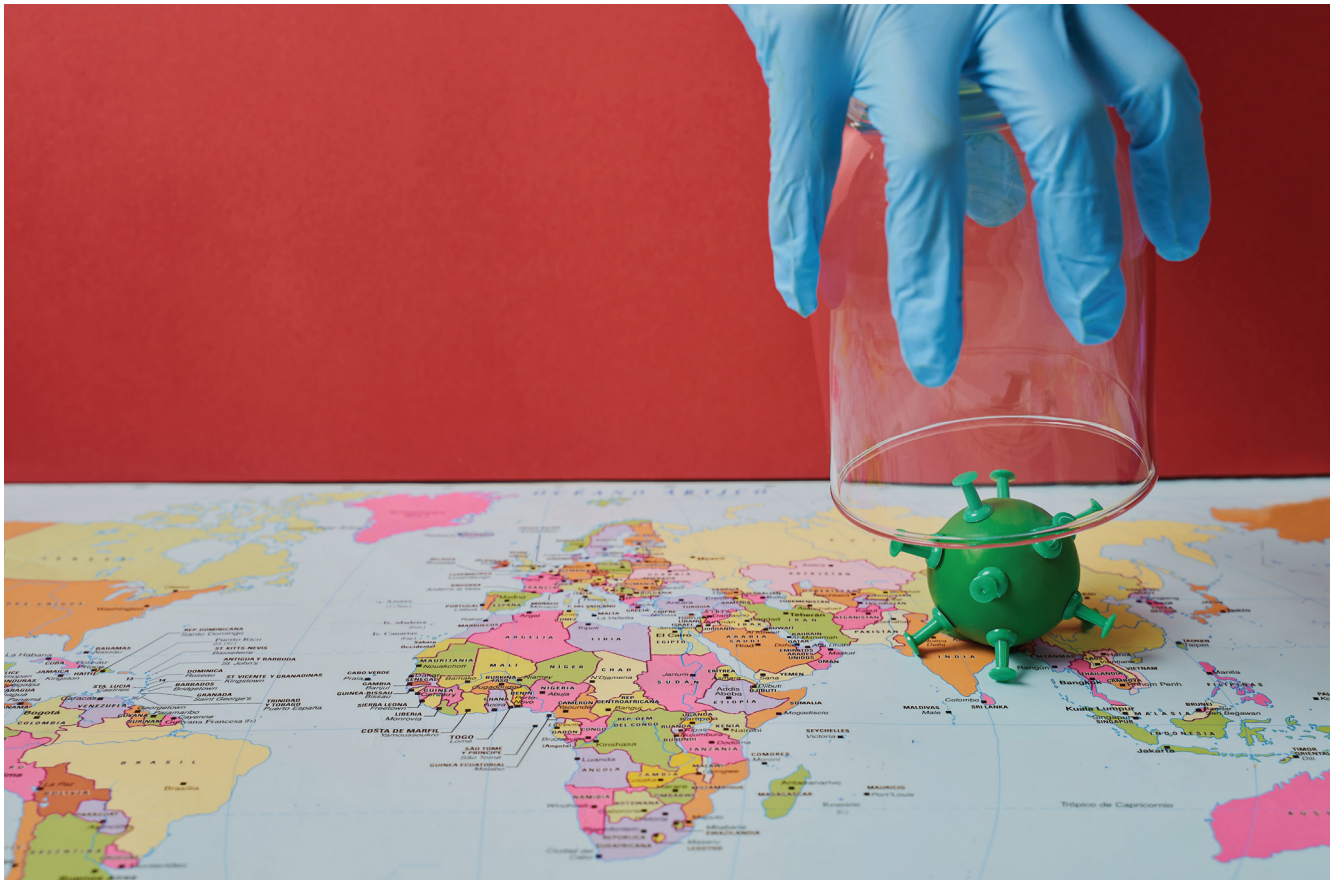
MediBuddy

IT STARTS WITH ONE:

CONTAGIOUS DISEASES OUTBREAK AND MANAGEMENT



OVERVIEW OF AN OUTBREAK

Human beings have always been keen to unravel the science behind occurrences. After centuries of struggles with pandemics, humanity in the 21st century can now easily study outbreaks and their spread to other countries. When it comes to understanding an outbreak, the first thing we do, is try to find out about **'Patient Zero'** (the first documented patient in an epidemic).

With the development of vaccines, antibiotics and other treatments due to improvement in medical technology, it sure seemed that humanity has finally won over disease causing microbes. Many experts even thought that, "it's time to close the book on the problem of infectious diseases".[1] However, this of course, is just another great illusion. The microbes never go away, they just hide in plain sight. In fact, they seem to return time and again, to take doctors, scientists, health institutions and decision makers by surprise.

An invisible enemy, in the form of a disease outbreak, still holds fear & fascination for us; because of the way it shows its dominance by consuming every one in its path.

Remember, we can beat a massive pandemic only through knowledge and extensive measures.

Pandemic outbreaks, and our response to them have been depicted in many movies and popular T.V. shows. Most of us have survived a pandemic scenario only on screen, but if ever there was a time for scientific inquiry and logic, it is during times like this.[1]

Diseases don't just disappear, when it comes to contagious pandemics, history does keep repeating itself.

Here's a list of epidemics and pandemics in the 21st century: [1]

P Plague

One might think that the plague is a terror of the past. In truth, as recent as 2017 there was an outbreak in Madagascar with **2417 cases** and **209 deaths**.

S SARS

Identified in 2003, severe acute respiratory syndrome was so deadly that it killed **1 in 10** people who had it, affecting over **8000 lives**.

H H1N1

The first influenza pandemic of the 21st century started in 2009. Preparedness efforts greatly helped in the fight against H1N1.

M MERS

The Middle Eastern Respiratory syndrome spread to areas beyond its region between the years 2012 and 2013.

Z Zika Virus

In 2015, the Zika virus, transmitted by the Aedes Aegypti mosquito, triggered a wave of microcephaly in Brazil. This disease causes dreadful damage to the brains of unborn babies. Almost 70 countries, one after another, then experienced their own Zika epidemic.

N Nipah

In 2001, the Nipah virus outbreak hit Siliguri, West Bengal, but remained undiagnosed though there were **66 cases**. It was eventually diagnosed by a laboratory in the United States in 2006. When it reappeared in Nadia, West Bengal, in 2007 and in Kerala in 2018, outbreaks were quickly diagnosed and contained. [2]

DISEASE MANAGEMENT PROTOCOLS

Screening, Diagnosis and Preparedness for any new outbreaks:

To understand the set protocols for disease management, we need to first understand how it spreads. Epidemics and pandemics occur in **four phases**, yet it isn't necessary that they go through each phase. The **first phase** is the introduction phase, where it emerges into a community. The **second phase** is localized transmission, where sporadic infections with the pathogen occur. In the **third phase**, the pathogen is able to transmit from human to human and causes a sustained outbreak in the community, threatening to spread beyond it. The **fourth phase** is reduced transmission when human-to-human transmission of the pathogen decreases, owing to acquired population immunity or effective interventions to control the disease.[1]

PHASES OF AN EPIDEMIC:

Phase 1
Emergence

Phase 2
Localized transmission

Phase 3
Amplification

Phase 4
Reduced transmission immunity

INDIA'S RESPONSE TO EPIDEMICS

In India, the **National Center for Disease Control** has created an **Integrated Disease Surveillance Program** to this effect. Their approach to disease outbreaks starts with a simple **checklist**. This is good to keep in mind, because it might be overwhelming to think of a disease in its entirety whereas a checklist provides a breakdown of what needs to be done and actions that will actually help the situation.

Checklist for Actions to be taken by the IDSP on Disease Outbreaks: [3]

PREVENTION AND CONTROL OF VACCINE PREVENTABLE DISEASES

A. Enhanced case based surveillance and active case search
B. Contact Tracing
C. List of unimmunized/unvaccinated children in the area
D. Isolation and symptomatic management of cases
E. Vaccination of susceptible (Cases/patients) as per GoI guidelines

PREVENTION AND CONTROL OF VECTOR BORNE DISEASES

A. Fever survey and maintain a line list of cases
B. Symptomatic management of cases
C. Entomological Assessment and Integrated Vector Control Measures
D. Vaccination as per GoI guidelines

PREVENTION AND CONTROL OF FOOD & WATER BORNE DISEASES

A. Identify and maintain a line list of cases
B. Health education activities to promote safe water drinking practices
C. Regular water quality checks in the community
D. Sanitation survey in the community

PREVENTION AND CONTROL OF BLOOD BORNE DISEASES

A. Contact tracing of cases
B. Universal Precautions to prevent exposure to blood and bodily fluids
C. Vaccination as per GoI guidelines
D. Behavior change communication to avoid high risk activities
E. Immunize health personnel in hospitals and clinics

PREVENTION AND CONTROL OF AIR BORNE DISEASES

A. Disease specific surveillance
B. Personal hygiene and respiratory etiquette
C. Quarantine/isolation of cases
D. Vaccination as per GoI guidelines

- Appropriate lab samples to be collected and sent to the designated labs
- Inter-sectoral coordination ensured with respective departments
- Relevant IEC and BCC interventions
- Any other disease specific control and prevention activity

IDSP : Integrated Disease Surveillance Program

RESPONSE INTERVENTIONS[1]

ANTICIPATION

In this stage, we forecast the disease and identify the drivers that could worsen the impact and facilitate the spread. Preparedness plans should contain a variety of scenarios to allow for a reactive response to the unexpected.

EARLY DETECTION

Detecting a disease early on can really help with containment efforts before it amplifies. This stage begins at the health care setting, so health care workers must be trained to recognize potential epidemics, and report an unusual event quickly (such as an unusual cluster of cases or deaths).

CONTAINMENT

As soon as the first case is detected, rapid containment efforts need to be taken. This will help avoid a large scale epidemic.

CONTROL AND MITIGATION

Reducing the impact, incidence, morbidity and mortality becomes the goal once the infectious disease threat reaches an epidemic or pandemic level. This step also looks to reduce economic, political and social disruptions.

ELIMINATION OR ERADICATION

When the disease is no longer considered a major public health issue, it is said to be "eliminated". Intervention measures still need to be implemented in order to prevent re-emergence. Eradication of a disease is much more difficult and rarely achieved.

CLINICAL TRIALS AND VACCINES

One turns to science when containment efforts don't give the desired results. Scientists are pushed to the frontline to take on clinical trials. The catch is this- though the world needs a vaccine desperately for an outbreak, at the same time clinical trials cannot be hurried. Clinical trials take place in **three phases**. The **first** has a few dozen healthy volunteers, tests the vaccine for safety. The **second** is with several hundred people who have been affected by the disease. The **third phase** involves a higher sample size, in thousands, who also check the effectiveness of the vaccine.[4]

IMPACT ON BUSINESS AND ECONOMY

Pandemics and epidemics disrupt social fabric and devastate the existing businesses.
Here are some examples of how the economy gets affected:

Hospital sector

Due to sharp rise in cases, hospitals get overloaded, thereby affecting the administrative and operational expenditure. **Example:** The excess hospital admissions and costs due to the H1N1 influenza pandemic in England between June 2009 and March 2011, incurred admission costs of around **GB£45.3 million** (**GB£20.5 million** for admissions between June 2009 and March 2010 and **GB£24.8 million** for admissions between November 2010 and March 2011.[5]

Tourism sector

Places hit by an epidemic are deemed unsafe, thereby affecting local tourism. **Example:** Korea had **1 million** fewer non-citizen visitors in 2015 and lost **US$2.6 billion** tourism revenue due to MERS-CoV outbreak.

The nation-wide lockdown in India due to coronavirus pandemic is expected to cost the Indian economy almost **$4.64 billion** every day and the entire 21-day lockdown will result in a GDP loss of almost **$98 billion**.[5]

Agriculture sector

Infectious diseases that spread from livestock to humans lead to the agricultural sector taking a hit. **For instance;** A social media rumour that poultry causes coronavirus has cost the Indian poultry market over **₹1.6 billion** a day.[5]

BUSINESS CONTINUITY PLAN

While getting ready for the 'worst case scenario', employers have to strike a balance between worker safety and productivity. This is difficult for physical businesses. However, wherever remote work can be encouraged, it should be encouraged. **Here is a guideline of how to create a business continuity plan when things aren't 'Business As Usual':**

STRATEGISE

Think of ways in which employees can continue to function while staying safe and healthy.

PROVIDE MEDICAL ATTENTION

Give care to employees who have a threat of infection arising. You can also set up a dedicated number for employees to report cases.

PROMOTE REMOTE WORKING

Laptops, internet connectivity and working headsets are the essentials for effective work-from-home. Make sure that security measures are also taken care of.

BE FLEXIBLE

Abnormal times can't call for a normal working arrangement. Review HR policies and modify them to provide employees with flexibility.

PRIORITISE

Put down your business' priorities and decide the minimum staffing requirements to achieve these.

MAKE A COMMUNICATION PLAN

Keep employees and stakeholders informed regarding the situation and actions taken by your business.

LOOK AT OPERATIONS

Stay aware of your dependencies and predict disruptions that may occur there.

To sum up, these little invisible forces of nature have disrupted humanity time and time again, but humans have always managed to come out at the top through preparedness and prevention. An invisible enemy, in the form of a disease outbreak, still holds fear & fascination for us; because of the way it shows its dominance by consuming every one in its path. Remember, we can beat a massive pandemic only through knowledge and extensive measures.

SOURCE

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5. Economic impact of epidemics and pandemics, © European Union, 2020