

Nonpharmaceutical interventions for tackling the COVID-19 epidemic in Brazil

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COVID-19 was detected in Wuhan, China, in December 2019. In view of the growing number of cases, deaths and affected countries, on January 30th 2020 the World Health Organization (WHO) declared the event to be a Public Health Emergency of International Concern.¹ In Brazil, the epidemic was declared a Public Health Emergency of National Concern on February 3rd 2020.^{2,3} Following notification of over 110,000 cases and 4,000 deaths in countries on all continents, on March 11th 2020 WHO declared that COVID-19 had become pandemic.

In the absence of prior immunity in the human population and with no vaccine against SARS-CoV-2, the causative agent of COVID-19, its highly virulent nature means that case numbers grow exponentially. Nonpharmaceutical interventions (NPIs) are indicated in this context, aimed at inhibiting transmission between humans, slowing the spread of the disease and consequently reducing and delaying the peak of its occurrence on the epidemiological curve.⁴ In this way, it is possible to reduce instantaneous demand for health care and mitigate the consequences of the disease for people's health, including minimizing associated morbidity and mortality (Figure 1).⁵

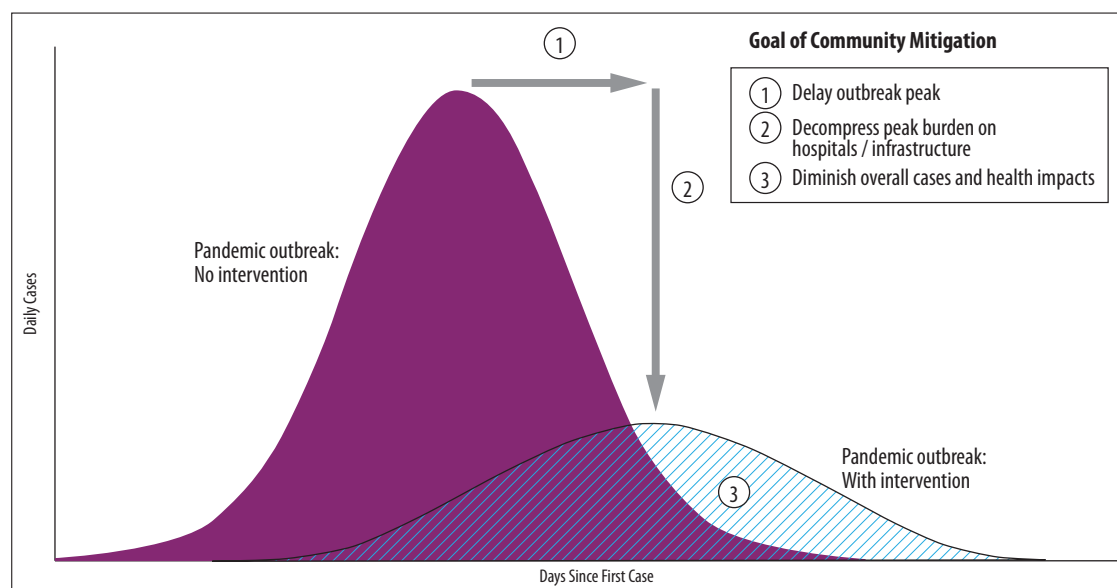


Figure 1 – Hypothetical epidemic curve showing the normal course of the epidemic and flattening of the curve expected by adopting non-pharmaceutical interventions

Source: Adapted from Centers for Disease Control and Prevention (CDC), 2007.

NPIs are public health measures with personal, environmental and community scope. Individual measures include hand hygiene, respiratory etiquette and social distancing. In turn, social distancing involves case isolation, quarantine of contacts and the voluntary practice of not frequenting places where many people are gathered together.⁵

Another personal measure is the use of masks, recommended for people with confirmed or suspected coronavirus and their carers. WHO recommends that asymptomatic people should not use masks, due to lack of evidence as to

their effectiveness in reducing influenza transmission, apart from giving a false sense of protection. Furthermore, there are no studies on the effectiveness of mask use by asymptomatic people for preventing COVID-19 transmission.

Environmental measures refer to rooms being well ventilated and exposed to the sun, as well as routine cleaning of indoor environments and other surfaces, these being procedures that help to eliminate the virus.⁵ SARS-CoV-2, like the influenza virus, can remain stable outside the human body, in aerosols and on various surfaces for up to three days, as in the case of plastic and stainless steel.⁷ Special attention must be paid to cleaning elevator buttons, handrails, public transport hand straps, door handles, card terminal buttons, smartphones, workstations, among other objects and surfaces which, if contaminated, can contribute to spreading viruses.

Community measures are actions taken by managers, employers and/or community leaders to protect the population. They include restricting access to schools, universities, community gathering places, public transport, as well as other places where large numbers of people gather, such as social and sports events, theaters, cinemas and commercial establishments, which are not characterized as providing essential services.⁵

The starting time and duration of the various community NPIs will influence their impact. It is a considerable challenge to determine the best time to start such interventions, as if they are implemented too soon this can result in economic and social hardships without any benefit for public health and, over time, can result in “intervention fatigue” and the population ceasing to commit to the intervention. On the other hand, implementation once the disease has become widespread can limit the benefits for public health. It needs to start soon enough to prevent the initial sharp rise in the number of cases, and last for long enough to cover the peak of the expected epidemic curve.⁵

In view of the knowledge gaps inherent to a new disease and considering the similarity between the behavior patterns of SARS-CoV-2 and the viruses that cause pandemic influenza, the strategies adopted in pandemic influenza contingency plans are being considered for the COVID-19 pandemic. The guidelines of the United States Centers for Disease Control and Prevention (CDC) on pandemic influenza mitigation, indicate that the time to start interventions should be based on assessments of disease severity.⁸ Assessment of COVID-19, in accordance with the CDC Pandemic Severity Assessment Framework (PSAF), has indicated that the disease has high transmissibility and clinical severity.⁹ In view of the severity of the disease and the intensity of community transmission, the use of community NPIs to mitigate the COVID-19 pandemic is justified.¹⁰

Measures such as home quarantine for infected people, social distancing and reduction in public gatherings, such as church services, as well as closing schools, were implemented during the 1918-1919 influenza pandemic in several cities in the United States.¹¹ During the 2009 influenza pandemic, home quarantine was found to be feasible and achieved good uptake in Australia.¹² The experience of China suggests that NPIs, which included strict lockdown measures, such as those adopted in the city of Wuhan with effect from January 23rd 2020, contributed to suppressing the COVID-19 epidemic in that country.^{4, 13}

On February 6th 2020, Brazil enacted Law No. 13979 which makes provisions for measures to address the COVID-19 epidemic and lists the community NPIs that can be adopted. The country's Federative Units began to adopt these measures with effect from the second week of March 2020. Examples include the state of Rio de Janeiro (Decree No. 46970, dated March 13th 2020),¹⁴ the Federal District (Decree No. 40520, dated March 14th 2020),¹⁵ the city of São Paulo (Decree No. 59.283, dated March 16th 2020)¹⁶ and the state of Santa Catarina (Decree No. 515, dated March 17th 2020)¹⁷ which, subsequently, approved new decrees establishing stricter measures. It is expected and desirable that actions to fight the epidemic will be reviewed and altered as it unfolds. It is noteworthy that the state of São Paulo, the country's most populous state, adopted rigorous quarantine measures with effect from March 24th 2020.¹⁸

It should be highlighted that for some NPIs to be implemented, conditions of vulnerability peculiar to population subgroups need to be taken into consideration, such as street dwellers, people deprived of liberty, the institutionalized elderly,¹⁸ people living in overcrowded households, households without adequate ventilation or without running water, migrants, people with special needs, people who live alone, among others.

Moreover, adopting these measures has important impacts on everyday activities, on people's lives and on society. For example, children stop going to school, their studies are interrupted and they lose their access to school

meals. Restricting social contact can have consequences for people's mental and physical health, particularly in the case of children and the elderly.^{4, 19} Workers may be stopped from going to work, may need to alter their routines so as to work from home, or may lose their jobs or sources of income. Women and children in particular become more vulnerable to domestic and intrafamily violence. People, families, companies and countries are also expected to face economic losses.

Within this context, it is fundamental for the Brazilian National Health System (SUS) and the other areas of the social protection system to work together in an articulated manner, so as to favor people's uptake of NPIs and minimize the detrimental impacts of community measures. Protecting public health must guide decisions to be taken by government managers. It is fundamental for these decisions to be based on the best available evidence and for them to be communicated in a transparent manner in order to gain the population's trust. Guidance given by authorities and people's uptake of NPIs will be determining factors for the course of the COVID-19 epidemic in Brazil.

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