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# Will the COVID-19 Pandemic Change National Security and Healthcare in the Spectrum of Cardiovascular Disease?

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**Abstract:** COVID-19 pandemic changed the current state of healthcare, especially in terms of reorganization of resources. Chief complaints of patients admitted to hospitals changed drastically in the proceeding months, which worsened the treatment of many acute and chronic conditions involving cardiovascular system pathologies and resources were moved in order to fight COVID-19. Moreover, the pandemic had long-term effects not only on healthcare but also national security on global scale. The COVID-19 drastically changed perception of global health and safety, trust in healthcare professionals as well as patients' willingness to seek medical help. The long-term effect of the epidemic, in terms of its impact cardiovascular disease progression and prognosis remain to be observed. The current paper discusses the impact of COVID-19 on healthcare and national security based on the currently available data. (Curr Probl Cardiol 2020;45:100645.)

## Introduction

**T**he rapid emergence of the coronavirus disease 2019 (COVID-19) pandemic is one of the most significant challenges for humanity to fight in the modern era. Various regiments are

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currently being studied, some of which are specifically antiviral, and some of them affect the host response. Variety of interventions beyond the routine supportive care, ventilator support, intravenous fluids have been proposed to provide clinical benefit in survival.<sup>1</sup> Nevertheless, while a successful treatment or vaccine is still on the way, the world has transformed dramatically since the end of 2019. Social isolation warrants, travelling restriction, closing borders, changes in the legal systems have made a significant impact on healthcare and national security, both locally and globally. The current manuscript aims to stress the most critical changes and treats that healthcare and national security are facing during the COVID-19 and post-COVID-19 era, especially in term of cardiovascular diseases.

## Impact of COVID-19 on Healthcare

SARS-CoV-2 has caused more than 5 million confirmed cases worldwide, resulting in approximately 300,000 deaths.<sup>2</sup> Therefore, the increase in the number of hospitalizations and deaths largely exceeded the capacitance of the current healthcare system. The current pandemic has revealed that many areas of healthcare lack preparedness, especially in lower- and middle-income countries. Healthcare systems in various countries differ significantly, to a point to recently, point score systems were proposed to compare preparedness for the pandemic and facilitate humanitarian help distribution.<sup>3</sup> Preparedness of the healthcare systems is typically assessed in 6 categories being: prevention, detection and reporting, rapid response, health system, compliance with international norms and risk environment. Even despite a high preparedness level, in some countries, like Italy, the number of cases largely exceeded the capacitance of hospitals, leading to increased mortality.

Moreover, the epidemic leads to a significant shift in healthcare recourses leading to a lower admittance rate for non-COVID-19 cases. In an example, a recent multicentre, observational, nationwide survey followed in Italy to collect data on admissions for acute myocardial infarction throughout 1 week during the COVID-19 outbreak, has shown worrying data.<sup>4</sup> A 48.4% reduction in hospitalizations for acute myocardial infarction compared with the equivalent week in 2019. The decrease was significant for both ST-segment elevation myocardial infarction and non-ST-segment elevation myocardial infarction. Also, the number of patients hospitalized for heart failure was observed to drop by approximately 50%.<sup>5</sup>

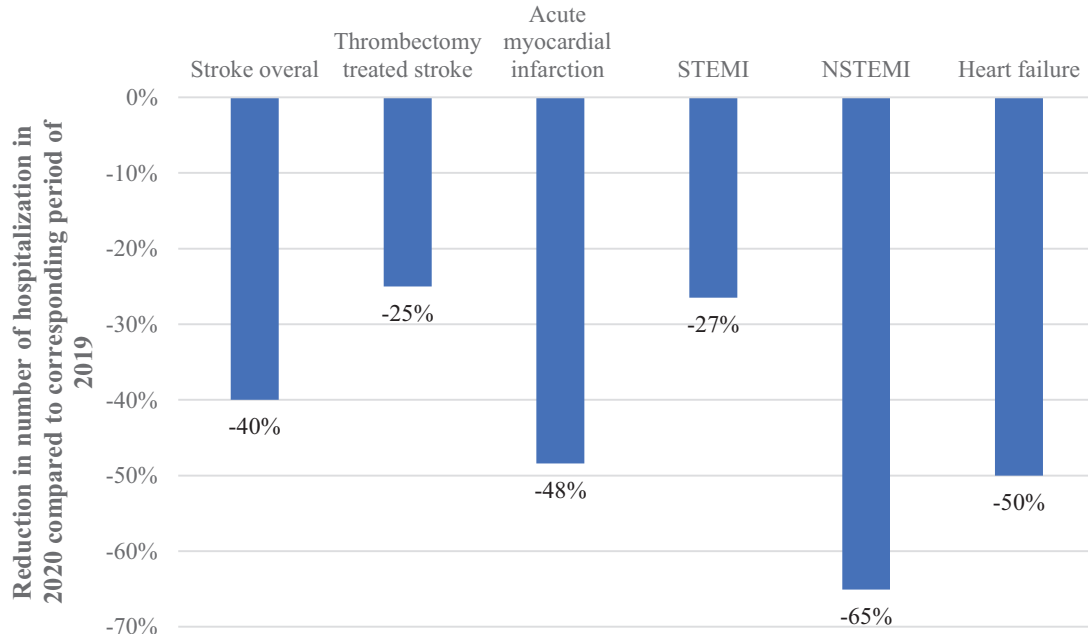
The same trend was observed for stroke.<sup>5,6</sup> In China, it was assessed that Hospital admissions related to stroke dropped by approximately

40%, while invasive treatment by thrombolysis and thrombectomy dropped by 25%. Both cases are the more worrying that COVID-19 is known to cause an increased risk of thromboembolic complication, and therefore myocardial infarction and stroke. Thus, the previously presented number might be underestimated (Figure).<sup>7</sup>

Moreover, the epidemic affected not only acute admissions but also hospitalizations for elective procedures.<sup>8</sup> Surgeons were probably the one to witness one of the most dramatic changes in their practices with rapidly decreasing numbers of elective surgeries. Analyses show that not only the total number of performed procedures dropped drastically, but the majority of surgeries were those for oncological diseases and urgent procedures.<sup>9</sup> In an example, in England, the United Kingdom National Health Service (NHS) suspended all non-urgent elective surgery for three months to repurpose resources to deal with the COVID-19 pandemic.<sup>9</sup>

The virus affected outpatient care in the majority of specialities. Various problems were reported from urologists, ophthalmologists, dermatologist, but also specialists in senile and palliative care.<sup>10-13</sup> Posing not only medical but ethical dilemmas in the managing doctors. One of the answers to this problem might be improving the telemedicine, primarily through an increased home-based diagnosis and screening, public health surveillance and epidemiology.<sup>14</sup> But this area is still largely underutilized, especially in low- and middle-income countries.

The last issue that probably needs to be covered when discussing the impact of COVID-19 on healthcare is the long-term consequences of the pandemic. On the one hand, the previously discussed reduced access to the healthcare professionals and fear against seeking professional help will result in increased mortality and worsening of the prognosis of many patients. However, detailed data on this issue require a more extended observation period. On the other hand, social isolation and the slowing of industrial production resulted in decreasing the levels of air pollution.<sup>15,16</sup> It seems that in case of highly industrialized regions, that is, in China, air quality has dramatically improved in the previous months, which contributes to a global carbon emission reduction. If the improvement will continue when the lock-down lifts completely, and long-term exposure to nitrogen dioxide or particulate matter (PM)<sup>2,5</sup> will be permanently reduced, remains to be seen. It was previously observed that even mild, short-term improvement of air quality results in lowering the morbidity and mortality rates.<sup>17,18</sup> Therefore, the currently watched environmental improvement may reduce the negative impact of the virus on healthcare itself.



**Figure.** Reduction on hospitalizations for acute cardiovascular conditions due to COVID-19.<sup>5-7</sup>

## Impact of COVID-19 on National Security

Due to high morbidity and mortality attributed to the COVID-19 pandemic, drastic changes were made not only in healthcare but also in national security. It was probably the first in history phenomenon, which caused an international collaboration between distant countries in order to prevent a pandemic-level outbreak of COVID-19. All countries were, in some part, focused not only on the interest of the individuals, on a shared future for humanity. Various new tools and global resources were mobilized in order to equip hospital facilities and supplies to protect noisome infections and to provide personal protective tools such as facemask to the general population. Moreover, never seen an increase in the research project activity focused on drug and vaccine development was observed.

Nevertheless, those measures resulted in changes in national and international law, providing vast alterations in many areas of life. One of the first implemented were travel restrictions. Throughout the past months, various governments have implemented massive travel restrictions and border control to mitigate the outbreak of the SARS-CoV-2. To limit the cross-border spread, many countries have adopted lock-down measures, including full closing shops, companies, airports, imposing travel restrictions and completely sealing their borders, to contain transmission.<sup>19</sup> The grounding of international travel as part of the global response to prevent spread has caused profound disruption of travel and trade and has threatened the survival of many airlines, travel companies, and associated businesses.<sup>20</sup>

Travel bans to affected areas or denial of entry to passengers from affected areas are moderately effective in preventing the importation of cases but have a significant economic and social impact. Since the WHO declaration of a public health emergency of international concern on 30 January 2020, and as of 8 April 2020, 180 countries have reported to WHO additional health measures that significantly interfere with international traffic concerning travel to and from China or other countries, ranging from denial of entry of passengers, visa restrictions or quarantine for returning travelers. While travel restriction measures may be justified at the beginning of an outbreak, they should be based on a reasoned scientific evaluation of the available evidence on their possible effectiveness.<sup>21</sup>

Mentioned restrictions result in significant socioeconomic implications.<sup>22</sup> They impaired trade, agriculture, petroleum and oil industry, manufacturing, finance hospitality, tourism, aviation, real estate, as well as the entertainment industry and education. Those resulted in fears of a new recession and financial collapse and long-term consequences of the

implemented measures are currently unknown. Medium and longer term planning is needed for the economy to rebalance following this crisis.

The pandemic has in 2 ways been associated with the armed forces in individual countries, and thus with the fundamental power to create national and international security. First, the case concerns the potential of COVID-19 spread in soldiers and thus the reduction of the operational capacity of the armed forces. An example illustrating this fact may be the outbreak on the US aircraft carrier Theodore Roosevelt (CVN-71), which resulted in the immobilization of this unit for nearly 2 months. As the example of the US Army shows, the pandemic forced several changes in the organization of the daily functioning of the armed forces. Even the way training was changed, the recruitment of recruits was temporarily suspended, military hospitals were prepared to fight the virus, the Charlie protection level was introduced when only the higher level is Delta. It was decided that going through the disease (being a healer) made it impossible to join the army. It should also be mentioned that COVID-19 influenced changes in the number of participants in Defender Europe exercises. The ease of virus transmission forces thinking about the operational capacity of the armed forces and thus the ability of states to defend themselves and participate in creating security on the international arena.

Secondly, the time of the pandemic showed the significant benefit of having the state's armed forces that can provide adequate support to public administrations and the public in the face of non-military threats. An example is a situation in Poland, where soldiers include together with the police, they patrol the streets, transport food and personal protective equipment, look after veterans and medical families.

The pandemic forced the need to create new forms of cooperation at the international level of the armed forces of individual countries. Italian Defense Minister Lorenzo Guerini said: 'The pandemic proved the Defense added value. International cooperation between the EU Defense Ministries played and will play a fundamental role'.<sup>23</sup>

Another significant issue is cyber-security that could be vastly violated during the pandemic. One of the measures discussed in terms of pandemic spread decrease was mobile phone-based contact tracing. Several apps were developed (in the United Kingdom or Singapore or by Google and Apple) with the ability to trace user contacts.<sup>24-26</sup> They were designed to store data on possible contacts with SARS-CoV-2 carriers in order to facilitate quarantine and reduce the disease spread. The mass introduction of those programs raised many questions on data safety and protection.<sup>27</sup> Therefore, it is essential to find data-minimizing solutions that do protect fundamental rights. Such solutions will often increase the

effectiveness and efficiency of the data processing system because of increased public trust in the system.

## Conclusions

COVID-19 pandemic mainly changed the current state of healthcare and national security, affecting the majority of aspects in these 2 areas. The impact of the COVID-19 pandemic on national security shows how much value, an irreplaceable value, are the sovereign state's own armed forces that are ready to use in the event of non-military threats both within their own country and in international space. The capacity of the armed forces to cooperate with the state administration at local level and non-governmental organizations, including those working for public health, should be increased. The long-term effect of the epidemic, in terms of healthcare and national security, may only be assessed after the global lock-down lift and so-called return to the 'new normality.'

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