prioritizing their individual well-being. In response to past violations of research test subject rights, the United States developed various ethical guidelines for clinical research that outline the trial's social and clinical value, scientific value, fair subject selection, informed consent, respect for potential and enrolled subjects, and a favorable risk-benefit ratio. These measures help to eliminate the exploitation of test subjects and strengthen trust in healthcare institutions. However, in countries like India, who have a competent workforce, patient availability, low-costs, and a friendly drug-control system, they are seen as perfect opportunities for the clinical trial industry to take advantage of the population through the lack of regulation of pirate trials and inadequate informed consent and proper ethics review. The Indian Council of Medical Research (ICMR) has launched a Clinical Trials Registry of India to increase transparency, although there is currently no legal obligation for clinical trials to register, meaning the safety of the people are at risk. Especially as drug companies continue to buy hospitals in countries such as India, the transparency between their relationships could lead clinical trial participants to be placing trust into a system that does not have their best interests in mind. While disease research on test subjects, such as vaccination trials, helps solve public health crises, the time constraints and negative effects on society caused by a pandemic place

pressures onto these clinical trials that can put test subjects in danger of being misled by false information and exposure to unstable agents in the interest of benefiting the larger population.

Questions to Consider

- What are the positives and negatives of global collaboration on infectious disease research?
- What role would the UN play in ensuring research safety and coordinating outbreak containment?
- Do the probable consequences of infectious disease research outweigh their benefits?
- Is it ethical for countries to store advanced infectious agents that are not currently active in the world, such as anthrax or smallpox, in order to further understand them through research?

Further Reading

1. An article about the details of the accidental release of SARS from a Beijing lab in 2004. https://genomebiology.biomedcentral.com/articles/10.1186/gb-spotlight-20040427-03
2. An article on specific TDR efforts in increasing access to disease research. https://www.who.int/tdr/news/2019/benefits-strengthening-research-capacity/en/
3. An article about global collaboration in response to the SARS epidemic in 2003. https://www.cidrap.umn.edu/news-perspective/2013/04/experts-sars-sparked-global-cooperation-fight-disease

Topic 2: Mitigating the Effects of Chronic Obstructive Pulmonary Disease Globally

Introduction

Chronic Obstructive Pulmonary Disease is a terminal disease affecting around 360 million people globally that can dramatically reduce quality of living and lifespan. Despite relatively aggressive attempts by international groups to mitigate the damage done by the disease, it continues to be one of the leading causes of death globally. COPD, or chronic obstructive pulmonary disease, which refers to a variety of respiratory diseases characterized by airway function limitations and other breathing-related problems. The most common forms of COPD are emphysema, shortness of breath caused by damaged air sacs in the lungs, and chronic bronchitis, inflammation of the bronchial tubes. Tobacco smoke exposure is the primary cause, but inhaled outdoor air pollution, occupational dust and chemicals, and lack of access to adequate healthcare are the most common factors contributing to COPD. Although COPD is not curable, medical and physical treatments can help relieve symptoms, improve quality of life, and reduce the risk of death. In 2015, the Global Burden of Disease Study estimated that 3.17 million deaths were caused by the disease, accounting for 5% of all deaths globally that year, and reported 251 million cases of COPD globally in 2016. More than 90% of deaths related to COPD are in low or middle-income countries, where effective strategies for prevention and control are not always available or accessible.

Chronic Obstructive Pulmonary Disease has been reportedly prevalent in high-income countries with heightened levels of smoking, and the WHO has estimated that 73% of deaths from COPD-related symptoms in these affluent nations were related to tobacco smoking. In 2005, the EU documented that 5% of the total healthcare expenditure covered COPD, amounting

to almost 38.6 billion euros. Despite the high prevalence within some developed nations, 90% of COPD deaths globally occur within lower and middle-income countries. In many developing countries, COPD is neglected by governments, physicians, and the pharmaceutical industry, although it has been recognized as an important public health problem.

History

Although COPD has been known to medicine for centuries, the term chronic obstructive pulmonary disease was not coined until 1965. Before that, it was known as chronic bronchitis, chronic airflow obstruction, or chronic emphysema and was mainly treated though pneumonia antibiotics and mucus thinners. In the late 1950s into the 1960s, various conferences led by the American Thoracic Society tried to create criteria for numerous lung conditions. The definitions were often sparse and limited, but it created the foundation for many modern conditions definitions like asthma and bronchitis. COPD was loosely encompassed by conditions, but its definitions included 3 months to 2 years of coughing and reduced alveoli walls hurting lung capacity. Later the definition would expand to include functional difficulty like breathlessness, but this vastly improved ability diagnosis cases. The FEV (Forced expiratory volume) system of measuring exhaled air was developed during the 60s, improving diagnosis criteria.

In the 20th-century, smoking rates began to increase rapidly due to increasing tobacco advertising and cigarettes being provided free to soldiers during the world wars. This increase in smoking led to increasing respiratory disease rates in the latter half of the 20th century. Despite rising alarm around the danger of smoking by 2000, COPD was the 5th leading cause of death globally. In 1976 a link between smoking and COPD was established, but by that point, evidence

was coming out quickly that smoking had severe negative effects, and tobacco companies were fighting the findings, so the impact of these findings on the public was limited.

In response to the growing disease, in 1997, the World Health Organization (WHO) helped create the Global Initiative for Chronic Obstructive Lung Disease (GOLD) to coordinate efforts against COPD. GOLD was composed of numerous experts on respiratory conditions, and in 2001, it would begin creating yearly reports and guidelines which vastly improved COPD mitigation globally.

Current Situation

Despites the efforts of organizations like GOLD, COPD (between 2000 and 2015) went from the fifth leading cause of death globally to the third leading cause of death with the vast majority of those occurring in lower to middle-income countries. The increase is mainly due to an increasing number of smokers, an aging global population, increasing air pollution, and continuing risks from the use of biomass fuel indoors and occupational toxins. To combat the spread of COPD in addition to the Global Initiative for Chronic Obstructive Lung Disease (GOLD) the WHO helped found the Global Alliance against Chronic Respiratory Diseases (GARD) in 2006, both of which coordinate international efforts to mitigate COPD. The efforts of these groups and the burden of COPD continue to increase worldwide, bringing a huge array of issues. GOLD, in particular, has worked to stimulate interest in COPD research and standardise treatment through valuable guidelines. The GOLD treatment guidelines have been criticized for giving one size fits all advice, which relies mainly on bronchodilators, corticosteroids, and

antibiotics, even though COPD is a very heterogeneous condition with a number of causes that respond differently.

A large host of diseases has severe comorbidities with COPD increasing hospitalizations and deaths globally. Among the worst comorbidities are Lung cancer, Heart disease, high blood pressure, diabetes, and other lung conditions like asthma, although things ranging from Osteoporosis and sleep apnea to Anxiety and Depression have worsened outcomes when combined with COPD. These comorbidities make treating COPD complicated and worsen life expectancy. Because COPD is incurable, it almost always merits palliative care, care focused on mitigating the symptoms of a serious disease, and improving quality of life, but palliative care is often not sought out by patients leaving a hole in treatment.

Although studies have been limited, COPD seems to be severe comorbidity with COVID-19. Because people suffering from COPD also tend to be older, making them more vulnerable to SARS-CoV-2, the risk to COPD patients from COVID-19 could be extreme. The risk from the virus is forcing many individuals with COPD to socially distance to a high degree, risking COPD suffers mental health, physical health due to decreased exercise, and even their jobs. The economic damage caused by the COVID-19 pandemic is also exacerbating the damage done by COPD. COPD outcomes are known to worsen when economic downturns occur. During Greece's financial crisis, hospitalizations from COPD increased by more than 14 percent due probably to increased treatment nonadherence because of the cost of treatment and reduced hospital spending. People with COPD suffer from the cost of medical care for the disease and the disability it causes.

Since COPD is incurable, strategies to address it often focus on prevention. COPD's most common cause is long term tobacco smoke exposure including through second-hand smoke. The number of smokers globally has slowly decreased since 2000, but tobacco use by males only started to decline in 2018, making it likely COPD rates will continue to rise. Around 25 percent of people who develop COPD never smoked and then developed the condition due to air pollution, usually from indoor use of biomass fuel, and occupational hazards. Indoor air pollution caused by biomass fuels constitutes a massive issue on its own, killing around 1.6 million people a year, most of them children. Women often receive higher amounts of indoor air pollution due to being more active in household activities. Occupational risks could account for more than 15 percent of COPD cases and include exposure to silica, cadmium, and organic dust. Occupations like mining, agriculture work, and masonry have particularly high rates of COPD. Establishing occupational regulations could have a major impact on these cases. Even though COPD affects every nation because 80 percent of tobacco users are in low or middle-income countries, and because biomass fuels account for around half of energy in most low-income countries, there are dramatic disparities in COPD's occurrence between developing and developed nations. Over 90 percent of COPD deaths occur in developing nations putting massive strain on under funded health care systems.

COPD causes massive damage globally burdening health care systems, making mundane daily activities extremely difficult, and cutting countless lives short. The problem is being dramatically worsened by disparities between developed and developing nations. The numerous and amorphous causes of COPD combined with the way the disease does damage by worsening other diseases through comorbidities. Addressing smoking rates and indoor air quality along

with treatment for those who are ill is critically important. COPD will almost certainly remain a leading cause of death in most nations and it warrants aggressive international action to address it.

Questions to Consider

- What strategies can be employed to prevent the economic downturn caused by the COVID-19 from worsening the burden of COPD?
- Are intuitives to combate COPD like GOLD active within your nation?
- Would increased screening for COPD in the general population be helpful in facilitating early interventions or waste resources finding low grade cases of the condition before they are an issue?
- How can treatment for COPD be improved in rural or poor areas that lack easy access to healthcare?

Further Reading

1. WHO factsheet on COPD https://www.who.int/news-room/fact-sheets/detail/chronic-obstructive-pulmonary-disease-(copd)
2. Article on global burden of COPD and its causes. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5921960/#:~:text=An%20estimated%20328%20million%20people%20have%20COPD%20worldwide%20%5B3%5D.,million%20deaths%20annually%20%5B11%5D.

3. Study on the effect of COPD on COVID-19 patients.

   https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7154502/