

# Social distancing and dangers of access block to health care services during COVID-19 pandemic

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## Abstract

An outbreak of the novel coronavirus (COVID-19) that started in Wuhan, China, has spread quickly, with cases confirmed in 180 countries with broad impact on all health care systems. Currently, the absence of a COVID-19 vaccine or any definitive medication has led to increased use of non-pharmaceutical interventions, aimed at reducing contact rates in the population and thereby transmission of the virus, especially social distancing. These social distancing guidelines indirectly create two isolated populations at high-risk: the chronically ill and voluntary isolated persons who had contact with a verified patient or person returning from abroad.

In this concept paper we describe the potential risk of these populations leading to an 80% reduction in total Emergency Department (ED) visits, including patients with an acute condition. In conclusion, alternative medical examination solutions so far do not provide adequate response to the at-risk population. The healthcare system must develop and offer complementary solutions that will enable access to health services even during these difficult times.

## Introduction

The global pandemic of the coronavirus outbreak is putting

unprecedented pressure on health care systems, with hospitals in the worst affected areas close to breaking point. On December 31, 2019, a cluster of atypical pneumonia cases was reported in Wuhan City, China.<sup>1</sup> The etiologic agents identified were two novel beta-coronavirus, severe acute respiratory syndrome (SARA-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV). The disease, named coronavirus disease 2019 (COVID-19), can progress to acute respiratory distress in severe cases. Most patients are mild to moderate severity, and with a better prognosis.<sup>2</sup> However, for patients developing into severe or critical levels, the mortality rate markedly increases. The basic reproduction ratio ( $R_0$ ) of SARS-CoV-2 has been estimated at 1-2.2,<sup>3</sup> with human-to-human transmission occurring globally, so far affecting approximately 2,070,000 patients with 138,000 deaths, with numbers rising exponentially.

Currently, the absence of a COVID-19 vaccine or any definitive medication has led to increased use of Non-Pharmaceutical Interventions (NPIs), aimed at reducing contact rates in the population and thereby transmission of the virus.<sup>4</sup> Two fundamental strategies are possible: i) mitigation (combined home isolation of suspect cases, home quarantine of those living in the same household as suspect cases, and social distancing of the elderly and those at risk due to preexisting conditions), which focuses on slowing but not necessarily stopping epidemic spread, thereby reducing peak healthcare demand while protecting those most at risk of severe disease from infection; and ii) suppression, which aims to reverse epidemic progress, reduce case numbers to lower levels, and maintain that situation indefinitely until treatment or vaccine become available.

Each policy has major challenges. The strategies differ as to whether they aim to reduce the reproduction number, to below 1 (suppression) – and thus cause case numbers to decline – or merely to slow spread by reducing reproduction number.<sup>4</sup> NPIs impact depend on the extent to which people respond to instructions, which varies among countries and even communities, with significant spontaneous changes in population behavior even in the absence of government-mandated interventions.

In Israel, several NPI interventions are currently applied: i) Symptomatic case isolation in home - symptomatic cases are under home isolation until symptoms resolve; ii) Voluntary home quarantine - all household members remain at home for 14 days following identification of a symptomatic case in the household, or when a member returns home from another country; iii) Social distancing of those over 60 years of age – who are required to remain in their households, separate themselves from family members, and avoid hospital and community medical waiting rooms; iv) Social distancing of entire populations - all households reduce contact outside the household, school, or workplace except those affiliated to an approved government institute; and v) Closure of schools and universities - closure of all schools and universities while shifting to social media distant learning programs.

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These social distancing guidelines indirectly create two isolated populations at high-risk: the chronically ill and voluntary isolated persons who had contact with a verified patient or person returning from abroad. These populations are at increased risk mainly due to difficulty in accessing medical care (Figure 1).

### Older adults and those with severe or chronic illness

For older adults (above 60 years old) and those with severe or chronic illness at higher risk of being affected and severely impacted,<sup>5</sup> access to medical facilities essentially became unachievable. These populations are avoiding both routine and emergent medical care related to their baseline illness, even if they experience mild symptoms, for several reasons: i) Significant fear of infection by the virus in light of global media coverage, especially images from countries with high mortality rates, such as Italy and Spain; ii) Healthcare professionals initiated campaigns encouraging people to stay in their households that include frequent displays of health care teams collapse in light of the circumstances and struggle to administer appropriate medical care. These campaigns are also viewed by the old and chronically ill population who are truly compassionate to the struggle of the medical staff; and iii) The body's natural stress responses assist to overcome the worsening in symptoms of their underlying illness – especially activation of corticotrophin releasing factor at the hypothalamus and sympathetic branch of the autonomic nervous system. The former leads to secretion of adrenocorticotrophic hormone from the pituitary gland, and subsequently to secretion of cortisol from the adrenals to the blood stream. This results in a surge of peripheral catecholamines and activation/deactivation of body organs, according to their relevance in defending the organism (e.g., digestion may be deactivated whereas blood transport to muscles is activated). Other responses involve activation of brain areas related to perceiving and responding to threat, in which the brain noradrenergic system has a central role. All the above cause an increase in adrenaline levels, which results in a decreased sense of pain and uncomfortable symptoms.<sup>6</sup> This masking effect lowers symptom severity temporarily, leading to a lower Emergency Department (ED) visit rate.

Further illustrations of the current problematic situation in this population can be seen in the official public announcements issued by the Chairpersons of the Neurological Association and Cardiology Association in Israel. All members of the health system have noticed a significant decrease (~40%) in ED referral rate due to neurological and cardiovascular conditions. As a sudden decrease in morbidity is less likely, it is probable that an underlying cause exists. Concurrently, a significant dramatic reduction (~80%) in the overall number of ED referrals since the onset of the pandemic has been noted.

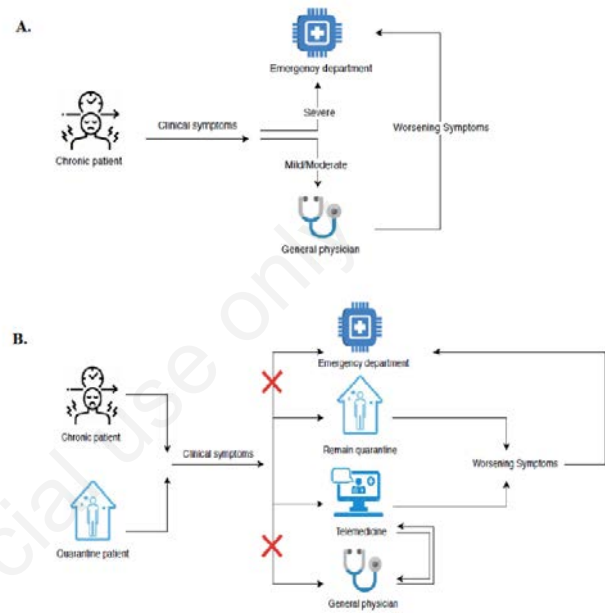
Late-arrival cases have also emerged in patients with diabetes, congestive heart failure, chronic respiratory illness such as chronic obstructive pulmonary disease and asthma, and even life-threatening conditions such as diabetic ketoacidosis or and gastrointestinal bleeding. Patients arrive in extremely severe clinical worsening, and in some cases the situation is irreversible, leading to a possible increase in mortality.

Reports solely from the past week demonstrate approximately 20 death cases of patient avoiding ED visit due to the fear of infection. These cases may have been avoided or treated if the ED did not turn into an ominous environment.

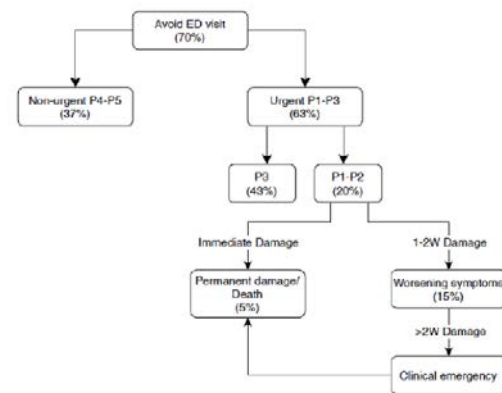
Possible scenarios for those with severe chronic illness are

illustrated in Figure 2. All scenarios relate to a single ED with high operation capacity treating an average of 300 chronic patients daily. In an optimistic scenario, of all chronic patients 60% (n=180) will avoid ED visit, and of those 63% (n=113) will be classified as urgent.<sup>7</sup> According to the Canadian Triage and Acuity Scale (CTAS), 20% (n=23) will be classified as either P1 or P2, who require immediate treatment.<sup>8</sup>

In light of the current pandemic effect on the ED, and large number of patients avoiding ED visit, an estimated 5% (n=1) may



**Figure 1. Illustration of COVID-19 effect on medical care access; A. Flow of routine medical care, B. Alterations in medical care during COVID-19 pandemic.**



	Permanent damage/death (n)	<2 weeks damage (n)
Optimistic	1	3
Intermediate	1	4
Pessimistic	1-2	4-5

**Figure 2. Possible scenarios for patients with severe chronic illness per hospital.**

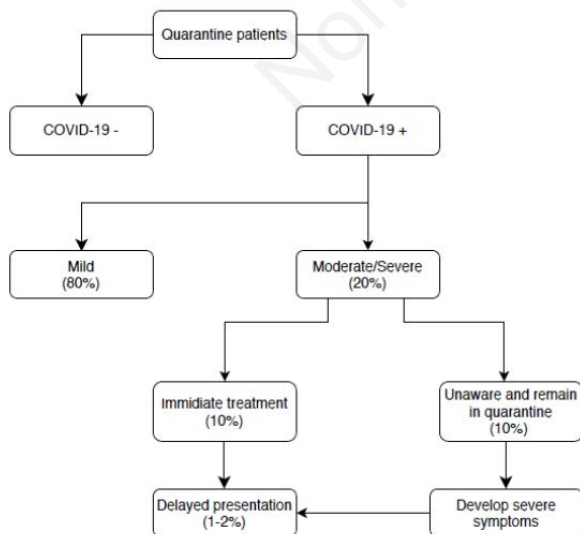
suffer permanent damage and 15% (n=3) will suffer worsening symptoms leading to clinical emergency within two weeks. An intermediate scenario may increase the number of avoiding patients up to 70% (n=210) and lead to an increase in clinical emergency cases (n=4). The most pessimistic assessment anticipates ED avoidance of 80% (n=240), and an increase in P1 and P2 classified patients (n=30), with doubling of patients under immediate damage risk (n=2). The assessment for worsening symptoms and clinical emergencies is expected to increase as well (n=5).

### Voluntary home quarantine

Another population of interest is those in voluntary home quarantine as a result of contact with a verified patient, or person who recently returned from countries abroad. Included are all age groups, who face the same difficulties accessing health services for the above and other reasons. The ongoing flow of information regarding new non-specific signs and symptoms indicating COVID-19 infection (such as gastrointestinal symptoms, impaired sense of taste and smell (anosmia), and general weakness),<sup>9</sup> has resulted in a state of uncertainty as to whether symptoms indicate psychogenic effect or the viral infection. When seeking to ascertain the nature of the symptoms, this population mostly contacts the telemedicine platform due to home quarantine, in lieu of clinical diagnosis by a physician. Some also refrain from using technology alternatives in light of a hampered health orientation.

### All Persons Quarantined (Age, Health, Potential Exposure)

In addition to the above factors, nowadays Emergency Medical Services (EMS) teams respond to suspected symptomatic cases for the sole purpose of COVID-19 test with no further clinical examination. Therefore, both populations are expected to reach the ED only in extremely severe medical condition.



**Figure 3. Estimation for risk associated with quarantine population.**

As the number of people under quarantine has a dynamic growth pattern and the COVID-19 prevalence is continuously changing, we offer an estimate for the risk associated with quarantine people condition (Figure 3). Of the quarantined population found positive for COVID-19, an estimated 20% will suffer moderate to severe symptoms. Of those, approximately 10% will require immediate treatment with 1-2 percent having delayed presentation. The remaining 10% are likely to be unaware of their condition or fear seeking medical assistance, and thus are at increased risk of developing severe symptoms.<sup>4</sup>

### Response and possible solutions

Closed clinics and primary medical centers are offering telemedicine and remote medical services as an alternative for frontal medical care. These platforms are known to have a certain amount of success; however, they do not fully replace clinical medical examinations, and high literacy and knowledge in technology are required for their use. People of older age and with chronic illnesses do not always possess these qualities.<sup>5,10</sup> Additional strategies mainly focus on preparation for resilience of health systems in all countries needed for prevention of future coronavirus outbreaks.<sup>11</sup> However, raising awareness using media campaigns calling for patients not to neglect current chronic or acute medical conditions in addition to phone calls with elderly at risk, which are currently performed by charity organizations or new non-organic medical call centers are also needed for the equally important management of community medicine.

### Conclusions

The current status raises an urgent need to formulate an appropriate response to the risky delay in addressing diverse population groups.

Intentional focus on the prevention and protection against COVID-19 and its effects is critical. Yet, populations at risk existed prior to the pandemic and their needs have not changed. In addition to the chronically ill, there are a growing population of people in isolation for which active surveillance of their condition is required. Solutions can vary, from raising awareness (e.g. media campaigns), fixed phone calls with elderly at risk, and more. Such actions could save lives and prevent deterioration in health and wellness, which would assist the population and improve the health system long after crisis resolution.

We all hope to overcome this pandemic with a minimal number of casualties.

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### References

1. Zhu N, Zhang D, Wang W, et al. A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med* 2020;382:727–33.
2. Hu Q, Wang D, Li R, et al. Association between severity of COVID-19 and clinical and biochemical characteristics: a

- cross-sectional study. Research Square [Epub]. doi:10.21203/rs.3.rs-18482/v1 Available from: <https://europepmc.org/article/ppr/ppr121980>. Accessed: August 19, 2020.
3. Li Q, Guan X, Wu P, et al. Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia. *N Engl J Med* 2020;382:1199-207. doi: 10.1056/NEJMoa2001316
  4. Ferguson NM, Laydon D, Nedjati-Gilani G, et al. Impact of non-pharmaceutical interventions (NPIs) to reduce COVID-19 mortality and healthcare demand. Imperial College COVID-19 Response Team 2020. doi: 10.25561/77482
  5. Smith AC, Thomas E, Snoswell CL, et al. Telehealth for global emergencies: Implications for coronavirus disease 2019 (COVID-19). *J Telemed Telecare* 2020;26:309-13. doi: 10.1177/1357633X20916567
  6. Rosenbluth RM. Pandemic response: developing a mission-critical inventory and cross-training programme. *J Bus Contin Emerg Plan* 2010;4:126-31. Available from: [https://www.researchgate.net/publication/44623025\\_Pandemic\\_response\\_developing\\_a\\_mission-critical\\_inventory\\_and\\_cross-training\\_programme](https://www.researchgate.net/publication/44623025_Pandemic_response_developing_a_mission-critical_inventory_and_cross-training_programme)
  7. Uscher-Pines L, Pines J, Kellermann A, Gillen E, Mehrotra A. Emergency department visits for nonurgent conditions: Systematic literature review. *Am J Manag Care* 2013;19:47-59.
  8. Christ M, Grossmann F, Winter D, Bingisser R, Platz E. [Triage in der Notaufnahme.] *Dtsch Arztebl* 2010;107:892-8. [Article in German].
  9. An P, Chen H, Jiang X, et al. Clinical Features of 2019 Novel Coronavirus Pneumonia Presented Gastrointestinal Symptoms But Without Fever Onset. *Lancet SSRN Electron J* 2020;THE-LANCET-D-20-00863. doi: 10.2139/ssrn.3532530. Available from: <https://www.ssrn.com/abstract=3532530>
  10. Mohr NM, Campbell KD, Swanson MB, Ullrich F, Merchant KA, Ward MM. Provider-to-provider telemedicine improves adherence to sepsis bundle care in community emergency departments. *J Telemed Telecare* 2020 Jan 5;1357633X19896667. doi: 10.1177/1357633X19896667. Available from: <http://journals.sagepub.com/doi/10.1177/1357633X19896667>
  11. Heymann DL, Shindo N. COVID-19: what is next for public health? *Lancet*. 2020;395:542-5. doi: 10.1016/S0140-6736(20)30374-3.