World Health Organisation

Strengthening international response and resilience for future pandemics



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Introduction

The COVID-19 pandemic is a fresh wound in the minds of global leaders to this day. Despite the eventual decline of the outbreak, it would be incorrect to say that the situation was handled perfectly. As a collective, we have to be aware of the evolving risks of pandemics, caused by factors such as increased travel, urbanization and climate change. It is crucial to have a robust and effective response to such threats to avoid the devastating effects which are still reflected today from the events of the coronavirus pandemic.

Since the ruinous effects of the crisis a few years prior, many associations have been formed, and pre-existing disease control organisations have been working in order to produce a definitive schema to respond to such events. There are many factors which contribute to a solid pandemic response, including prevention, appropriate dissemination of medical information (such as combating misinformation by specifying verified sources), source control and appropriate quarantine measures. By learning from past experiences with pandemics, starting from the coronavirus only five years ago and then stretching all the way back to the 1300s with the bubonic plague, we can take into account the actions of the past, and use them to positively impact and reinforce our future.

Definition of Key Terms

Pandemic

According to the National Library of Medicine in the United States, a pandemic is a large-scale outbreak of infectious disease that can greatly increase morbidity and mortality over a wide geographic area and cause significant economic, social, and political disruption.

Epidemic

An epidemic, compared to a pandemic, is a rapidly spreading outbreak of infectious disease limited to a single region.

Misinformation

Misinformation is defined as false or inaccurate information. It is information generally disseminated without any manipulative or malicious intent, but the facts are incorrect. Not to be confused with disinformation, which is where the disseminator is trying to manipulate the facts and knows that they may not be correct, with the goal to deceive the viewer.

Source Control

Source control refers to measures taken to block the spread of infectious agents from an infected individual. This is particularly used for respiratory droplets, and some examples of source control would be the wearing of fitted face masks and respirators. This is to prevent the spread of such infectious agents whenever the user sneezes, coughs, or talks.

Quarantine

A strictly imposed and controlled isolation measure in order to prevent the spread of an infectious disease.

Contact tracing

Contact tracing is the act of identifying individuals who have potentially been exposed to a communicable disease, and any other individuals they may have been in contact with in the past few days, monitoring their symptoms and recommending quarantine measures to those involved.

Border control

Border control refers to restrictions and regulations implemented by governments in order to prevent/slow the spread of infectious disease across international borders. These controls are in place to manage the movement of people and goods across borders, while still minimising disruptions to essential travel and trade.

General Overview

Pandemic control is essential in today's world. As has been recently demonstrated, without a robust plan, it can be very difficult to keep diseases restrained and guarantee the safety and welfare of the population. And yet, the widespread negative effects of poorly controlled pandemics aren't limited to health problems from infection alone. In March 2022, a report by the World Health Organisation showed that the pandemic increased cases of anxiety and depression by 25% worldwide. Furthermore, the economic effects of COVID-19 are still felt to this day. Government debt has risen by 12% since the start of the pandemic five years ago, and inflation levels have skyrocketed, becoming a crucial discussion in day-to-day life. We must take these experiences, and other previous experiences into account in order to prevent such effects.

The "Black Death"

The Black Death was one of the deadliest pandemics in human history. Taking place in the mid-14th century, it swept through Europe, Asia, and North Africa, killing an estimated 75–200 million people. It was caused by the bacterium Yersinia Pestis and it decimated nearly half of Europe's population within just a few years. There was no understanding of germs or effective public health systems at the time, and so societies were left powerless, relying on superstition and isolation. The chaos exposed the devastating consequences of a weak pandemic response. However, society was not completely without response. In fact, it was from this experience that the concept of a quarantine emerged. The term comes from the Italian word quaranta, meaning forty, as ships arriving in Venice had to wait offshore for 40 days before docking, in an early attempt to isolate the sick. Although the level of medical understanding at the time was very low, these primitive measures served as a foundation to the ones we use today. This includes protective gear. Plague doctors have become infamous figures, dressed in long robes, gloves, and eerie bird-like masks stuffed with herbs and

spices to "purify" the air. Though not perfect, these robes, gloves and masks were beneficial to stopping the spread of the pandemic and formed the basis of the masks worn during the COVID crisis itself.

The case of Cholera

There have been seven cholera outbreaks spanning 1817-1961, the last one being ongoing. Despite most efforts to combat it being in vain, it introduced many new strategies which eventually led to a successful identification and prevention of spread of the disease. The third cholera pandemic, taking place from 1852 to 1860, originated in India during the 19th century. It was particularly deadly, spreading globally and causing widespread death across Asia, Europe, North America, and Africa. However, research efforts led by a man named John Snow in England managed to trace the source of the outbreaks to contaminated water. He did this by tracking cholera cases, and his method is one of the earliest recorded uses of contact tracing, which is a vital pandemic response to this day.

The sixth cholera outbreak began in 1899 and primarily affected parts of India, the Middle East, North Africa, and Eastern Europe, with the death toll in the hundreds of thousands. However, unlike previous outbreaks, Western Europe and North America were largely spared. This was thanks to improved sanitation, water systems, and public health measures, highlighting the growing effectiveness of public infrastructure and disease response. However, in regions with poor hygiene and limited medical access, the disease spread rapidly and was just as deadly. The United States was especially prepared, with only 11 deaths. A small outbreak in 1910, supposedly stemming from Italian immigrants from Naples, was contained through strict border control, contact tracing and isolation, leading the spread of the disease to come to a halt. This outbreak underscored the global health divide and the urgent need for international cooperation in preventing and managing infectious diseases. This situation still rings true today, and it is important for nations to find ways to decrease this divide so that all nations can have a fair and equal pandemic response, limiting the spread and preventing countless deaths.

Severe acute respiratory syndrome (SARS)

Severe acute respiratory syndrome (SARS) is a viral respiratory disease. It was detected in November 2002 as part of an outbreak that emerged in China and subsequently spread to 28 other countries, infecting over 8,000 people and causing around 800 deaths. Although SARS (Severe Acute Respiratory Syndrome) caused significant international alarm, it was never officially declared a

pandemic by WHO. Thanks to rapid international coordination, transparent information-sharing, and strict public health measures like isolation and travel restrictions, SARS was successfully contained by mid-2003, and declared no longer a global health threat by WHO in early 2004. This outbreak was a turning point in global health preparedness, and displays how swift response and cooperation between nations can prevent an epidemic from escalating into a full-blown pandemic.

COVID-19

COVID-19 was officially declared a pandemic by WHO in March 2020 and declared no longer a public health emergency in May 2023. It prompted a massive global response with impacts still observed today. Countries implemented emergency measures such as lockdowns, border closures, mass testing, and quarantine protocols. However not all countries responded equally. While some nations responded swiftly, others faced widespread criticism and were often unable to have as effective a response, this being either due to governmental missteps or due to a lack of resources. The United States was criticised for a delayed federal response and politicised public health messaging, causing a divide in the population, and therefore making the pandemic response less effective. Politicised vaccine hesitancy led to lower vaccination rates and increased deaths, that should have been prevented. Another nation criticised was Brazil, whose government under President Bolsonaro downplayed the virus, discouraged restrictions, and spread misinformation about both the disease and the vaccines. Similarly, India faced a deadly second wave as it struggled with preparedness and experienced shortages in oxygen and hospital space.

The deadly nature of the pandemic drove rapid vaccine development, including international efforts such as COVAX, which aimed to promote global vaccine access. However the response also highlighted the imbalance between more developed and less developed countries in vaccine distribution and infrastructure, leading to inefficient healthcare and a delayed response in lesser developed countries. It displayed the urgent need for stronger global coordination, transparency, and preparedness for future pandemics.

Major Parties Involved

In a pandemic response, every nation is a major party, which is why this section focuses on international groups which are key parts of pandemic responses.

World Health Organisation (WHO)

Coordinates international efforts for disease surveillance, issues guidelines, declares public health emergencies, and supports countries in response planning.

Gavi

Gavi, sometimes referred to as the Vaccine Alliance, is a public-private partnership established in 2000 focused on increasing access to vaccines in low-income countries. It is now responsible for vaccinating half of the world's children.

Coalition for Epidemic Preparedness Innovations (CEPI)

CEPI is a global partnership which funds and coordinates the development of vaccines and other biologic countermeasures against epidemic and pandemic threats.

Timeline of Key Events

Date	Description of event
The 1300s	The plague, caused by the Yersinia Pestis bacteria that was transmitted by rats, spread through Europe, Asia, and North Africa, killing an estimated 75–200 million people.
1817-1961	During this time range, seven cholera outbreaks were caused by infected water sources.
November 16th, 2002	A new disease called SARS (severe acute respiratory syndrome) first occurred in Guangdong Province, China and spread to 29 countries.
December 2019	The first human cases of COVID-19 were identified in Wuhan, China, leading to the beginning of the outbreak in mainland China.
April 2020	About half the nations in the world were under some form of lockdown measures, with more than 3.9 billion people in more than 90 countries or territories having been asked or ordered to stay at home by their governments.

December 2nd, 2020	The United Kingdom gave temporary regulatory approval for the Pfizer–BioNTech COVID-19 vaccine, becoming the first country to approve the vaccine, administering it for the first time seven days later.
May 5th, 2023	The WHO chief declares the end of COVID-19 as a public health emergency

UN involvement, Relevant Resolutions, Treaties and Events

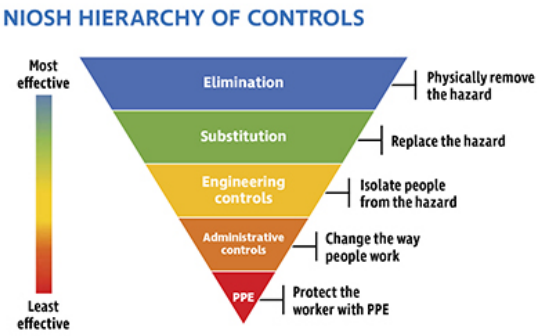
- Comprehensive and coordinated response to the COVID-19 pandemic, 11 September 2020, (A/RES/74/306)
- Global health and foreign policy: strengthening the management of international health crises, 3 December 2014 (A/RES/69/132)
- Global health and foreign policy: health employment and economic growth, 15 December 2016 (A/RES/71/159)
- International cooperation to address challenges faced by landlocked developing countries in the context of the COVID-19 pandemic, 11 August 2020 (A/RES/74/270)
- International cooperation to ensure global access to medicines, vaccines and medical equipment to face COVID-19, 20 April 2020 (A/RES/74/274)
- Political declaration of the high-level meeting on universal health coverage, 10 October 2019 (A/RES/74/2)

Possible Solutions

There are many different possible ways of strengthening response to pandemics. There are many key actions that make up a solid response, however it may be easier to grasp these ideas by conceptualising them.

The hierarchy of controls

The hierarchy of controls is a systematic approach mainly put in place in workplace environments when dealing with hazards. However, it can also be carried over when it comes to pandemic response. Using this format, it may be easier to understand the main things that make up a solid general pandemic response. The image displays the different levels of the hierarchy of controls, going from most effective to the top, to least effective at the bottom.



Elimination, at the very top, is the most effective. When it comes to hazardous environments, it consists of removing the hazard. When it comes to pandemics, it consists of eliminating the disease altogether, such as through the development of vaccines and transmission prevention.

Next comes substitution. In the case of an infection, replacing the hazard would imply replacing the infection with a less lethal version. This can be done by the administration of drugs.

Engineering controls consist of isolating people from the hazard, or shielding them from it. The pandemic counterpart of this step is obvious. By implementing controlled quarantines for non-essential workers, we can avoid the spread of infection quite quickly. As for creating a barrier? Offices or other areas where there would need an exchange between people that could cause in the exchange of infectious agents can implement a temporary plastic wall between the two people.

Administrative controls work to change the way people work. Using COVID-19 as an example, some of the many administrative controls put into effect were social distancing, working from home, and implementing disinfectant stations.

Now last, and the least effective (but still very important) is PPE, which stands for Personal Protective Equipment. In the context of a pandemic, Personal Protective Equipment would be gloves, masks and protective clothing.

The effectiveness of these measures should not be equated to how important they are. Despite PPE being the least efficient measure, it was one of the most widely implemented measures in COVID-19, as it is easier to put into place than any of the more long term solutions such as

elimination. When putting these pandemic measures into effect, one must consider the balance between ease of implementation and effectiveness, and manage the two in order to have the strongest response.

Other factors

The hierarchy of controls is simply a way of understanding how steps may be implemented in a response, however it is important to consider external factors. Some important factors to consider in a robust response is how to inform the general public, how to combat any misinformation about the pandemic (a large problem highlighted in the COVID-19 pandemic) and how to consider the emotions of the population, specifically how to counteract any panic or unrest that may take place and hinder the response. To accomplish a strong and solid response despite all these setbacks, governments and medical organisations must work together and be aware and informed at all times about any developments in the disease, and have appropriate measures prepared to combat said developments. To be prepared is a huge proportion of a robust pandemic response, and with good communication, nations can much more easily end the spread of disease.

Another vital factor is to bridge the divide between countries with limited access to medical resources. The coronavirus pandemic highlighted the shortages and gaps in infrastructure present in lesser developed nations, and this inequality led to many deaths, often due to lack of equipment or lack of access to vital resources such as vaccines and PPE. Nations must work together to support nations with shortages and make sure vaccine efforts are equally accessed by all.

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