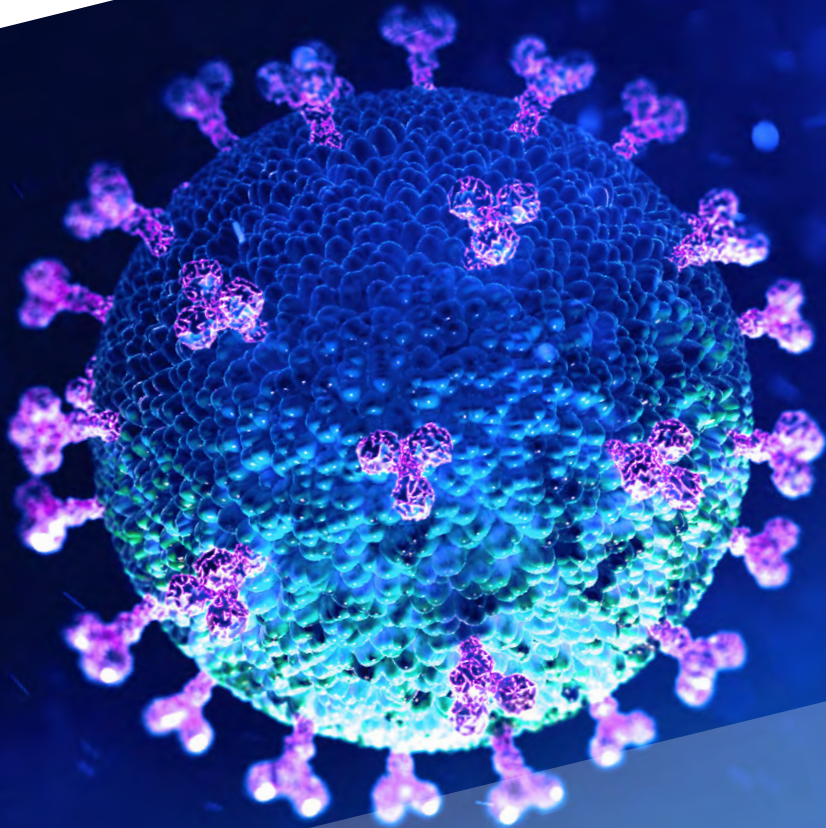


# Outbreaks, Epidemics, and Pandemics: Preparedness and Response Strategies



# Table of Contents

## CONTENTS

- 1 Introduction
- 2 Cost of Epidemics and Pandemics
- 4 Response Planning
  - 4 Employee Wellbeing
- 5 Insurance Considerations
  - 5 Employers' Liability
  - 6 Public Liability Master and Excess
  - 7 Directors and Officers Liability
  - 7 Employment Practices Liability
  - 7 Stop-Loss
  - 7 Contract Frustration
  - 8 Innovations in Modelling and Insuring Pandemic Risk
  - 10 Property and Business Interruption
  - 11 Standalone Options
  - 12 Environmental Liability
  - 13 Claims Considerations
- 13 Conclusion

# Introduction

Just over a century ago, the Spanish flu spread across the world, killing as many as 100 million people and causing devastating economic losses. Since then, tens of millions of lives have been claimed by pandemics and epidemics that also wreaked havoc on businesses and damaged national economies. Despite advances in medicine and improved infection control practices, the novel coronavirus (COVID-19) pandemic – which the World Health Organization (WHO) has declared a public health emergency of international concern – along with the Zika pandemic and outbreaks of the Ebola virus and Middle East respiratory syndrome coronavirus in the last decade, are stark reminders of the dangers posed by rapidly spreading disease.

Although public health officials must lead much of the preventive work needed to limit the effects of infectious diseases, organisations can manage their own risk by planning their response to protect their people and fiscal integrity.

Businesses should take a two-pronged approach. First, businesses should establish preparedness strategies that cover emergency response, business continuity, crisis management, and crisis communications. In addition to monitoring the progress of emerging pandemics, epidemics and understanding their potential impact, plans should be in place to continue operations in case of travel restrictions and if organisations are directly affected.

Second, businesses should understand how existing insurance coverages may respond to a pandemic, and make any necessary changes to their policies, keeping in mind the potentially global nature of various diseases.





# Cost of Epidemics and Pandemics

The WHO defines an epidemic as “the occurrence in a community or region of cases of an illness, specific health-related behaviour, or other health-related events clearly in excess of normal expectancy.” A pandemic is defined by the WHO as “an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people.”

The global influenza pandemic of 1918 – known to history as the “Spanish flu” – infected an estimated 500 million people and killed as many as 100 million. In the century since, many pandemics and epidemics have emerged (see Figure 1).

Although recent pandemics and epidemics have been deadly, their mortality rates have generally been far lower than earlier health crises, owing in large part to advances in medicine and infrastructure. Yet the potential economic impact of today’s health crises can be far greater in scope, business’s increasing reliance on technology, frequent and unrestricted travel, and far-reaching

supply chains mean that an outbreak in a single country can have global repercussions. The cost of a severe flu pandemic could total as much as 5% of global GDP, estimates the World Bank.

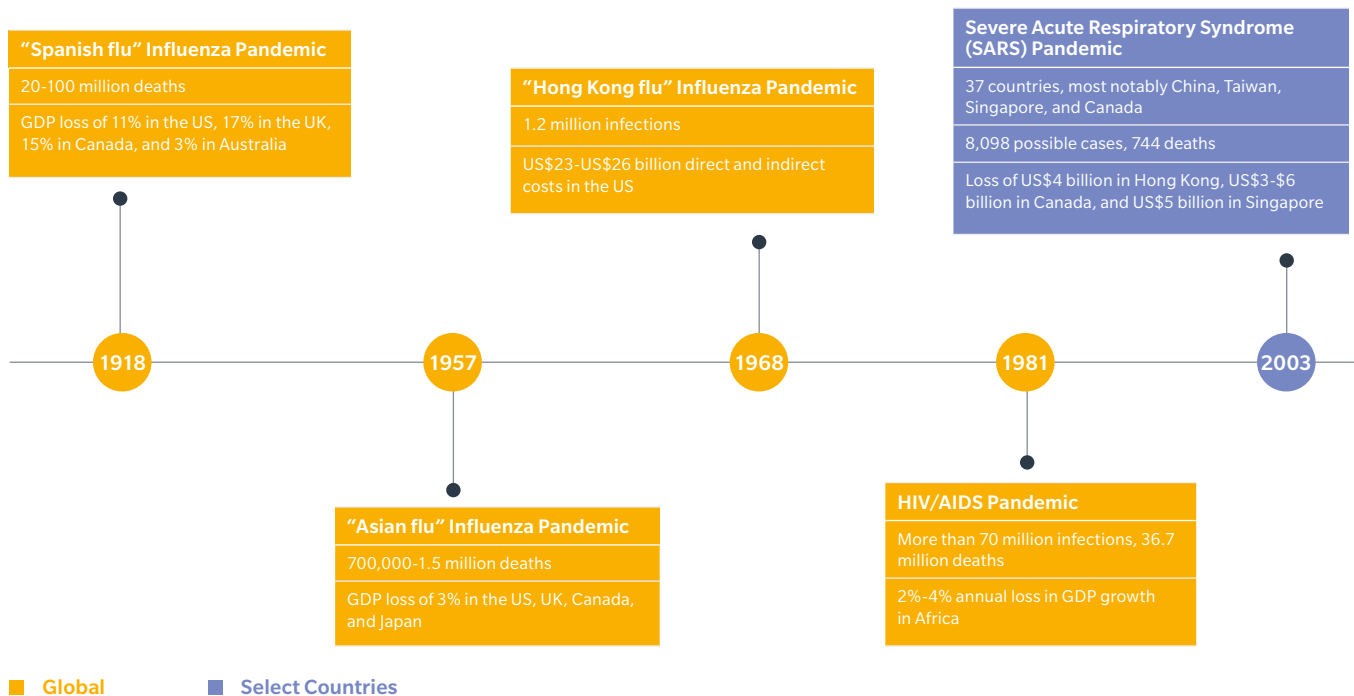
For businesses, potential risks include:

- Loss of workforce due to death and illness.
- Increased employee absenteeism and lower productivity due to family care obligations, social distancing, and fear of infection.
- Operational disruptions, including interruptions and delays in transportation networks and supply chains.
- Reduced customer demand.
- Reputational damage if response to an outbreak is seen as ineffective or communications with internal and external stakeholders are seen as incomplete or misleading.

FIGURE 1

Since the “Spanish flu” in 1918, many pandemics and epidemics have emerged.

SOURCE: Madhav, N., Oppenheim, B., Gallivan, M., Mulembakani, P., Rubin, E., & Wolfe, N. (2018). Pandemics: risks, impacts, and mitigation. *Disease control priorities*, 9, 315-345



NOTE: List of events is illustrative rather than exhaustive. All US dollar amounts rounded to nearest billion.

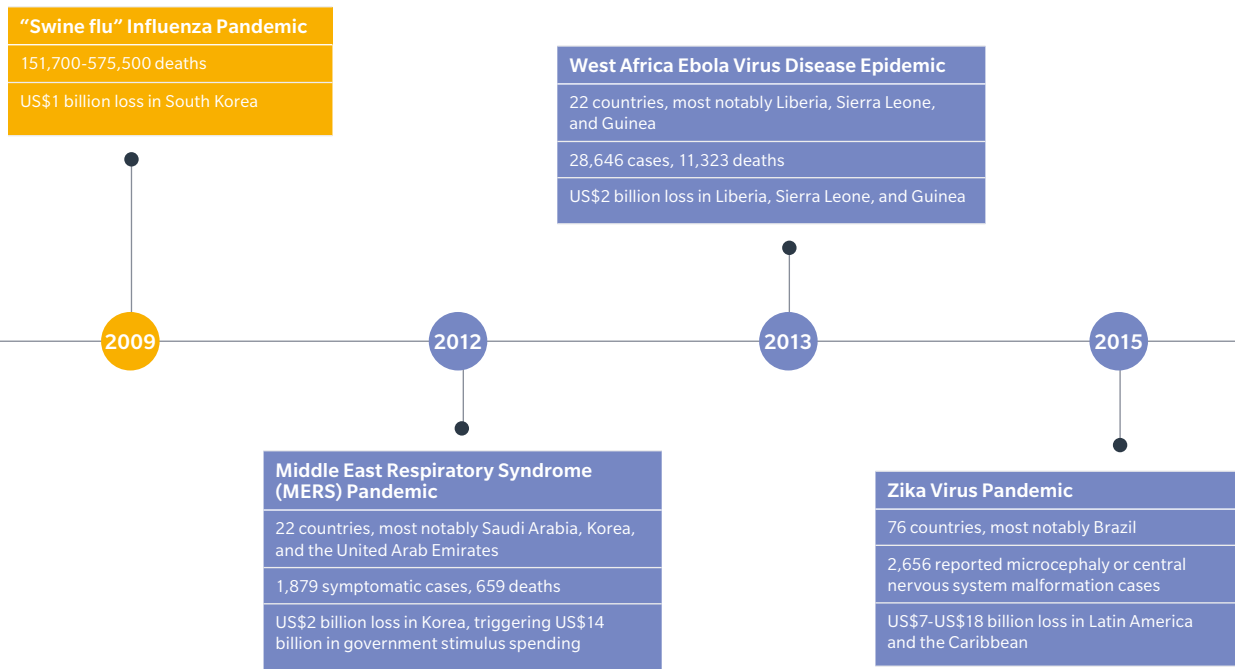


When public confidence is eroded by public health crises, the effects can be felt on a company’s bottom line – particularly those in sectors such as retail, hospitality, entertainment, and airlines. For example, during the 2013-14 Ebola outbreak, airline stocks fell as investors anticipated sharply decreased travel after an Ebola

case was reported at a Texas hospital, while several hundred airline workers did not report for work at LaGuardia Airport in New York due to safety concerns. More than 80% of losses in the Caribbean from the 2015 Zika virus outbreak [have been tied to lower international tourism revenue](#), according to the United Nations Development Programme.

At the same time, healthcare providers may face patient overloads and illnesses among staff, adversely affecting service delivery during critical times. Higher education institutions may also face risks stemming from their role in providing housing and other services to students and local communities, international travel and study abroad by students and faculty, and more.

Similar economic and social consequences of the COVID-19 pandemic are materialising. We are seeing drops in global stock markets, the curtailing of travel within and to/from China and other countries with significant outbreaks, the closing of factories and businesses, and health and safety concerns being raised by travelers and employees, which indicate the potential high costs should this outbreak persist. Though organisations can do little to prevent or limit the spread of outbreaks, they can be prepared to respond, remediate, and recover.



# Response Planning

Organisational preparedness to manage a disease outbreak includes emergency response, business continuity, crisis management, and crisis communications. As they monitor the progress of emerging pandemics or epidemics, businesses should review, exercise, and update or otherwise adjust their response plans, including crisis management, crisis communications, and business continuity plans.

To remain resilient, organisations should seek to answer several critical questions. For example:

- Which products and/or services are of greatest value and how would revenue be affected by a disease outbreak?
- Will our plans work in the event of border closures, travel restrictions, or reduced exports of certain commodities?
- What if we lose critical people, or have staff working from remote locations?
- Will the fear of infection affect our key customer base?
- How should we engage with public health and government entities?
- Who should we involve in our response efforts?
- How can we position ourselves to respond positively?

Businesses should consider developing clearly defined pandemic response escalation thresholds specific to their operations so that individual facilities, divisions, and regions can identify potential health threats early and act appropriately to protect the organisation, employees, resources, and revenue streams. Organisations should also review critical suppliers and vendors and potential operational or sales implications of an outbreak, while also considering alternative and/or geographically dispersed suppliers and vendors.

FIGURE  
2

The COVID-19 pandemic has already had a far-reaching human impact.

SOURCE: WHO, CDC, media reports

**100+ countries**

**100,000+ confirmed cases**

**4,000+ deaths**

*(Between 31 December and 11 March.)*

## Employee Wellbeing

To effectively protect people, businesses should consider the nature of any disease – for example, its virulence, mortality rate, and public fears – and define the potential direct and indirect impact on employees. Businesses should monitor guidance and updates from public health agencies, governments, industry groups, and determine procedures, including notifications to health authorities, employees, and other stakeholders, in the event of a suspected case involving an employee, an employee’s family member, or others visiting an area that is known to be affected by an outbreak.

Businesses should also:

- **Review or develop employee health procedures to minimise the potential transmission of infectious diseases to other people, including employees, their families, and customers.** Consider the need for individuals to be quarantined or isolated and define additional cleaning protocols that may need to be implemented.
- **Keep employees informed and educated about outbreaks and relevant healthcare precautions.** Consider the role of employee wellness programmes, especially if an outbreak happens during cold and flu season. Encourage employees to remain at home when sick and consider establishing a remote-working policy to limit the spread of disease.



# Insurance Considerations

Several forms of coverage may apply if an employee, employee's family member, or third party is infected, or if an insured property or a third party's property is contaminated or otherwise affected by an actual or perceived infectious disease. The insurance market has also developed parametric, indemnity-based insurance policies that can be triggered without direct property damage.

Ahead of an outbreak, risk professionals should understand the coverages they purchase and how each might be expected to respond to a pandemic.

## Employers' Liability

Fundamentally, employers' liability coverage will indemnify an insured with respect to legal liability for bodily injury suffered by an employee resulting from employment by the policyholder. Disease generally is included within the policy definition of "bodily injury", and so the contraction of COVID-19 by an employee will potentially trigger policy cover. To the extent that a policyholder's employees contract coronavirus as a result of a failure on the part of the policyholder to take all reasonable steps to ensure their safety at work, the insurance policy will respond to claims those employees make.

Coverage will apply with regards to any sums awarded to the employee with respect of pain and suffering caused by contracting COVID-19 and any loss of earnings, cost of medical care, and associated transport costs for which an insured is held to be legally liable. The policyholder's legal defence costs and any of the employee's legal costs awarded against the insured will also be covered.

Employers' liability coverage also extends to an insured's employees who are temporarily overseas on business, provided their contracts of employment were signed in the UK and their usual place of work is the UK. However, the policyholder must still be deemed to be "legally liable" for that employee contracting the disease. In other words, the employer must have failed to take all reasonable care to ensure the employee's safety while travelling abroad, and contracting the disease must have been a direct result of that failure for policy coverage to apply.

In cases where the employee's contract of employment was signed in a territory outside of the UK and they are habitually based there, then any applicable local workers' compensation scheme cover will apply. The extent of this cover depends upon the territory in question and whether there is coverage beyond what is mandated by law.

In addition to the risk to individual employees, organisations should be concerned about exposed employees spreading infectious diseases to family members and colleagues. Each connected case could eventually become a general liability claim. Depending on individual retentions for applicable policy years, these compensable losses could involve reinsurance or excess casualty coverage. Efforts should be made to ensure the same coverage is afforded across all risk transfer aspects of the relevant policies.



## RISK FOCUS: TRAVEL PRECAUTIONS

In response to the COVID-19 outbreak, the US State Department urged Americans not to travel to China, South Korea, Italy, and Iran. The UK's Foreign & Commonwealth Office has advised against travel to China, Italy, and South Korea. Other countries have issued similar warnings, mainly to avoid China's Hubei province and any nonessential travel to China; some countries have urged their citizens to leave and also banned travellers from China.

Organisations should review such warnings and consider potential changes to business travel approval procedures. If travel to an affected region is deemed necessary, organisations should educate employees about disease transmission and infection-control measures. Specifically, travellers to affected regions should:

- Avoid high-risk activities.
- Pay strict attention to hygiene.
- Monitor their health and seek medical attention if exhibiting any symptoms commonly associated with the disease.
- Carry emergency medical assistance numbers.

Before travelling, employees should be familiar with any policies regarding emergency medical evacuations and understand what medical care (if any) may be available via company resources, in addition to or instead of those provided by local health facilities. Organisations may also wish to recommend that employees who travel regularly be immunised against the flu and high-risk pathogens for which vaccines are available.

Finally, travellers should be mindful of the possibility that screening and isolation measures may be put in place at airports, seaports, and land crossings. As the number of COVID-19 cases rises, passengers arriving from affected areas are being screened for elevated temperature and other symptoms at airports around the world, including in North America, Europe, and Australia. Many airlines have also reduced flights or completely ceased flying to China and other severe outbreak countries.

## Public Liability Master and Excess

Insurers generally take the position that a public liability policy extends only to actual injuries. They are likely to look closely at the nature of injuries alleged by third parties, and, while “bodily injury” may trigger coverage, insurers may reject claims based on fear of exposure, exposure without actual symptoms, or other mental or emotional injuries unless resulting from actual bodily injury. As with employers’ liability policies, disease is generally included within the definition of “bodily injury”.

A public liability policy typically also responds to claims by third parties that an insured has caused property damage, but the policy will likely require a showing of physical injury to or loss of use of tangible property. Insurers may take the position that certain types of claimed damage are not covered or that the mere presence of the virus in or on a property does not constitute physical injury. General liability policies typically do not cover damage to the insured’s own property.

Public liability policies also typically provide coverage for “personal injury” – a number of specified wrongs, including wrongful eviction by an owner or landlord. Policy language and applicable law can vary, but in some circumstances it may be possible to argue that closure of a building or evacuation of premises fall within this definition, therefore covering third party liability exposure.

Because of varied wording and legal interpretations of policy language, potential claims should be reported to both primary and excess insurers. Master policies are generally broader than local primary coverages; as such, all master and excess carriers should be placed on notice for all liability claims, including employers’ liability. Most master policies include crisis response coverage to reimburse policyholders for supplementary expenses to manage or contain a crisis. In order for the cover to apply, a crisis – for example, an outbreak at an insured’s location where third parties might be infected – would need to trigger bodily injury, property damage, or personal injury covered by the umbrella policy. The typical limit offered by this coverage extension in the UK is £250,000, in addition to the master policy limit, and is intended to cover expenses incurred by crisis management firms, which may include media expenses, public relations fees, advertising, and travel expenses for directors and officers.



## Directors and Officers Liability

Public companies and their directors and officers have become increasingly concerned in recent years about event-driven litigation. During or following an outbreak, epidemic, or pandemic, shareholders may file litigation alleging, among other things, a lack of preparedness for the potential impact on corporate operations and revenues.

Directors and officers liability (D&O) policies typically include certain limitations on coverage for illnesses and bodily injury, but depending on the specific language of the policies, those exclusions might be narrowly tailored and thus may not affect coverage for epidemic-and pandemic-related shareholder claims. Risk professionals should review their policy language and consult with insurance advisors about potential coverage considerations.

## Employment Practices Liability

Employers are permitted to implement and enforce specific corporate and human resources policies to address outbreaks, epidemics, and pandemics, but should balance their response against potential liability risks. For example, the COVID-19 pandemic could affect members of protected classes on a disproportionate basis, particularly individuals whose race or nationality is associated with regions where the outbreak is most pronounced. Employers should be mindful about taking any action that could result in discrimination claims by these individuals. Employers should also carefully consider any decision to isolate or quarantine employees who are disabled or perceived to be disabled because they are exhibiting symptoms, lest they run afoul of disability discrimination, medical privacy, and wage and hour laws.

Where possible, corporate and HR policies bearing on the outbreak – such as travel restrictions, quarantines, employee leave, and return-to-work authorisations – should address all communicable illnesses rather than focusing on a specific outbreak such as COVID-19, and should be enforced impartially to avoid employment practices liability and wage and hour claims.

## Stop-Loss

Many employees' family members are covered under self-insured medical plans sponsored by their employers. If an infection spreads from an employee to a covered family member, the family member's medical expenses would likely be covered under the employer-sponsored plan. If the employer has purchased a stop-loss insurance policy, it may apply if expenses exceed the policy's deductible.

## Contract Frustration

Countries affected by the spread of infectious disease could see ancillary economic effects, including employee absences or closures of major ports. This could increase the risk that businesses in these countries cancel contracts with or default on payments or deliveries to their foreign counterparties.

### **INDUSTRY FOCUS: HEALTHCARE**

Treating infectious diseases can put the healthcare industry and its employees – including doctors, nurses, assistants, technicians, lab personnel, students, and maintenance workers – at risk. Medical professionals' first line of defense is to follow infection control-protocols set forth by public health officials; in the US, these include those published by the Centers for Disease Control and Prevention (CDC), and in the UK those published by the National Health Service (NHS). Health providers should also refer to guidance from other independent organisations, such as The Joint Commission and the WHO.

If a healthcare worker contracts an infectious disease during the course of employment, their employers' liability insurance would likely provide coverage for costs related to treatment of the illness, lost wages, and, in a worst-case scenario, death benefits.

A healthcare organisation that is forced to shut down or restrict access to its facilities due to an actual or suspected case of infectious disease or contamination will likely suffer a loss of revenue. Healthcare organisations may also face additional operating expenses – for example, to purchase additional personal protective equipment for staff, or to hire additional staff to replace workers who are out sick, or for the handling of increased patient flow resulting from other nearby facilities being forced to close. As noted elsewhere, traditional property and business interruption (BI) policies may not always respond, which is why many healthcare organisations' policies contain communicable disease contamination sublimits with specific trigger wording.

On the crisis management front, healthcare providers should make necessary updates to procedures based on evolving health authority requirements. Providers should update employees, provide ongoing training, and regularly review and test pandemic response plans and infection control protocols. All employees should be made aware of the measures to treat potentially infected patients and ensure their safety and that of all others in the hospital or provider environs.



## Innovations in Modelling and Insuring Pandemic Risk

The risk of disease outbreaks will increase as the world becomes more connected through trade and travel; climate change alters disease ranges; and as the population grows and interacts with animals that may new disease risks. Constant traditional and social media coverage means the fear associated with outbreaks spreads widely and rapidly.

While insurance is usually a central part of preparing for known risks, insurers have been reluctant to cover pandemic risk since little research existed on the associated costs. Insurers have had particular difficulty in quantifying the indirect effects of infectious diseases, including the loss of business because of public fear of travel or congregating in crowded spaces.

That is changing as modelling firms study the historical record and use advanced analytics to quantify the impact of past events and forecast the potential effects of future outbreaks. This analysis involves evaluating such variables as country-level preparedness, population density, and population movement and transportation patterns.

### NEW SIMULATIONS

Computer simulation models assess the likelihood of loss by projecting plausible disease transmission events on a local or global scale. For example, simulations can depict the potential spread of flu-like pandemics or outbreaks akin to the 2003 SARS and 2014 West Africa Ebola events. Probabilistic models show disease emergence, rate of spread, number of people infected, and the resulting rates of healthcare utilisation and mortality. Organisations are often interested in costs, so disease spread models can be coupled with financial models that quantify the economic impact and insurance claims related to outbreaks. Altogether, an extremely large set of simulated events allows for the estimation of potential financial and human losses.

Such models use the probability of individuals moving across travel networks and transmitting disease within each network node to simulate differing scenarios of disease transmission and spread. Millions of calculations occur in a single epidemic simulation.






### QUANTIFYING DISEASE IMPACTS

In addition to developing such simulation engines, Metabiota, a leading risk modelling firm, has specifically quantified the “fear factor” by creating a sentiment index that measures the emotional response and potential behavioural changes among populations facing deadly diseases (see Figure 3). This index scores each pathogen – such as Nipah, Ebola, and yellow fever – based on a range of fear-inducing characteristics including disease symptoms, mortality risk, type of transmission, and other factors.

FIGURE  
3

Understanding a disease’s “fear factor” can help response planning.

SOURCE: Metabiota

	GERMANY	JAPAN	MEXICO	UNITED STATES	CHINA
					
FEAR RANK					
1	Nipah virus	Nipah virus	Nipah virus	Marburg virus	Marburg virus
2	Lujo virus	Marburg virus	Marburg virus	Lujo virus	Lujo virus
3	Marburg virus	Lujo virus	Lujo virus	Nipah Virus	Nipah virus
4	Ebola viruses	Ebola viruses	Ebola viruses	Chandipura virus	Ebola virus
5	Hendra virus	Hendra virus	Hendra virus	Ebola viruses	Chandipura virus

By better understanding how the public responds to various outbreaks, organisations of all types – businesses, non-profits, and governments – may be able to better direct their responses. For example, the 2014 Ebola outbreak was largely confined to West Africa, yet [researchers from the Netherlands](#) found that people’s level of “psychological fear” increased when they heard about isolated cases in countries that were “socially closer”. People in the Netherlands showed greater fear of the disease when reading about the few Ebola cases in North America than in Sierra Leone.

For the communities where Ebola did most harm, evidence suggests that certain media reports and other communications and behaviours [increased the fear levels among some people](#). This in turn helped to perpetuate behaviours that increase the spread of the disease. Among other steps, researchers recommend “[devising] communication and awareness-raising strategies, behavioural interventions, risk governance, and community engagement approaches that can diminish the disease impact of FRBs [fear-related behaviours] in the future pandemics”.



## INDUSTRY FOCUS: EDUCATION

Educational institutions – especially those that provide food, lodging, and social activities, such as colleges and universities – can be particularly hard-hit by pandemic outbreaks. Among their unique concerns are the significant numbers of students and faculty who travel internationally as part of their education, research, or career.

Depending upon the timing and circumstances of an outbreak, foreign students, faculty, or staff may leave school to return to their home countries or choose not to attend or return to an institution if a disease threat could affect them or their families. Similarly, those participating in overseas programmes may be exposed to disease, or refused (re)entry if travel bans are enacted.

Campus environments can place students, faculty, and staff in close proximity to one another, while also drawing in larger communities for sporting events, lectures, concerts, and other activities. Administrators must therefore balance potential revenue loss and reputational damage against possibly contributing further to the spread of a pandemic. And, of course, many larger universities run teaching hospitals, which are subject to the risks and concerns of a healthcare organisation.

Educational institutions should develop crisis management and crisis communication plans around pandemic risk, and engage in careful analysis to quantify and estimate those risks. For instance, many institutions could find research funding at risk if activity is interrupted due to a pandemic. Similarly, crisis planning should also address the possible need to undertake a large-scale disinfection of affected facilities and provide isolated housing, food, and medical services to students and other individuals who may be quarantined on campus for extended periods of time.

Contract frustration insurance policies can provide coverage for these counterparties if policyholders can meet certain financial criteria. Such policies can be designed to cover non-payment, non-delivery, or contract cancellation for any reason, including the potential economic effects of an outbreak. Coverage may become more expensive or unavailable immediately after a crisis, so policyholders should consider purchasing such coverage before a pandemic or epidemic arises.



## Property and Business Interruption

Under standard property policies, insured physical damage is necessary to trigger a covered loss. If COVID-19 was to manifest at an insured's premises, through people becoming ill, insurers could contend that contamination is not physical damage and also may maintain that possible contamination, proximity to other contaminated premises, or public fear do not amount to physical damage. Property forms also typically contain "contamination" exclusions that insurers may seek to invoke.

Most property forms include some coverage extensions, including ingress/ egress, civil or military authority, and decontamination. Such coverage typically is only provided due to insured physical loss or damage that follows a covered cause of loss. The presence or suspected presence of the virus alone is unlikely to trigger these coverages. Similarly, absent insured physical loss or damage, reduced demand for goods and services and supply chain disruptions are unlikely to be covered.



Property policy forms may include one or more of the following clauses that could respond to COVID-19 losses:

- **Interruption by communicable disease (notifiable/infectious disease).** This extension provides business interruption coverage resulting from a discovery of a disease at the insured's premises, which results in interruption to trade and loss of income.

There are many variations of this extension, the broadest of which will respond if a disease is discovered at the premises or within a pre-agreed radius, whether or not there has been an order by a competent authority. Other variations of this clause require an order to be issued by a competent authority in respect of the discovery of the disease at the insured's premises.

The narrowest variation of this clause is known as specified notifiable disease. Coverage applies under this variation only if a disease listed in the policy occurs. As COVID-19 is a new disease, it will not be found on the list of diseases in policies drafted before the outbreak, and therefore will not be covered unless the policy extends to cover diseases that are subsequently declared notifiable under local law. COVID-19 was declared a notifiable disease under English law on 5 March 2020.

- **Communicable disease cleanup.** Coverage may be provided for reasonable and necessary costs for the cleanup, removal, and disposal of covered property due to the actual, and not suspected, presence of a communicable disease on premises. Coverage may be triggered through the limitation or prohibition of access to an insured's premises by order of an authorised governmental agency due to a communicable disease.

## Standalone Options

Few insurers currently offer standalone pandemic insurance coverage to transfer non-physical losses – such as business interruption – resulting from the COVID-19 outbreak not directly occurring at an insured's premises and caused by reduced demand for goods and services or disruption of supply. The limited options that are available can be expensive and include significant attachment/coinsurance points. Pricing is driven by modelling, which can also be used to set the parameters for self-insured retentions.

If an insured believes it may have sustained an insured loss, it should immediately begin the process of gathering documentation to support a potential claim. This should include details of the specific incident to the extent that information is available to the public, including:

- Where the case was diagnosed.
- Where the infected individual is in relation to insured property.
- What authorities have been or are required to be notified and what authorities require of insureds locally.
- The specific date of the occurrence.
- Any tracking costs incurred by insureds, in addition to effects on receipts.

## INDUSTRY FOCUS: HOSPITALITY AND RESTAURANTS

Industries with the most in-person customer contact stand to suffer the most damage in a pandemic. Hospitality and airline companies may find themselves effectively shut down and may need to draw down cash reserves to stay in business. Restaurant chains, entertainment companies (such as cinemas and theatres), cruise lines, and other leisure-oriented companies face similar risks.

Hospitality and restaurant companies should have specific crisis and communication plans in place, and regularly tested, to address an outbreak. Planning should also address business continuity needs should the organisation encounter large-scale absenteeism, whether from employee illness, their need to care for sick relatives, or decisions to avoid potential contagion.

Hospitality and restaurant companies should juggle conflicting demands: ensuring staff are on hand to keep facilities running, while protecting employees from the spread of communicable disease. Organisations that encourage their employees to come to work and then see them fall ill may find themselves the targets of litigation and/or liability claims.

The major risk to hospitality and restaurant companies in a pandemic situation typically is not physical damage, but a sudden and dramatic loss of customer traffic and revenue. Yet traditional property and business interruption policies are usually triggered only by events causing physical damage or property loss. Policies should be reviewed to determine what, if any, pandemic-related losses might be covered and how they may be triggered. In addition to insurance, the company should assemble cash and credit resources to draw upon in the event of a steep and sudden drop in customer traffic.



## INDUSTRY FOCUS: MARINE

Commercial vessels and seaports [carry more than 80% of global trade by volume](#), according to the United Nations Conference on Trade Development's Annual Report 2017, making the maritime community particularly vulnerable to communicable disease outbreaks. For example:

- Port closures due to pandemics could frustrate voyages and threaten contractual obligations if goods cannot be delivered or loaded.
- Because some diseases can be spread via cargo and crew members, vessels and crew that leave areas affected by pandemics may be barred from entering other ports. Infections to crew may only become apparent while vessels are at sea, where treatment or evacuation may be difficult.
- In countries where other infrastructure is limited, vessels and seaports may be the most effective way of transporting medical supplies to respond to a pandemic, which could inadvertently accelerate disease transmission.

Several forms of insurance coverage could respond to these risks. These include protection and indemnity insurance (specifically for vessel owners), maritime employers' liability insurance, charterer's legal liability policies, and delay in startup coverage for projects that may be affected by pandemics. Maritime companies – and others that rely on marine transport – should review their insurance programmes to ensure they have adequate protection from the potential effects of pandemics.

Beyond insurance, owners and operators of ships and seaports can take other actions to reduce pandemics' potential impact on people and operations. Crisis management and response plans should be tested ahead of an event to ensure they will be effective in a crisis; among other items, these plans should address how to impose quarantines, if necessary. Ship owners and charterers should also be prepared to choose backup ports in the event that preferred ports are closed because of a pandemic.

Insurance policies that can provide coverage for pandemic risk without physical damage triggers are available and can help businesses fill some of the coverage gaps in BI policies.

## Environmental Liability

Depending on the virulence of an infectious disease or how it is transmitted, organisations may need to clean up or remove waste or other materials at an infected individual's workplace or home. A government authority could order a property to be closed while such activities are completed. Whether coverage exists under a pollution legal liability (PLL) policy will depend on the facts of the claim and any specific wording contained within the policy. This includes, but is not limited to, policy definitions and exclusions related to viruses and bacteria.

Some insurers offer environmental policies for the healthcare industry that may contain language providing some coverage for disinfection, cleanup, and emergency response costs related to "pollution conditions", which may include viruses and bacteria. But policyholders should carefully review their PLL policies for specific language or terminology that may limit or exclude coverage. Policy language may, for example, restrict coverage to "facility-borne illnesses", and it is unclear how insurers will interpret this language as it relates to specific diseases. Environmental laws or cleanup standards may also influence whether the policy is triggered. And coverage may be conditional upon a written recommendation by a certified industrial hygienist or written requirement from a local health authority, such as Public Health England.

Insureds outside the healthcare industry may also receive claims for cleanup costs and loss of income as a result of contamination following an infectious disease case. If this occurs, any available PLL policies should be reviewed carefully for potential coverage. The availability of coverage under a PLL policy may depend on the policy's definitions of "pollution condition" and "government orders".

A PLL policy's definition of pollution typically refers to solid contaminants and waste, but does not specify viruses. The question of coverage may therefore depend on country law. Many policies drafted to take into account mould or legionella contain language referring to "microbial matter", fungi, or bacteria, but insurers may argue that viruses do not fit within these definitions. Some policies contain specific language dealing with infectious diseases, which might exclude or limit coverage, require coinsurance, set sublimits, or impose other terms and conditions that could limit an insured's recovery.

PLL policies also typically restrict coverage to cleanup undertaken in response to a government order, and some policies further specify that such orders must be issued under governing environmental laws. It is unclear whether an insurer would accept a decontamination or disposal order issued by a health authority, but policies that provide coverage for mould frequently expand beyond environmental laws to include health laws and regulations.

PLL terms and conditions will likely require prompt reporting to relevant local or national government bodies in addition to timely written notification to the insurer. And they will typically exclude coverage for actions taken and expenses incurred without the insurer's consent.

## Claims Considerations

Before any losses related to infectious disease outbreaks occur, organisations should develop claims management protocols that establish clear roles and responsibilities for personnel inside and outside the organisation. Such personnel should include insurers' claims representatives, brokers, and any other insurance advisors who can assist with a claim.

To plan for the worst-case scenario that headquarters and other key locations become inaccessible because of a contamination event, government order, or other factors, organisations should ensure that insurance policies, contact lists, financial and property records, and other key documents are accessible in hard copy and electronic formats at alternative location sources.

In the event of a loss, organisations should gather data for a potential claim filing. Organisations should capture potential loss information and other costs, including those related to medical treatment of employees and cleanup of contaminated surfaces. Businesses should also record photographic and/or video evidence of any environmental contamination, and document any government orders in the event of a partial or full shutdown.

## Conclusion

The battle against pandemics is taking place on multiple fronts. The global public health community seeks to identify emerging pathogens, control their spread, and develop effective vaccines and courses of treatment. National and local governments refine their public health policies and cooperate with international organisations, such as the WHO, to develop effective protocols for outbreak detection and response. Businesses and other organisations hope to mitigate the economic and social impact of pandemics through risk management, business continuity, and contingency planning. Modelling and analysis of pandemic risk – supporting pricing and placement of pandemic-specific insurance coverage – can give organisations another important tool in preparing for the unpleasant but inevitable reality of a pandemic outbreak.

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## About This Report

This report was prepared by Marsh with support from Metabiota, a leading risk modelling firm.

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