****

**BRIEFING PAPER**

Committee: Health

Question of: The Question of Establishing Preparedness Protocols for Epidemics and Pandemics

Chair: Hari Das

School: Haberdashers’ Elstree School

Summary:

An epidemic is defined as the widespread occurrence of a disease within an area or community with a pandemic subsequently being defined as widespread occurrence of a disease within an entire country or an even greater area.

In the last 100 years there have been 6 pandemics and 11 epidemics. These have been caused by a range of diseases ranging from the Spanish Flu and Bubonic Plague at the start of the 19th century to modern day diseases such as Avian Flu or Covid 19. Global pandemics like those caused by the Spanish Flu and Covid 19 are thought to occur every 100 years.

Pandemics and Epidemics are largely caused by three main factors, the emergence or re-emergence of diseases, changes in human behaviour which lead to poor sanitary conditions such as those seen at the end of the first world war with the Spanish Flu pandemic or the widespread distribution of the disease as was seen more recently with Covid-19 and environmental changes allowing diseases to jump the species gap as was see with Covid-19 or Avian flu. This last cause will likely become a far more dangerous threat in the future as humans disrupt the environment at a deeper level.

Definition of Key Terms:

**Epidemic -** A widespread occurrence of an infectious disease in a community or region at a particular time, typically affecting a large number of people.

**Pandemic -**  An epidemic that has spread across a large geographical area, often worldwide, affecting an exceptionally high proportion of the global population.

**Endemic -** A disease that is consistently present in a particular region or population, often at a predictable rate.

Outbreak - A sudden rise in the number of cases of a disease above what is normally expected in a given area or population. It is often smaller in scale than an epidemic.

 Reproductive Number (R₀ or R-naught) - A measure of how many people, on average, will be infected by a single case of the disease. If R₀ > 1, an epidemic or pandemic is likely to spread.

 Mutation - A change in the genetic material of an organism, which can result in new strains or variants of a pathogen.

Vaccination - The administration of a vaccine to stimulate the immune system to develop immunity against a specific pathogen, preventing infection or reducing disease severity.

Quarantine - The isolation of individuals who have been exposed to a contagious disease to prevent its spread, even if they are not showing symptoms.

Isolation - The separation of infected individuals from healthy ones to prevent transmission.

Contact Tracing - The process of identifying, assessing, and managing individuals who have been in close contact with an infected person to prevent further transmission.

Herd Immunity - A form of indirect protection from infectious diseases that occurs when a sufficient percentage of a population becomes immune to the disease, either through vaccination or previous infection.

Surveillance - The systematic collection, analysis, and interpretation of data regarding diseases and health conditions in a population to monitor the spread and impact of infectious diseases.

Mortality Rate - The number of deaths from a specific disease in a population, often expressed as a percentage or per 100,000 people.

Case Fatality Rate (CFR) - The proportion of people diagnosed with a disease who die from it. It differs from the mortality rate, which considers all causes of death in a population.

Public Health Response - The coordinated actions taken by governments, health organizations, and the community to control and mitigate the spread of an infectious disease.

 Immunization Coverage - The proportion of a population that has been vaccinated against a particular disease, which helps prevent outbreaks and ensures herd immunity.

Background:

Intermittent outbreaks of infectious diseases have always had profound and lasting effects on societies throughout history. Those events have powerfully shaped the economic, political, and social aspects of human civilization, with their effects often lasting for centuries. Epidemic outbreaks have defined some of the basic tenets of modern medicine, pushing the scientific community to develop principles of epidemiology, prevention, immunization, and antimicrobial treatments. This chapter outlines some of the most notable outbreaks that took place in human history and are relevant for a better understanding of the rest of the material. Starting with religious texts, which heavily reference plagues, this chapter establishes the fundamentals for our understanding of the scope, social, medical, and psychological impact that some pandemics effected on civilization, including the Black Death (a plague outbreak from the fourteenth century), the Spanish Flu of 1918, and the more recent outbreaks in the twenty-first century, including SARS, Ebola, and Zika.

Major Countries and Organisations Involved:

The following countries all have pandemics or epidemics active:

South Africa (HIV/AIDS, Tuberculosis)

Nigeria (HIV/AIDS, Tuberculosis, Cholera)

Uganda (HIV/AIDS)

Kenya (HIV/AIDS)

India (Tuberculosis, Malaria, Dengue)

China (Tuberculosis)

Indonesia (Tuberculosis, Malaria, Dengue)

Russia (Tuberculosis, HIV/AIDS)

Democratic Republic of Congo (Malaria, Ebola)

Mozambique (Malaria)

Sri Lanka (Dengue)

Vietnam (Dengue)

Philippines (Dengue, Malaria)

 Yemen (Cholera)

Haiti (Cholera)

South Sudan (Cholera)

All these countries have Covid-19 Outbreaks:

China, United States, India, Brazil, United Kingdom, Russia, South Africa, Mexico, Japan, Australia, Indonesia, Thailand, Argentina, Chile, and Philippines.

These countries all have a vested interest in the elimination of pandemics or epidemics, particularly LICs such as those in Sub-Saharan Africa whose economies have been ravaged by various diseases.

These organisations are partly or fully dedicated to eliminating pandemics or epidemics:

World Health Organization (WHO)

Centres for Disease Control and Prevention (CDC)

United Nations (UN)

GAVI, the Vaccine Alliance

Médecins Sans Frontières (MSF)

European Centre for Disease Prevention and Control (ECDC)

World Bank

UNICEF (United Nations Children's Fund)

National Institutes of Health (NIH)

Coalition for Epidemic Preparedness Innovations (CEPI)

The World Health Assembly (WHA)

 Pan American Health Organization (PAHO)

These organisations are all useful tools to help prevent the outbreak of pandemics and epidemics so are useful to mention in your resolutions.

Relevant International Agreements:

International Health Regulations (IHR) (2005)

Framework Convention on Tobacco Control (FCTC)

Global Health Security Agenda (GHSA)

International Covenant on Economic, Social, and Cultural Rights (ICESCR)

Pandemic Influenza Preparedness (PIP) Framework

Biological Weapons Convention (BWC)

The Global Fund to Fight AIDS, Tuberculosis, and Malaria

Cartagena Protocol on Biosafety (2000)

Convention on the Rights of the Child (CRC)

TRIPS Agreement (Trade-Related Aspects of Intellectual Property Rights)

International Labour Organization (ILO) Health and Safety Conventions

Previous Attempts to Solve the Issue:

1. Quarantine and Isolation Practices (14th Century - Present)

* One of the earliest responses to epidemics, quarantine was first used during the Black Death (bubonic plague) in the 14th century. Ships arriving at European ports were isolated for 40 days to prevent the spread of plague.
* Prevent the spread of infectious diseases by isolating affected individuals or populations.
* Quarantine remains a central practice in controlling the spread of infectious diseases, particularly for diseases like COVID-19, Ebola, and Cholera.

2. World Health Organization (WHO) (1948 - Present)

* Established by the United Nations (UN), the WHO is a key global health organization working to combat pandemics and epidemics. WHO coordinates global efforts to monitor, control, and prevent the spread of diseases.
* Provide leadership on global health issues, track diseases, and facilitate emergency responses to health crises.
* WHO has played a pivotal role in the control of diseases such as smallpox (eradication), polio, and the HIV/AIDS pandemic.

3. The Eradication of Smallpox (1967 - 1980)

* Smallpox eradication was a landmark global public health success. In 1967, the WHO launched a coordinated campaign to eradicate smallpox globally through mass vaccination campaigns and surveillance.
* Eradicate smallpox, one of the most deadly and contagious diseases in human history.
* Smallpox was declared eradicated in 1980, the first disease to be eliminated by human effort.

4. Global Polio Eradication Initiative (1988 - Present)

* Launched by the WHO, UNICEF, and other partners, the Global Polio Eradication Initiative (GPEI) aims to eradicate poliovirus through mass vaccination campaigns.
* To achieve global eradication of polio by immunizing every child under the age of 5.
* Polio cases have decreased by more than 99% globally, with only a few countries still reporting cases.

5. The International Health Regulations (IHR) (1969 - Updated in 2005)

* The International Health Regulations (IHR) were first adopted in 1969 and updated in 2005 to address the growing threat of global health emergencies. They provide a framework for countries to cooperate in detecting and responding to disease outbreaks.
* Strengthen international public health security by setting out the responsibilities of countries in the event of a public health emergency.
* The IHR has been critical in improving the speed and transparency of reporting outbreaks like SARS(2002-2003) and H1N1 (2009).

6. The Global Fund to Fight AIDS, Tuberculosis, and Malaria (2002 - Present)

* An international financing organization aimed at combating HIV/AIDS, Tuberculosis, and Malaria, particularly in developing countries. It provides funding for prevention, treatment, and research.
* Raise funds and mobilize resources to fight the global pandemics of HIV/AIDS, tuberculosis, and malaria.
* The Global Fund has saved millions of lives and significantly reduced the burden of these diseases, though challenges remain.

7. The International Covenant on Economic, Social, and Cultural Rights (1966)

* This treaty, adopted by the United Nations, recognizes the right to the highest attainable standard of health, which can provide a framework for countries to address health issues, including during epidemics and pandemics.
* Promote the right to health as a fundamental human right.
* Encourages governments to address health disparities and improve public health systems, indirectly supporting pandemic preparedness.

8. The Pandemic Influenza Preparedness (PIP) Framework (2011)

* The PIP Framework was created by the WHO to improve the global response to pandemic influenza, especially ensuring fair access to vaccines and antiviral medicines.
* Strengthen pandemic preparedness and response by improving vaccine availability and distribution.
* It has enhanced global preparedness, particularly in the face of H1N1 (2009) and COVID-19.

9. The Coalition for Epidemic Preparedness Innovations (CEPI) (2017 - Present)

* CEPI is a public-private partnership formed to fund and coordinate the development of vaccines for emerging infectious diseases, with an emphasis on diseases that have pandemic potential.
* Accelerate the development of vaccines to prevent future pandemics.
* CEPI played a pivotal role in the rapid development of COVID-19 vaccines, including funding vaccine candidates and supporting international vaccine distribution.

10. The Global Health Security Agenda (GHSA) (2014 - Present)

* The GHSA is an international initiative involving over 60 countries to strengthen global health security and enhance countries' abilities to prevent, detect, and respond to infectious disease threats.
* To promote sustainable health security improvements, particularly in low- and middle-income countries.
* GHSA helps to improve global responses to outbreaks such as Ebola (2014-2016) and COVID-19.

11. The World Bank’s Pandemic Emergency Financing Facility (PEF) (2017 - 2020)

* The PEF was established by the World Bank to provide financing for countries facing a pandemic crisis, aiming to quickly mobilize resources for outbreak control efforts.
* Provide rapid financing to help countries respond to outbreaks of infectious diseases and reduce the spread of pandemics.
* The PEF provided resources during outbreaks like Ebola and Zika, although it was criticized for its limited impact and was replaced by the World Bank Pandemic Fund in 2023.

12. The Cartagena Protocol on Biosafety (2000)

* An international treaty under the Convention on Biological Diversity designed to ensure the safe transfer and use of living modified organisms (LMOs) and genetically modified organisms (GMOs), which can pose risks in epidemics.
* Safeguard public health and the environment from risks posed by GMOs, including their role in health crises.
* The protocol helps regulate the use of biotechnologies and genetically modified organisms, potentially reducing risks that could contribute to epidemics.

13. The GAVI Vaccine Alliance (2000 - Present)

* GAVI is a global partnership that brings together public and private sectors to improve access to vaccines in the world’s poorest countries.
* Ensure that vaccines are available to people in developing countries, particularly during outbreaks of preventable diseases.
* GAVI has contributed significantly to controlling diseases like measles, pneumonia, rotavirus, and COVID-19 through global vaccine distribution.

14. The Global Polio Eradication Initiative (GPEI) (1988 - Present)

* Launched by WHO, UNICEF, and other partners to eradicate polio globally through vaccination campaigns.
* To immunize every child against polio and reduce the disease burden worldwide.
* Polio cases have decreased by over 99% globally, with only a few countries still reporting cases.

Possible solutions:

Any solution must be comprehensive to solve an issue with such wide-ranging causes and widespread effects.

First, any solution must take into consideration the main causes of epidemics and pandemics reducing the frequency of such events. Here you should focus on proactive solutions such as disease identification and tracking or preventing diseases from jumping the inter-species gap.

Secondly, any solution must take into account the economic effects of pandemics and epidemics, especially to those who have been suffering for decades such as countries like Chad in Sub-Saharan Africa.

Thirdly, any solution must look at stopping the spread of the disease, either through quarantine, vaccination or other means to prevent outbreaks becoming epidemics and epidemics becoming pandemics, therefore lessening their impact.

Finally, all solutions should take into account the rise of drug and vaccine resistant strains and the significant risks they pose with a solution on how to mitigate this risk.

Bibliography:

1. **World Health Organization (WHO)**, 2005. *International Health Regulations (IHR)*. 3rd ed. Geneva: World Health Organization.
2. **United Nations (UN)**, 1966. *International Covenant on Economic, Social, and Cultural Rights (ICESCR)*. UN General Assembly, 16 December 1966.
3. **World Health Organization (WHO)**, 1980. *Smallpox Eradication: The Official Report of the Global Commission for the Certification of Smallpox Eradication*. Geneva: World Health Organization.
4. **World Health Organization (WHO)**, 2011. *Pandemic Influenza Preparedness Framework for the Sharing of Influenza Viruses and Access to Vaccines and Other Benefits*. Geneva: World Health Organization.
5. **Global Health Security Agenda (GHSA)**, 2014. *Global Health Security Agenda*. Available at: <https://www.ghsagenda.org/> [Accessed 8 December 2024].
6. **World Bank**, 2020. *Pandemic Emergency Financing Facility (PEF)*. Washington, D.C.: World Bank.
7. **United Nations Environment Programme (UNEP)**, 2000. *Cartagena Protocol on Biosafety to the Convention on Biological Diversity*. Available at: https://bch.cbd.int/protocol/ [Accessed 8 December 2024].
8. **Centers for Disease Control and Prevention (CDC)**, 2009. *Global Health Security Agenda: Strengthening the World’s Capacity to Respond to Infectious Disease Threats*. Available at: <https://www.cdc.gov/globalhealth/ghsa/index.html> [Accessed 8 December 2024].
9. **The Global Fund**, 2020. *The Global Fund to Fight AIDS, Tuberculosis, and Malaria*. Available at: <https://www.theglobalfund.org/> [Accessed 8 December 2024].
10. **World Trade Organization (WTO)**, 1994. *Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)*. Marrakesh Agreement Establishing the World Trade Organization.
11. **GAVI Vaccine Alliance**, 2020. *About GAVI*. Available at: <https://www.gavi.org/> [Accessed 8 December 2024].
12. **Coalition for Epidemic Preparedness Innovations (CEPI)**, 2017. *About CEPI*. Available at: <https://cepi.net/>[Accessed 8 December 2024].
13. **World Health Organization (WHO)**, 2020. *The Global Strategy for the Elimination of Tuberculosis 2016-2035*. Available at: **United Nations (UN)**, 1975. *Biological Weapons Convention (BWC)*. United Nations.
14. **United Nations (UN)**, 1989. *Convention on the Rights of the Child (CRC)*. UN General Assembly, 20 November 1989.

Links for Further Research:

<https://www.who.int/activities/preparing-and-preventing-epidemics-and-pandemics>

<https://pmc.ncbi.nlm.nih.gov/articles/PMC7123574/>

<https://www.emro.who.int/pandemic-epidemic-diseases/outbreaks/index.html>

<https://www.ifrc.org/our-work/disasters-climate-and-crises/what-disaster/epidemics-and-pandemics>

<https://commonslibrary.parliament.uk/research-briefings/cbp-9550/>

<https://www.ncbi.nlm.nih.gov/books/NBK525302/>

<https://openwho.org/courses/pandemic-epidemic-diseases>

Please bear in mind that although most of these are very wordy they answer this exact question, however, I suggest you skim read them for information