

Societal Resilience and COVID-19

Understanding the complex interplay of risks when dealing with a global pandemic crisis

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Abstract

A crisis is any event that leads to instability and danger to an individual, group, community, or whole society. A pandemic presents a unique form of crisis that can cause global disruption, affecting every facet of government, society, and business. The implications of a serious disease outbreak extend well beyond the disease itself. The levels of sickness and mortality, while important, can be quickly overshadowed by cascading risk implications that affect the global economy, threaten societal confidence, weaken the rule of law, present a risk of food security, and can lead to inter- and intra-state conflict. When multiple countries are concurrently impacted, the provision of life-saving and time-sensitive aid and humanitarian assistance can also be affected, leading to isolation and a domino effect of collapsing societies. When nations start from a low baseline level of resilience, then the speed of government and infrastructure failure may be swift. Resilience across every facet of government, community, and business is critical if the disruptive effects of the disease and the more far-reaching effects of the fear the unseen enemy creates are to be controlled.

Key Words

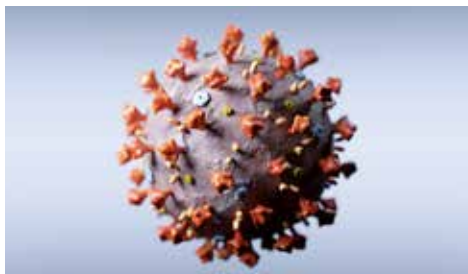
- Pandemic
- Epidemic
- Crisis
- Resilience
- Business continuity
- Disruption
- Disaster
- Conflict
- Risk
- Threat
- Outbreak
- Emergency
- COVID-19
- Coronavirus

Introduction

Serious disease outbreaks, whether an epidemic or pandemic, present a unique form of crisis as societies and businesses concurrently seek to cope with the tangible disruptive effects of sickness and death, as well as the more nebulous but often more far-reaching and impactful effects of the fear and resulting disruption caused by an outbreak. Given the complexities associated with this form of crisis, risk practitioners must view serious disease outbreaks holistically, evaluating the complex and dynamic interplay of the cascading risks that flow from epidemics and, at a global level, from pandemics.

Serious disease outbreaks present not only a risk from sickness; they present a crisis through fear. They are the invisible enemy, a silent plague against which common risk control measures are largely ineffective. They are both personal, bringing fear and harm to families, and they are indiscriminate, affecting not only those operating in high-risk conditions or professions, but also the shopkeeper and schoolteacher. They are also insidious, with their hosts unintentionally and unknowingly placing their loved ones, peers, colleagues, and clients at risk. Additionally, the fear of infection is a disruption force multiplier, accelerating and exacerbating the impacts of the disease itself as social stability is undermined, and the ability to move, work, trade, eat, drink, pray, wash, learn, socialize and stay warm is disrupted.

This paper has been written as communities across the world face the challenge presented by the Novel Coronavirus (COVID-19) outbreak, declared a pandemic by the World Health Organization on March 11, 2020. While the paper will discuss aspects of COVID-19 as a timely and striking example of the complex, far-reaching consequences of these events, its purpose is to prompt reflection and discussion of how epidemic or pandemic outbreaks of serious infectious disease test societal and organizational resilience more generally. COVID-19, like SARS, MERS, Ebola and other viral hemorrhagic fevers, will not be the last challenge we face in an interconnected world of mobile populations and interdependent trade and business.



Importance of Information



A stabilizing factor during an outbreak is knowledge. Understanding the disease, monitoring its spread, identifying vulnerable populations and mortality rates, and taking evidence-based precautions to control infection or receive life-saving treatment will often reduce the level of fear and resulting disruption. However, serious disease outbreaks are often accompanied by an initial lack of information, or conversely information overload (dubbed an infodemic in the current COVID-19 outbreak), media hype, and misreporting. Additionally, health authorities need time and data to appropriately investigate the nature, transmission mechanisms, and mortality rates of an emergent disease; as well as develop effective treatment protocols and initiate the process of developing a safe vaccine, for which the lead time will be 18 months to 2 years. To compound the problem, criminals may take advantage of a disease outbreak, whether through physical or cyber means, to further confuse matters. And, terrorist groups and hostile nations may exploit the instability caused by an outbreak to further their goals.

Compounding the lack or mistrust of information made available to the public is the availability and accuracy of information provided at Ground Zero – the initial source of the infection. When reporting authorities are trusted and effective, then reports during the Golden Hour (figuratively) of the disease outbreak are largely accepted at face value, and a reasonable level of public confidence is established. When reporting authorities disguise facts (as with Chinese authorities in the first months of COVID-19), or importantly are perceived to disguise facts or downplay the risks, then a multiplier will invariably be applied to any reported infection and mortality rates in peoples' minds, and fear correspondingly increases. The ability to contain the disease while containment may still be possible is therefore impacted.

Identifying trusted sources of information is essential for individuals, civil communities, governments and business, and in the welter of reporting, locating a consistent source of credible information will be essential to developing a balanced, risk-based view of the situation as it evolves over time. Multilateral public health bodies such as the World Health Organisation and the European Center for Disease Prevention and Control, as well as regulated national bodies such as the US Center for Disease Control and Prevention will provide this and, as an overarching principle, when decisions regarding risk exposure and response are being considered or taken, these should provide the baseline point of reference.



Capacity of Public Health Agencies

The underlying capacity (scale of resources) and capability (applied knowledge, skills, and ability) of public health agencies at the national and regional levels will often determine whether a disease is checked early, or if it will spread uncontrolled from the outset. Where there is robust, pre-existing existing capacity and capability to: (1) Conduct population-level surveillance and testing; (2) Advise counterpart government agencies on risks and response measures; (3) Deploy prevention, containment and control contingency measures; (4) Treat the sick up to and including in specialized, high-dependency care settings, then often transmission rates may initially be contained, and the survival and recovery rates will typically be higher.

When aspects of this capability and capacity are weak, and when existing primary care services are inadequate (as will often be the case in the developing world), then disease transmission will be unchecked from the outset, more deaths will likely occur, and recovery timeframes will be extended. However, even where robust public health capacity and capability and primary care services are present, there may be a point at which healthcare workers, medical infrastructure, and supportive resources become overwhelmed as staff become infected or are instructed to self-isolate, and where supporting infrastructure, utilities and services, and supply chain resourcing is disrupted or potentially crippled during a pandemic.

As is evident from the COVID-19 response, even among developed nations with sophisticated capability and significant capacity, the effectiveness of public health response varies. South Korea, responding to an acute episode of community-based transmission in Daegu, developed reliable test kits and deployed highly efficient testing protocols in less than 3 weeks, giving them the capacity to test up to 140,000 cases per week from the start. South Korea, the United Kingdom, and others have quickly deployed widely distributed testing, including drive-through facilities, to ensure that the surveillance and response is able to match the epidemiological progression of a disease that is significantly more infectious than seasonal influenza (more than 20 times more contagious). This contrasts markedly with countries, including the United States, who have struggled to mobilize rapid and reliable testing resources.



Political Culture



The political culture and nature of government intervention is often closely linked to the work of public health agencies in complex ways. Where, as in the US, a large cohort of the population will not have access to free testing (as they would across Europe and in many other parts of the world) and yet may not qualify for subsidized health care, the consequence will be that a significant number of people who would otherwise have been tested, will not be tested. In the midst of the COVID-19 outbreak, a number of epidemiologists and other public health professionals are warning that predominantly low-paid workers, often in customer service industries, will pose a public health threat as, even if only mildly symptomatic, they will feel they have no [economic] option other than to go to work. Another dimension of political culture witnessed in China, Iran, the US, and elsewhere is that politicians perceive a political threat to their power – either directly, where they may be perceived to be mismanaging the response efforts, or indirectly, where the cascading effects of the disease begin to impact the economy. Political statements playing down the risk,¹ masking the incidence of cases or, as in the US, seeking to prevent a cruise liner from disembarking passengers who have been exposed to COVID-19 because it would push up their [bad] case ‘numbers’, creates confusion, undermines public health communication efforts, and ‘politicizes’ the disease outbreak, diverting from rather than focusing attention on a coherent, evidence-based public health response.

¹ An example of this would be comments heard from significant political figures likening COVID-19 to flu in a manner that sought to dismiss its seriousness. Seasonal Influenza kills up to as many as 650,000 people every year (A Danielle Iuliano, PhD, Katherine M Roguski, MPH, Howard H Chang, PhD, David J Muscatello, PhD, Rakhee Palekar, MD, Stefano Tempia, PhD, et al. Estimates of global seasonal influenza-associated respiratory mortality: a modelling study, *The Lancet*, December 13, 2017).



Nature of Government Intervention



The government response to an epidemic or pandemic is critical in determining not only the containment and management of the disease, but also the confidence and stability of society and businesses. Responses may move from preventative through controlling and up to draconian, depending on the severity of the disease and the speed of its transmission. Government intervention at the outset of an outbreak may be applied in a measured manner that will reflect both the risks faced and the needs and expectations of society. At the point where government controls start to fail and the impacts of the disease are pronounced, then government measures may move from strict to draconian in an effort to contain the crisis. At this point, only two distinct outcomes are likely to occur – complete (eventual) success or catastrophic failure. Strict controls such as martial law will present either a positive or negative effect on the stability of a society, either calming the situation or eroding public confidence and ultimately the rule of law.

Another dimension of the success or failure of government intervention is the extent to which the population will accept or are used to restrictions on their civil liberties (movement, freedom of assembly, right to worship, freedom of speech, and so on). In liberal democracies where government intervention in civil society and business affairs is generally more limited, mistrust of or hostility to overt government control may be more likely than in societies where direct and restrictive government intervention is accepted and expected. The liberal democracies of the industrialized world in particular must therefore communicate effectively with their people and balance the need to intervene robustly, with the potential of societal resistance.

The key to successful government intervention in response to COVID-19 appears to be when governments openly and candidly communicate and have a logical, well-resourced plan that scales up through preparedness and contingency measures that are well-rehearsed through to a flexible, event-triggered series of civil contingency measures and powers. When governments fail to signal their intentions and then take swift extreme action, this often creates significant fear and confusion. While much of Italy's response to COVID-19 has been proportionate (and on the strict / draconian), many feel that a failure to clearly communicate what might happen in different scenarios has created an impression of a government losing control, having been forced into "firefighting" mode too quickly. Under these extreme conditions, fatigue may quickly set in, and the population moves from a point of accepting strict containment measures to actively resisting these steps to control the spread of disease.

At the point where government institutions are overwhelmed, especially during a pandemic where external support and resourcing may be scarce or non-existent, government institutions may struggle or fail and result in a vacuum of control, which can undermine the very fabric of society. When national controls fail, then the importance of local government becomes more relevant. When all forms of government fail, then self-regulating micro-communities and impromptu leadership may emerge to protect those communities. When conditions undermine these final stabilizing measures, then militias and gangs may emerge to take control or exploit the absence of government.

Cascading Effects



The impacts on individuals, communities, and the operations, facilities, information, assets, business and reputations of governments and businesses cannot be solely tied to the speed and extent of disease transmission, nor to associated long-term health effects or deaths resulting from infection. The challenge is much larger than the disease itself and can affect every aspect of society and business. Organizational decision-makers must look beyond the disease and consider how risks cascade to affect every facet of society and commerce. Each facet of disruption can itself generate a series of associated disruptions, causing a widespread and seemingly never-ending ripple of risks. Mapping the chain of effects of an outbreak can be challenging, leading to exaggerated concerns of a worst-case apocalyptic outcome. Conversely, risks may be downplayed and allow the situation to quickly worsen.

Even during the early stages of the current COVID-19 outbreak, the cascade effects of the disease on business have been seen. Central banks have cut interest rates and deployed other contingency measures as economies hover on the brink of recession; access to lending or investment has become an acute challenge, particularly for smaller businesses, as banks and investors adopt increasingly more risk-averse positions, affecting working capital even as revenue and cashflow drop and input costs increase, creating a potentially destructive reinforcing loop of consequences in both national and global economies.

Secondary effects can also cascade from the first wave of impacts. When healthcare services are disrupted, then mortality rates may increase, mortuary services may become overwhelmed, secondary diseases may emerge, healthcare staffing levels may decline, supporting services may be impacted as workers become sick or die, and social frustrations may arise, leading to isolated or widespread violence. Outbreaks at a pandemic level present a spiderweb of risk, with its reverberations creating a complex and ever-changing crisis environment. As such, each impact then creates further risks and accompanying fears to be anticipated and managed, if possible.



Communication Disruptions



We live in the age of hyper-connectedness at the individual, social, and business levels. The ability to communicate is fundamental not only to the effectiveness of government, communities, and business, but is also an assumed necessity at the personal level. A failure of communication infrastructure not only disrupts government effectiveness, degrades the effectiveness of community control, and harms business interests; it also quickly moves a population from frustration to fear, to panic, and potentially violence. In societies wholly reliant on technology, this process will be rapid as individuals, groups, communities, and whole segments of society struggle to deal with a dramatic shift in how they communicate and interact at both social and professional levels.

The importance of immediate communication is now central to how businesses and governments function. Even temporary disruptions in communication will present dire economic harm across layers of commerce, derail government and emergency response protocols, and enable criminals and terrorists to exploit the resulting vacuum of information sharing. As such, the impact on the ability to communicate presents a series of cascading risks that further aggravates the crisis environment.

Ironically, in societies where technologies are unavailable, ineffective, or inconsistent, then the impacts may be slower to materialize when decentralized controls are more common, and as the general population reverts to more physical communication mechanisms.



Implications for Internal and International Movement



At the very earliest stages of a serious infectious disease outbreak, governments will seek to contain the spread of the disease through restricting movement to and from affected areas. Increasingly, controls seeking to reduce the spread of infection will have a corresponding impact on business and society, as well as hampering the ability of agencies and humanitarian groups to assist less developed nations struggling to respond to the outbreak as they impose self-controls on movements to protect their own staff, or when nations close down borders. The United States’ decision to ban travel from 26 European countries for an extended period (currently running from the March 13 to April 12) will have dramatic political and economic impacts. The 2010 Icelandic volcanic eruption led to over 95,000 flights being cancelled during an 8-day period and cost the airline industry approximately \$1.7 billion. The implications of a protracted ban on travel at a global level will be difficult to quantify in terms of the cost to the global economy. In addition, as airlines and other businesses collapse under the strain of the crisis, the recovery speed – post pandemic – may be hampered as gaps in services appear.

Although a necessary containment measure from a public health perspective, this can have negative consequences (as seen during the COVID-19 outbreak in Hubei Province in China and in the originally “locked down” regions of Northern Italy and South Korea) for communities subject to restrictions. These range from disruption of supplies to essential goods and services as well as disrupted labor mobility, and can rapidly create a population both stigmatized by the outside world and collectively traumatized by being singled out as the place where risk is greatest.

Movement of people and goods is a critical factor. The movement of people, raw materials, and goods underpins the ability of society to thrive and function. When mobility is disrupted, the movement of domestic or international raw materials and products is impacted. The production of goods is derailed, and the movement of raw materials required to generate power is impacted. The failure to move raw materials again has a ripple effect with a loss of power, impacting telecommunications infrastructure and life-critical services and further exacerbating mobility challenges dependent on power. Additional impact then occurs as emergency services cannot move to or treat the injured or sick, and firefighters cannot contain fires. Commercial outlets may also quickly run out of stock, medicines cannot get to hospitals, and food shortages and ultimately (as a worst-case scenario) starvation occurs. The risk implications are more noticeable in high-density population centers where water and food scarcities may first occur, and it is likely that at these points, we might see the first signs of erosion of the rule of law.

These are worst-case scenario impacts, and at a much earlier stage the effect of movement restrictions will be felt. As countries begin to impose travel restrictions, the earliest impacts will be felt by businesses and communities that rely on movement such as tourism and leisure, air travel, commercial road and rail transport operators, and service industry businesses that by their nature travel frequently, such as global professional services and consulting businesses. Businesses with non-local supply chains will also face significant disruption, whether because they themselves are in a controlled movement zone, or because key nodes in their supply chain are. Local travel restrictions will translate into absenteeism in the workplace, and when businesses are not set up to deliver products and services with people working remotely, this can have a catastrophic impact.



The Effects on Community

Community resilience is influenced by societal risk tolerance levels. Where high mortality rates are common, especially through disease,² then the population may be more accepting of the outbreak as death from disease is more widely accepted as a norm. Conversely, in the industrialized world, where death from serious infectious diseases is less common, then a lower risk tolerance may exist, and communities are resultingly less robust. Fear of infection may also degrade the “social contract” whereby reasonable law-abiding behaviour is the norm and can result in the isolation of people, groups, and wider communities as mobility is restricted, social and recreational activities are limited or prevented, and comfort through worship and education, is impacted. Tensions may also surface between ethnic groups and religions as the fabric of society is weakened, and the impact of long-standing grievances is intensified. Blame may also be placed on specific groups for starting or spreading the disease, leading to hostility or persecution. When the political situation is fragile, the outbreak may exacerbate political and social tensions and potentially stress the political system to its breaking point. In addition, nations may seek to exploit the impacts of the disease to destabilize long-standing opponents through the use of economic sanctions, devaluing materials, or by restricting imports and exports.

When high sickness and mortality rates occur in children, this will likely have a dramatic impact on society. Parents will be less likely to place themselves at risk of infection if they then become unknowing disease carriers and infect their children. As a result, critical services become disrupted as people focus on protecting their families, rather than sustaining society. The psychological implications of the loss of a child on the immediate and extended family will likely exacerbate instability as personal grief undermines rational behaviour, and frustration results from actual or perceived government ineffectiveness. If the disease has a lower or negligible impact on children (such as is currently reported for COVID-19), then societal resilience will be higher because adults will

have a higher tolerance of personal risk and may be more willing to continue work that sustains society and businesses.

Secondary effects may be policing of movement restrictions and curfews, leading to frustration and potentially aggression. When police officers and soldiers are also contending with direct impacts upon their own families, then their ability to contain violence may weaken, resulting in spikes of aggression, widespread riots, and intercommunal or ethno-religious violence. As seen during Hurricane Katrina's impact on the rule of law in New Orleans in 2005, the veneer of a stable society is thin and easily fractured.

²Take, for example, Malaria which killed approaching 440,000 in 2017; where 70% of those deaths are of a child under 5, and where over 90% of these deaths occur in just 17 countries in Africa (in fact, over 50% (around 230,000) of all Malaria deaths worldwide occur in just 7 countries). (World Health Organization, Global Health Observatory; Number of Malaria Deaths 2010 – 2017 [Online]. Available at: <https://www.who.int/gho/malaria/epidemic/deaths/en/> (Accessed 12 March 2020)).

Foreign Assistance



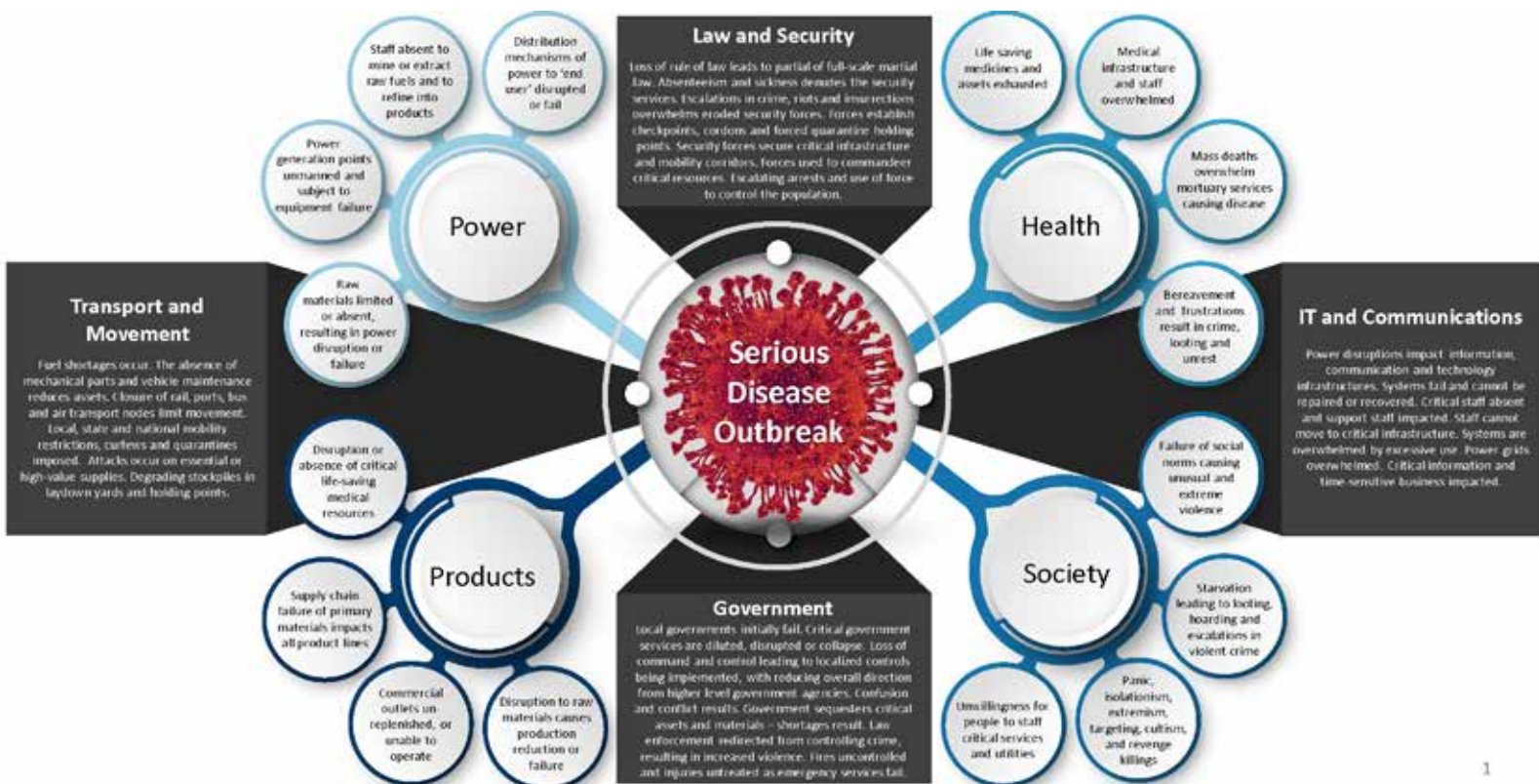
The humanitarian aid and development sector, focusing on conflict-affected, poverty-stricken, or disaster-struck regions may also be impacted by an epidemic or pandemic. During a pandemic situation, the disruption may quickly devolve to a point of crisis as organizations self-limit movement, as borders are closed, or as countries internalize their resources to manage their own crises.

It is within these regions that the highest demand for support will likely occur, as they start from a point of weakness in terms of government and infrastructure resilience. When a global pandemic occurs, countries may find themselves isolated from life-saving and time-sensitive external support. This will invariably compound the impacts not only on the affected nation and its population, but also on the uncontrolled spread of the disease. Had Ebola with a mortality rate of 40% not been contained within the 9 affected countries, Nipah with a mortality rate of 78% within 2 countries, SARS with a mortality rate of approaching 10% within 29 countries, or MERS with a mortality rate of over 34% within 28 countries not been contained or eradicated through a combination of intervention and natural processes, then the results could have been much more severe. COVID-19, based on current data, is lethal in 3.7% of cases and, while this number will likely decline,³ in the absence of a vaccine and

with sustained community transmission now present in several countries, it has the potential to kill many and leave a significant number with long-term, life-limiting health consequences. The compounded risks resulting from a direct loss of life through the disease may be much more significant.

These potential disruptions to foreign aid may also extend to global health organizations and foreign assistance programs, as resources are refocused to address the immediate needs of each beleaguered nation. USAID, DFID, ECHO and other critical donor funding may be frozen, diminished, or withdrawn, and this can further exacerbate socioeconomic problems created by a serious disease outbreak. Furthermore, such programs are designed to foster peace and stability. As such, localized, national, regional and even global tensions may increase, and armed conflict may occur as funding efforts are impacted.

³ Current estimates of the mortality rate at 3.4% are based on confirmed cases and those identified as having the disease through testing. The level of infection in the wider population is not yet capable of assessment, as many with mild or no symptoms will never be tested. Researchers from WHO and others estimate the final mortality rate of COVID-19 will likely be around 1% globally, and lower in countries where demographics are favourable and where public health response is more capable / availability of high dependency care. (BBC News, Coronavirus death rate: What are the chances of dying? [Online]. Available at: <https://www.bbc.com/news/health-51674743> (Accessed 12 March 2020))



Supply Chain Impacts



Tracing the interdependency between commerce and social stability at the local, state, national, regional, and international levels is complicated. The ability of manufacturing to succeed in one country may be influenced or be wholly dependent on the ability of another country to supply raw materials or goods.

If power generation is materially affected, then a loss of power may disrupt the extractive sector, and ultimately the manufacturing, production, movement, and distribution of goods. In the industrialized world, advanced economies rely on complex, carefully balanced supply chains. Any large shock to supply and distribution operations will be quickly felt, as intermediate distribution nodes cannot be re-stocked, and wholesale and retail operations struggle in the face of demand. If the power needed to fuel healthcare treatment and the ability to communicate and coordinate with government, community, or businesses is disrupted, then the ability to extract, refine, move, and distribute oil and gas not only effects global economies within the extractive sector and those who rely on oil and gas products, but also exacerbates the level of infection and mortality rates, as well as governmental measures to control or reduce the effects of the disease, leading to fear and social unrest. As such, the risks have a compounding effect as the challenges spiral to a point where they are difficult if not impossible to control.

Resilience and business continuity principles apply as governments, communities, and businesses seek to define minimum business continuity objectives [MBCO]. Complicating the need to define a minimum level of production or service is the fact that external stakeholders may undermine internal measures to reduce the impacts of the outbreak. The requirement for all stakeholders to have robust resilience measures in place then becomes critical as dependencies see external parties erode or cause failure in otherwise robust and effective strategies.

Governments, communities, and businesses also need to define their individual and collective Maximum Tolerable Periods of Disruption [MTPD] and Recovery Time Objectives; respectively, the maximum amount of time which can elapse before the adverse effects of disruption create a crisis and the target timeframe within which product or service output is to be recovered. For some businesses, a disruption will quickly lead to ruin and will be an irrecoverable event. Other organizations may be less impacted in terms of the nature of their industry (especially where work can be conducted remotely) or the diversity of their portfolio, or may have the resources to weather the storm longer. At some point, all organizations may need to consider austerity measures that may include laying off staff, minimizing wages, or freezing recruitment.

Escalating Intra- and Inter-State Tensions



Intra- and inter-state conflicts are triggered by many factors, of which food and oil security are prominent. When the local production of agricultural products or fishing is affected or when products cannot be processed or moved to market, then food security becomes a further compounding challenge in an epidemic or pandemic. Similarly, when the extraction of oil, gas, coal and other raw materials is affected or when pipelines are non-operational, refineries unmanned, and pipe, truck or maritime transportation is impacted, then not only are state infrastructure and commercial businesses affected, but internal tensions and the potential for inter- and intra-state conflicts are also elevated.

When disease drives internal displacement or triggers the movement of refugees across state borders, the potential for inter- and intra-state conflict also exists. Movement of displaced people or refugees will create pressure on already scarce resources, and bring with it the fear that those fleeing an area are bringing the disease with them, leading to persecution and violence toward displaced people and refugees and, when attempting to cross a country's border, creating the conditions for conflict as states attempt by force to stop or return refugees. Exacerbating these challenges is a potential lack of aid funding and humanitarian assistance that might otherwise support management of refugee migration or reducing potential political and military tensions.

Governments facing mass starvation or a collapsing economy may take political or military action to offset the secondary implications for food and oil security. When resources are near a nation struggling to deal with disease, then efforts to secure time-critical resources may become more likely. When resources are transmitted across borders or through open seas, then they may be intercepted and requisitioned to help stabilize one nation while destabilizing another. Such extreme measures could then trigger political countermeasures or may lead to direct military action between states that compound the effects of a pandemic and draw nations or regions into war.





Predicting Epidemic and Pandemic Disruptive Effectives

In order to make sense of the risks associated with an epidemic or pandemic, risk practitioners require a system for both mapping the thematic areas of risks and then evaluating the potential impacts when a risk trigger is tripped. At the macro level, an Epidemic and Pandemic Trigger Dashboard can support management teams in clearly laying out agreed categories of risk and visually tracking emergent warning indicators to define the potential risks an outbreak may have on their people, operations, and business interests. The purpose of a dashboard approach is to provide a structured framework within which scenario-based planning can be conducted.

A dashboard may reflect changes in both the disease spread and mortality rate, coupled with how government and society might respond to and cope with the outbreak at the national level. A higher-level dashboard may then seek to account for regional warning indicators up to a global perspective.

The dashboard is the first step in tracking, evaluating, and responding to risks. For this reason, identified levels of risk must be linked to pre-defined decision points where the organization takes action once a threshold is passed (when the “trigger is pulled”). This works in both directions, enabling organizations to de-mobilize or discontinue emergency measures as the identified level of risk diminishes.

Creating the dashboard of scenarios is, as we have said, the first step. Once the organization, community or nation has developed this framework to monitor the risk environment coherently for signals that are indicative of a worsening or improving situation, then they must develop a set of prioritized actions, triggered by movement between risk levels. At the organizational level it is good practice to ensure that risk-triggered actions are:

- Clear and prescriptive.
- Grouped thematically (such as around travel, finance, HR, IT, operations / service delivery, workplace HSE).
- Prioritized to protect, restore / recover and resume pre-determined mission-critical products, services, assets, processes, and systems.
- Are clearly communicated to all levels with any responsibility for implementing them.

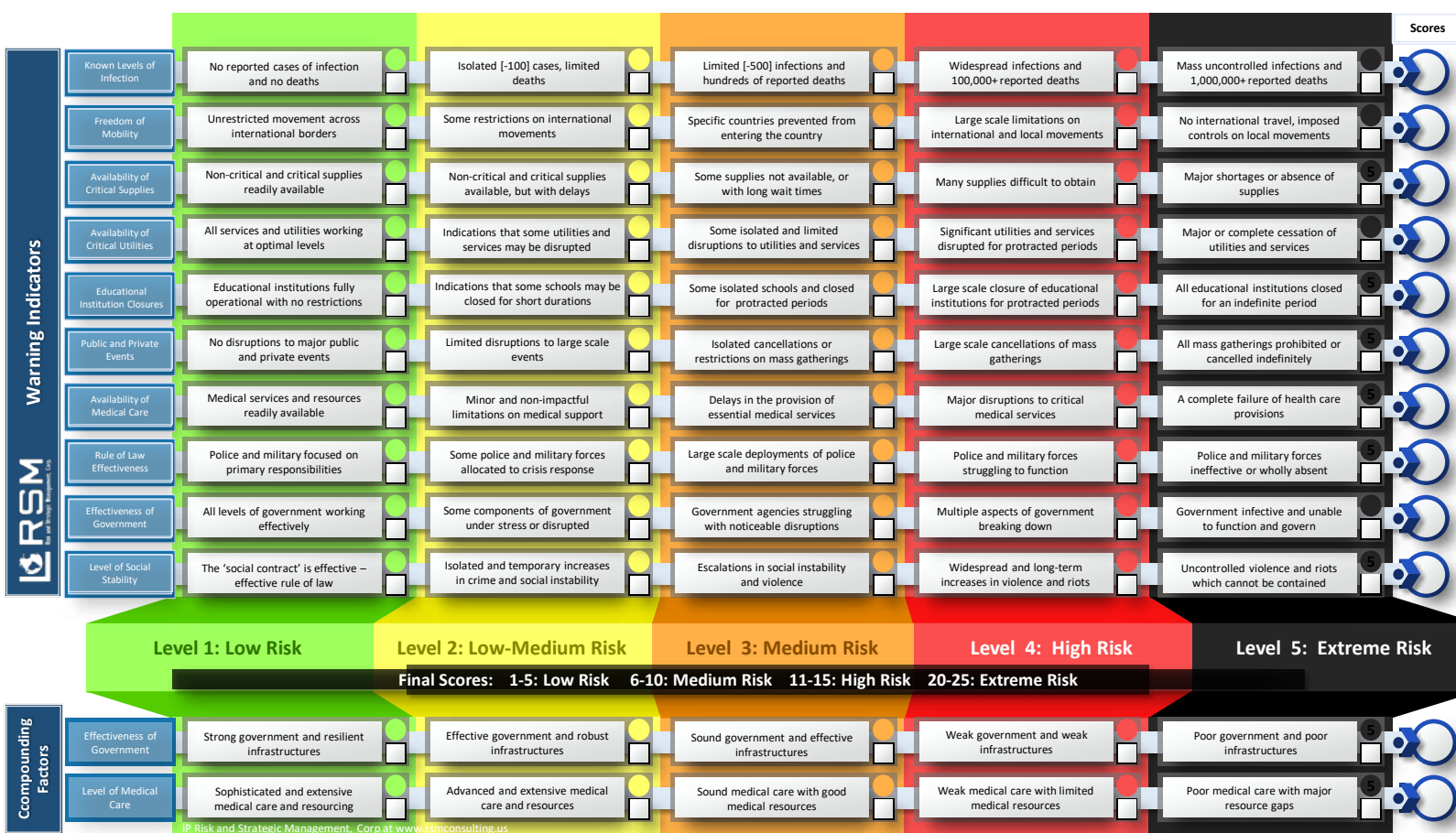
At the fundamental level a dashboard may have two units of measure: 1. The impacts on societal stability and the availability of critical resources and services as the infection spreads, not only measuring the effects of the disease itself, but scoring to reflect disruption to society, movement, services, and commerce. These risks reflect “emergent” risk factors; and 2. The compounding influence, both positive and negative, of existing strength of government, as well as local infrastructure resilience and the availability of effective medical care. These risks reflect current and potentially compounding risk factors or controls.

The emergent risks for a specific country may be scored from 1 to 5. Risk indicators include known levels of infection and reported fatalities, freedom of international and localized movement, the availability of services and goods, the provision of critical utilities, the status of educational institutions (school and university closings), the influence infection has on mass gatherings, the effectiveness of medical care as increasing numbers of infections potentially overwhelm healthcare services and resources, the status of rule of law, the ability of government to effectively function, and the socio-political environment. More subtle warning signs may also be present, such as military leave cancellations indicating a readiness to mobilize forces to impose restrictions on public movement and gatherings. These factors may be interconnected, with one deteriorating risk influencing another, or risks may be disconnected, with pre-emptive actions not necessarily corresponding to the level of infection or reported deaths. Emergent risk factors may also evolve over time, escalating and receding as information becomes more accurate as infection rates and reported fatalities surge and decline, and as societal resilience measures struggle, stabilize, or recover.

The Epidemic and Pandemic Trigger Dashboard system uses two interconnected scoring systems, with the emergent risk levels scored from 1 to 5, while the baseline resilience levels of a country before the effects of the infection are felt score between 0 and 8. These scores are then added to provide a final risk score. The higher the final score, the more vulnerable and unstable the country (or, at the macro level, the world). Resilient countries and low-risk conditions are scored at a baseline of 10, as no country is completely free of risk. Low to medium risk

conditions are scored from 11 to 24, medium risks from 25 to 38, high risks from 39 to 52, and extreme risk conditions from 53 to 66.

This process is based on both qualitative data and qualitative risk assessment techniques. In addition, leaders may determine that weighting of specific risks should be applied, with one risk condition being more critical to decision-making than another. Risks are also fluid, as conditions change and individual or group risks surge or decline. As such, this is a live process that must be monitored and managed. It is also critical for management teams to consider risk holistically, focusing not only on health issues, but also on implications for supply chains, utilities, services, politics, and security. The impact the disease has on infection and fatalities does not directly correlate to the impact on fear, which has a potentially greater impact than the disease itself.



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Actioning the Risk Assessment Process



This Risk Assessment process is only effective if known or predicted risks lead to a decision or an action. Action points may include creating or updating resilience and business continuity document systems (and testing them); reallocating organizational time, energy and focus; activating organizational and local crisis and incident management structures; creating contingency measures and clear and prescriptive response protocols that are clearly communicated, dealing with identified threats; actively monitoring, evaluating, and reporting on the situation; and sending out alerts and advisories to staff.

Defining risk groups and implementing associated risk controls to meet specific vulnerabilities will also be required, including risks by geography, function, or due to age or pre-existing medical conditions. Education will play a large part in communicating not only the risks, but also how the organization is managing them; organizations may provide training and exercises for management teams, travellers, and office staff. Risk practitioners will need to determine the point where organizations limit or stop both international travel and regional and local travel. A decision point may also be required on delaying, reducing, or stopping events where large numbers of people gather, and limiting or refocusing work activities or seeking workarounds. Further measures may, where relevant and practically achievable, include:

- Initiating a work-from-home policy for select staff, or for all staff.
- Adjusting working practices through staggered shifts or elective flexible working hours.
- Developing a “shadow” capacity for key personnel and areas of specialist expertise.
- Contracting specialist advice and service support on a call-off contract basis, such as crisis management advisory support, infection control, prevention and response professionals, and deep cleaning service providers.
- Identifying alternate product or service suppliers.
- Planning for the dispersal or re-distribution of production or service delivery capability and capacity.
- Identifying and readying alternate workspaces or production facilities.
- Preparing internal and external communications messaging to be used in a range of scenarios.
- Establishing messaging and instructions where staff or family members may be believed or confirmed to be sick.
- Messaging and instructions to clients and other external stakeholders.

- Engaging resilience and business continuity partners to assist organizations in building their resilience strategies, tools, and resources to counteract the effects of the outbreak.
- Contracting dedicated transport services whereby a significant proportion of the staff team travels by public transport.

Organizations will also need to consider communicating risks, concerns, and known or predicted impacts to external stakeholders, as well as reviewing critical dependencies and stakeholder influences. Staged or rapid supply and material procurements may be needed to control risks, and in some situations emergency cash, equipment, and supplies may need to be readied. Management teams should test crisis communications and emergency action plans, and define the point where they may need to implement austerity measures where protracted business distributions occur.

Critically, organizations must define their immediate, near and long-term business risks and associated resilience priorities, and develop workarounds early to ensure that MBCO, MTPDs, and RTOs are defined and enabled... allowing the organization to survive – as a business – a potentially protracted global crisis. Ultimately, risk practitioners should hope for the best and plan for the worst, developing a common vernacular and consistent level of understanding within the decision-making team to understand, respond to, manage, and ultimately recover from an epidemic or pandemic crisis.



Risk and Strategic Management, Corp is a world leader in resilience planning and risk solutions. We provide advisory services, document systems and training solutions to enable organizations to plan for and survive complex crisis situations.

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