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# Lockdown as a public health measure

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**Laila Woc-Colburn<sup>a</sup> and Daniel Godinez<sup>b</sup>**

<sup>a</sup>*Division of Infectious Diseases, Emory University School of Medicine, Atlanta, GA, United States,*

<sup>b</sup>*Internal Medicine, Belize Healthcare Partners Limited, Belize City, Belize*

As we learned through this book, coronavirus disease 2019 (COVID-19) pandemic brought to light how vulnerable we are to the infectious respiratory virus due to our living patterns, travel, and housing. To curb down the spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the implementation of public health mitigation strategies was necessary. One of them was the lockdowns and quarantine policies throughout the world. What is a quarantine vs lockdown? How effective are they? How long and how often do we need them? Do they have an impact on our overall health? These are some of the questions that we will explore in this chapter.

The most basic public health tool is to quarantine, followed by the lockdown. Quarantine as defined by Webster dictionary as “a state, period, or place of isolation in which people or animals that have arrived from elsewhere or been exposed to the infectious or contagious disease are placed”<sup>1</sup> and lockdown as “a temporary condition imposed by governmental authorities (as during the outbreak of an epidemic disease) in which people are required to stay in their homes and refrain from or limit activities outside the home involving public contact (such as dining out or attending large gatherings).”<sup>2</sup>

These are public health measures design to slow down the spread of infections. We have used these tools throughout history and implemented them during epidemics dating back to the Plague of Justinian (527–565 CE).<sup>3</sup> Boccaccio wrote the most famous quarantine/lockdown, *The Decameron*. *The Decameron* is a compilation of stories told by Florentines escaping the plague to pass the Renaissance. Quarantines have been implemented since then overtime when an infectious disease poses a threat. In our recent past, the most memorable quarantine has been Ebola in 2014, H1N1 in 2009, and SARS in 2003. We have not experienced the magnitude of this pandemic since 1917 with influenza.

The concept of starting a lockdown was first implemented in Wuhan, China, in January 2020 by the Chinese Centers for Disease Control and Prevention to prevent its spread throughout China. At that time, SARS-CoV-2 had high infectivity of 2.5 people per case (reproductive number  $R_0$ ) and a case fatality rate of 4.4%. Due to its high transmissibility as a respiratory virus, the idea of lockdown was to help stop and slow down its spread. This measure was quickly adopted by most of the world against

the spread of SARS-CoV-2 from Asia to Europe to the Americas. Some of the lockdown measures implemented by governments included<sup>4</sup>:

- curfews
- gathering restrictions (limiting the size or canceling them)
- isolation at home (including attending work, school, etc.)
- restriction of movement of their citizen to the only essentials
- travel restrictions

Although the lockdown has its advantages in decreasing new cases, mortality is not without its challenges.

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## Advantages

The significant advantage of the lockdown, when there are no vaccines or treatments, is slowing down the disease in the naïve population and decreasing its mortality. It gives the city or country officials' time to develop strategies that will help contain the disease, especially if there are no health-care infrastructures or capacity to perform testing for surveillance.<sup>5</sup> Other indirect advantages of the global lockdown were decreasing pollution levels, increasing flora and fauna, telecommuting, and telehealth.

As the lockdown phase shows decreasing rates or plateauing of the cases, this is the time to reconsider the reopening or unlocking stage. Due to the incubation period of SARS-CoV-2, 14–21 days can be used to start reopening strategies. Examples of countries with successful reopening are New Zealand, South Korea, and Taiwan.<sup>6</sup> The reopening should continue mitigation practices, including social distancing, face mask wearing, digital contact tracing, serosurveillance studies, and vaccination.<sup>6</sup>

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## Challenges

Despite deaccelerating the COVID-19 pandemic, the lockdowns themselves had various adverse effects on health (physical and mental), education, social interaction, economic productivity, and nutrition. Lockdowns are not meant to be a long-term solution but short term and serve as bridges to contact tracing, treatment, and vaccination. In the last year, the lockdown was used to control the number of cases and in some countries lasted for several weeks or went into a second or third lockdown. Here are some of the significant challenges faced by the 2020 COVID-19 lockdown.

## Economic effects

Since the start of the COVID-19 pandemic, the world went into recession and is facing a global crisis. As the world went into lockdown and the demand for personal protective equipment was on the rise, supply shortages occurred from increasing prices to food shortages at the grocery stores.

The disruption to the flights and factories in mainland China had a harmful effect due to delays in manufacturing electronic equipment, pharmaceuticals, and food. The stock market fell in the early months of the pandemic but recover with the news of possible treatment and vaccines. The impact on the travel and leisure industry was unimaginable. The world of travel was double impacted by the reduction of flights and the cancellations of cruises. It is estimated that more than 60% of restaurants won't be able to reopen. Just as the restaurant business went down, so did retail business at the shopping centers due to the lockdown restrictions. Unemployment rose, which lead to increase sexual exploitation, homelessness, and food insecurity.

### **Mental and psychological effects**

The lockdown measures did globally disrupt the daily lives of all the people living in the world. The daily tasks and mundane routines ceased to exist and were replaced by restrictions and monotony, sometimes. The change in pattern and isolation lead to people feeling more anxious and less in control of their lives. The isolation leads to an increased number of psychological disorders like acute stress disorders, irritability, insomnia, emotional distress and mood disorders, depression, fear and panic, anxiety and stress because of financial concerns, frustration, boredom, loneliness, lack of supplies, and poor communication.<sup>4</sup> People already have mental illness were more vulnerable. Food insufficiency had increased during the COVID-19 pandemic and affected vulnerable populations, placing individuals at higher risk for poor mental health symptoms.

A study was done by Serafini et al.<sup>7</sup> showed that the most relevant psychological reactions to COVID-19 infection were uncontrolled fears related to illness, pervasive anxiety, frustration, and boredom, disabling loneliness. More resilient people had better coping mechanisms, and good social support had fewer psychological effects. Strong support networks and coping mechanisms help lessen anxiety and depression.

### **Social inequities**

COVID-19 brought to light the social inequities that exist today in the world. The social and economic determinants of health were influenced by low income, access to health care, and access to food.<sup>8</sup>

In the United States of America, the African-American and Latino communities were impacted the most by COVID-19.

The social inequities were due to lack of health care, preexisting conditions, essential jobs (not medical), and structural inequality.

### **Future**

COVID-19 pandemic is an unprecedented event in our lifetime, where we had to take draconian measures to stop the spread of the virus. Where lockdowns a good mitigation measure? Countries like New Zealand, South Korea, and Taiwan would agree

since they use the time to strengthen their health-care systems, continue with public health measures such as masking, social distancing, and contact tracing. In summary, the continued use of epidemiological surveillance to appropriately calibrate social distancing efforts and to achieve a low and stable infection rate, thereby minimizing overall morbidity and mortality, is a reliable long-term approach to follow and maintain until the COVID-19 pandemic reaches its herd immunity with vaccination.

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