



BRIEFING NOTES

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KEY CONSIDERATIONS AND LESSONS LEARNED FROM THE PANDEMIC

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SUMMARY

- ✚ This briefing note (BN) investigates lessons that can be learned from deficiencies in the response of organizations, countries, and public to COVID-19 pandemic.
- ✚ This BN attempts to pinpoint areas for which there exists urgent needs for policy change and higher attention, emphasis, and focus as per the major challenges that are being considered worldwide regarding the COVID-19 pandemic with emphasis on cyber-security and privacy.
- ✚ Our observations also provide as recommendations that target a broad range of stakeholders in the Canadian government, health organizations, and DND/CAF.

CONTEXT

- ✚ As our interactions with the online world have increased during the COVID-19 pandemic, we all have also been exposed to new forms of cybersecurity risks that are emerging where the malicious adversaries are sending convincing messages or notices with novel references to the COVID-19 pandemic.
- ✚ As an example, recent phishing emails that were sent to the [Concordia University](#) community seem to be conducted through the university President's email under the heading and subject matter of updating information and policy regarding the COVID-19 pandemic [1]. In another case, Zoom has admitted that they were “[mistakenly](#)” routing free calls through China [2].
- ✚ With people staying at home and expanded circulation of [fake news](#) [3], should one consider regulating and managing the internet in a situation where there might be a deliberate attempt to jeopardize the national security?
- ✚ Another question is are we prepared for the security risk of virtual communication platforms such as [Zoom at the governmental level?](#) [4] This video conferencing app was highly advertised from early March, despite many reports that go back to 2018 suggesting how it has many [security vulnerabilities](#) [5] and this is still through to this date and [still has](#) [6].
- ✚ One should also need to pay special attention to the [privacy issues](#) that are raised in this pandemic [7].
- ✚ Contact tracing is one of the most important aspects of isolating, identifying, and locating COVID-19 patients. South Korea is using a [contact tracing app](#) to identify, locate, and test individuals who have come in contact with a COVID-19 patient [8]. Can we institutionalize and establish a similar practice nationally in Canada?
- ✚ The COVID-19 pandemic also represents a [data collection opportunity](#) [9], where this pandemic is a manifestation of significant uncertainty where a very few countries have predicted. There has not been any other disaster of the same scale and magnitude recently

where sufficient and reliable data are available and one has to go back to [1918](#) [10] to find a similar catastrophic scenario.

- Due to uncertainties that we are facing in Earth quakes, storms, or pandemics one [needs to collect data to be able to predict](#) [9] [and foresee what can be done to diminish negative effects](#) [11].

CONSIDERATIONS

- Due to the COVID-19 pandemic Ontario has [established rules](#) regarding utilization of virtual meetings by corporations [12]. At the governmental level, one may need to consider setting these types of rules with greater attention to security aspects and considerations.
- How one can protect [privacy issues in a pandemic](#)? Personal Information Protection and Electronic Documents Act (PIPEDA) is an already established Canadian law that is related to privacy at the federal level [13], therefore the question is how we can adjust or modify this act so that it can be adapted to the current COVID-19 pandemic situation?
- In Ontario, the [Personal Health Information Protection Act \(PHIPA\)](#) [13], determines what information can be shared about a patient's health even during the pandemic. Factors such as consent, purpose, and accountability are part of the regulations.
- Based on the European Union's General Data Protection Regulation [GDPR](#) [14], people's private data must be protected at all times unless there exists a legitimate reason for the society benefit for that data not being kept private.
- Few have [argued](#) that even patient's private data in hospitals should be allowed to be used, at times we are facing a situation that concerns the health and security of a nation [15]. The debate revolves around whether we need consent or we need to establish laws bypassing this in times of national emergency?
- [Flattening the curve](#) is one of the most used terms by politicians and scientists, but how can we efficiently flatten the curve [16]? For better response regarding the issues that are related to health, one of the requirements is to [increase the capacity of the data centers](#) in local hospitals [17]. According to some, Canada has [a real-time standard data reporting problem](#) [18].
- In addition to privacy concerns and issues, many local hospitals cannot store large amounts of electronic health records over a long period of time. Due to the lack of comprehensive data the accuracy and reliability of [the predictor systems that are used by scientists](#) [19] will be adversely impacted and expected results deteriorated.

RECOMMENDATIONS

- ✚ As far as security issues are concerned, individuals should be completely aware of threats and different manners that malicious adversaries, scammers, and foreign adversaries can take advantage of the COVID-19 pandemic situation and the vulnerabilities in our communication and social media networks.
- ✚ We may need to regulate contact tracing Apps usage at the governmental level to prevent potential national security risks. Contact tracing Apps nevertheless require a thorough impact assessment studies. However, in a nation-wide health emergency and pandemic one may be able to circumvent these challenges and consider them as acceptable options.
- ✚ More care and caution should be applied on people's virtual regulation when dealing with issues such as fake news and dis-information since there could be implications on violation of individual's freedom and rights on expressions that could have adverse consequences.
- ✚ For establishing applications similar to Zoom for utilization at the governmental level, Canada may cooperate with experienced technology companies such as Google to minimize the potential risks associated with their use.
- ✚ As far as data regulation aspects are considered during the COVID-19 pandemic, [an important factor](#) to take into account is to be able to break the private contracts between patients and hospitals on confidentiality of information [20], specifically in emergency and critical national security situations where it may be necessary to perform detection, isolation, and tracing analysis on a large scale as in pandemics.
- ✚ The purpose of disclosing patients' information is an important privacy issue as far as accessing health data. In a national emergency, one may have to establish legislations to authorize the usage of this data by authorized and approved organizations.
- ✚ By improving data centers and gathering health records, scientists can then use electronic health records to detect, isolate, trace, and predict how the [hospitalization trends will change](#), and scientists may be able to predict when hospitals will have a ventilator-free day.
- ✚ Data collection is not only limited to healthcare and pandemic challenges, as one can also establish data regulation policies that support studies that are concerned with determining the relationships between [mitigation measures](#) considered by the country and other issues such as recovery of the economy [11]. This may lead to an efficient response to a pandemic. Therefore, closer engagement with legislators have to be initiated in order to elevate this problem.

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EXTENDED Version of the Above BN:

Context

This BN attempts to pinpoint areas, for which there exists a need for policy change and higher attention based on major issues that are discussed worldwide with respect to the COVID-19 pandemic. We suggest areas where DND needs to act, or what organizations should they collaborate with, to come up with a plan that would benefit all Canadians. Our observations provide recommendations that include diverse stakeholders such as technology companies, universities, media, government, health organizations, and DND/CAF to appropriately manage their resources during these difficult times.

On the month of [April 2009](#), world health organization raised the pandemic alert for the swine flu, and in [June 2009](#), they declared that a global pandemic was underway, and in [august 2010](#) they declared that the world is no longer in the pandemic alert. CDC and WHO [estimated](#) that between 151 to 575 thousand people have died worldwide from this infection disease, while countries with better healthcare system such as Canada had only [428](#) confirmed cases of death. As the disease was controlled, the [backlash](#) had begun. There were [arguments](#) that every 1 billion dollars spent on this pandemic could have been used for other health related purposes. However, [other arguments](#) suggested that the threat was always higher than the money spent as indeed was the case. Facing now the COVID-19 pandemic suggests how imperative is the push for a vaccine for these dangerous viruses, and how the delay can be costly. However, in absence of a vaccine, how can we overcome the negative effects of this pandemic? Our **first suggestion** concerns the health care system.

Health and Physical Well-Being:

Testing: It is well-known that testing is one of the primary responses to countering the pandemic. For analyzing the samples taken from potential patients, scientists use a technique known as [PCR](#), which requires a specific thermal cycler device. Many institutes in Montreal such as [IRIC](#) (UdeM), are in the possession of such devices. They also benefit from many capable individuals that have expertise in **PCR** testing. However, these people were also part of the stay at home order, and therefore we did not use Canada's testing capacity to its fullest potential. Therefore, involvement of universities for a more comprehensive response needs significant attention besides their research capabilities.

Contact Tracing and Data Regulation: One of the most important aspects of locating and isolating COVID-19 patients is known as contact tracing. South Korea is using a [contact tracing app](#) to identify, locate, and test individuals who came in contact with a COVID-19 patient. Establishing a [similar](#) practice in Canada may face many challenges and resistances in terms of violating individual's freedom and privacy. Based on the European Union's General Data Protection Regulation [GDPR](#) people's private data must be protected at all times unless there exists a legitimate reason for that data being kept. Some [arguments](#) suggest that even patient's private data in hospitals

should be allowed to be used when we are facing a situation that concerns the health and security of a nation. Therefore, one needs to change data regulation policies that allow scientists to have a better and more comprehensive analysis of the pandemic situation.

Mental Health: Another question we have to ask ourselves is are we ready for the second pandemic? [A second pandemic](#) is coming that relates to the mental health issues that may arise from the COVID-19, which can affect two general groups of people:

First Group:

1. Patients.
2. Those who lost loved ones.
3. Those who were the family or friend of a patient that was struggling with this disease.
4. Those who dealt with a lot of stress whether they were a nurse, doctor, or other essential workers.
5. People who lost their jobs.

Second Group:

1. *All remaining people of Canada*

There is not a single person in Canada who has not been affected by this virus. Staying at home, and social distancing measures can have long term effects on mental health and well-being of Canadians. We need to pay attention to the [long term effect](#) of mental health issues that people are facing or will be facing with, due to factors such as physical distancing, decrease of their interactions with the outside world, or disruption of their routines, whether Canadian's Armed Forces or in general Canadian citizens. In this regard, two important aspects of this issue can be highlighted as media and controlling violence, which needs significant further attention.

Media: One of the challenging parts about a pandemic is keeping up with entertainment, which is highly related to the mental well-being of individuals. When there is no place to be but home, people may find it difficult to deal with issues and stresses. Whether you liked hiking, followed football, basketball, or you had a simple enjoyment of hanging out at a bar for a hockey night, now many find themselves isolated and demotivated and their routines all vanished. This pandemic showed us the lack of infrastructure worldwide, which can keep people entertained, fresh, and motivated. To decrease the potential of long-term damage to the economy, and improve the people's mental well-being, we should *simultaneously* come up with ways that can keep people informed, boost their morality, and preserve the economy. The following are characteristics of future media platforms that [IBM](#) recommends:

1. Digital with agility such as in-home entertainment platforms.
2. Smarter operation.
3. Deep consumer engagement.

Therefore, investment in futuristic media platforms should be one of the priorities.

Violence: Rise in [domestic violence](#), or violence in general is another issue that needs to be taken seriously. With many sources of entertainment almost gone, and people's mental health at risk we may see increase in violence, hate crimes against Asian Canadians, or violent demonstrators.

For example, a noble cause such as countering racism can be utilized by adversaries for their malicious intent. On the **5th of June 2020**, many were [concerned](#) that protests for support against racism may move toward violence in Toronto and Ottawa, and the Black Lives Matter movement [denied](#) any participation in organizing violent events. While there may always be some agitators in the crowd, with malicious and coordinated intent that advocates violence, to minimize the effects of such adversaries, Canada needs to be proactive, identify, and address the issues raised in social media and push toward a society with great attention to problems related to mental health, discrimination, and try to minimize the potential damage toward the health of the nation and the economy.

Research and Health Infrastructure:

[Flattening the curve](#) is one of the most recently used terms by politicians and scientists. But how can we efficiently flatten the curve? For proposing better solutions related to health issues one of the requirements is to [increase capacity of data centers](#) and local hospitals. Many local hospitals cannot store large amounts of electronic health records over a long period of time. Due to lack of comprehensive data the accuracy and reliability of the predictor models such as those developed based on AI systems will be inadequate and unreliable.

[Another important factor](#) is to be able to break private contracts between patients and hospitals on confidentiality of information in situations where it is necessary to perform a large scale and reliable analysis as in pandemics. [Other important factors](#), include enhancing technical knowledge of biologists/medical professionals on predictor models such as AI systems. In this manner, one can perform a better analysis of the situation, and consequently propose a more optimal response.

Cyber-Security:

As our interactions with the online world have expanded during this pandemic, we are also exposed to new vectors of cybersecurity risks that has emerged where adversaries send convincing messages or notices related to COVID-19. A recent phishing email that was sent to [Concordia University](#) seems to be sent through the president's email about updating information and policy regarding the COVID-19. Therefore, all should be completely aware of threats and different ways that malicious hackers, scammers and foreign adversaries are taking advantage of uncertainties and new circumstances due to the COVID-19 pandemic situation.

Another issue is wide utilization of video communication platforms such as Zoom. This video conferencing Apps was highly advertised from early March, despite many reports that go back to 2018 suggesting how it has many [security vulnerabilities](#) and is [still is the case](#). In another case, Zoom

has admitted that they were “[mistakenly](#)” routing free calls through China. To stop leakage of important information, when in-person meetings are not possible in a situation such as a pandemic, Canadian Armed Forces and government need to invest in building secure platforms that can be used to communicate with minimum risk of being cyber attacked by malicious adversaries. In this regard, Canada may cooperate with top technology companies such as Google to tackle this challenge.

Business Uncertainties and Job Reallocation:

An estimate of job market is one of the essential and forward-looking topics that can be considered at this time. We need a [thorough analysis of impact assessment of job losses](#) due to COVID-19, to predict how the job market will adapt and evolve going forward, and how one can facilitate finding new jobs for those who are affected by this pandemic. Therefore, research and investigation on topics related to quantifying and determining the relationship [between uncertainties in the market and economy](#) should also be a high priority.

Lack of Parallel Response:

It may never come to this, but what if in a hypothetical scenario a virus emerges that has a much higher mortality rate, and as infectious or higher as the general flu, then what can be done? Here we suggest that a cooperative early response approach with neighboring countries, such as U.S., where there is a level of economic co-dependency and self-sufficiency regionally allows one to operate in isolation from other continents or countries without a significant risk and damage to economy as a potential strategy.

Conclusions:

Overall, we recommend that future responses and policy changes should consider the above-mentioned issues and factors. These considerations may allow Canada to maintain a healthy and stable community at times of distress and uncertainty due to pandemics.