

Battling the Second Wave of COVID-19: How Invincible Are Young People?

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Insights

- The second wave of infections has shown growing reports of COVID-19 cases among young people around the world.
- Although this disease tends to be less severe in this subpopulation, they may still require hospitalization, and even intensive care in some cases.
- The risk factors that make young people susceptible to COVID-19 include underlying health conditions, not following social distancing rules, and smoking.
- While younger persons infrequently are hospitalized, the long-term sequelae of COVID-19 remain largely unknown.
- Anecdotes from young survivors illustrate a devastating aftermath of the disease that can significantly limit their ability to complete activities of daily living, as well as lower their overall quality of life.
- Young survivors have become strong advocates and messengers for prevention of COVID-19.

“Recent weeks have made it clear that COVID-19 not only seriously affects older adults, but young adults are experiencing severe complications, facing hospitalizations and even dying from the virus, according to new data from the Centers for Disease Control and Prevention.”

————— Dona Jayne Potts, 2020 (1) —————

“Catching the coronavirus isn't turning out to be as fleeting as some younger people may have thought.”

— Dr. Bonnie Henry —

British Columbia Health Officer (2)

“I'm a pandemic flu expert and this is not the flu... This is very different, it's certainly worse for young adults than the flu.”

— Dr. Matthew Miller —

Associate Professor, Michael G. DeGroot Institute for Infectious Disease Research, McMaster University

COVID-19: A Disease That Does Not Discriminate by Age

Since the beginning of the COVID-19 pandemic, the media has been flooded with news about the overwhelming burden of this disease on some sub-populations who are at greater risk, including those older than 60 years and immunocompromised individuals (3). While the high rates of infection and mortality in these groups can not be denied, the primary focus on these groups may have led to some misconceptions that young people are less likely to suffer from COVID-19. However, given our largely limited understanding of the biological and social conditions that increase the susceptibility of severe outcomes once infected with SARS-CoV-2 in different sub-populations, it is premature to assume young people have less to worry about COVID-19. This is further compounded by the fact that the long-term sequelae of this disease remain under-examined, including those for young people. However, it is important to note that the absence of evidence does not imply evidence of absence. There are increasing anecdotes shared by young survivors of COVID-19 and their healthcare providers regarding the debilitating short and long-term impact of this disease. Importantly, as many countries have entered the second phase of the pandemic, individuals under 40 years of age now constitute a significant proportion of infected cases. There is strong rationale for young people to take every safety precaution to protect themselves from COVID-19: not only will this reduce the spread of SARS-CoV-2 and help limit the impact on already overburdened healthcare systems, but it will also save young people from potential prolonged suffering. In the absence of a vaccine or treatment for COVID-19, as well as the significant knowledge gaps regarding its long-term implications, this is not a disease worth taking a risk with – regardless of an individual's age.

“Fast-tracked journal articles published within the last week or so report on similarities and differences among pediatric and adult patients with COVID-19 infection. Most disturbing are the increasing numbers of severe illness and fatalities in the 20- to 44-year-old segment in the U.S.”

“Young adults are not immune to coronavirus. Lower risk should never be confused with no risk”

— Dr. Irving Steinberg —

Associate Professor, Clinical Pharmacy and Pediatrics at the USC School of Pharmacy and the Keck School of Medicine of USC (4)

Young People and COVID-19: The Numbers Are Not So Promising

Earlier data from the COVID-19 pandemic shows mostly older and immunocompromised individuals becoming seriously affected and requiring hospitalization (5). However, as we progressed through summer 2020, with more testing done and more data available, the changing trends in COVID-19 cases are becoming more apparent. There are now increasing reports of young people getting this disease and requiring hospitalization, as well as intensive care in some cases (5).

Recently, the World Health Organization (WHO) warned that people in their 20s, 30s, and 40s are responsible for driving the spread of COVID-19 (6). In Canada, people under 40 represent 12 percent of hospitalized cases of COVID-19 (7). In France and the Netherlands, half of the serious cases were people under 50 years (5). In Australia, people aged 20-29 years continually had the highest rates of cases (6). Analysis from the U.S. Centers for Disease Control and Prevention (CDC) shows that 1 in 5 people hospitalized due to SARS-CoV-2 infection are 20-44 years old (4). As of July 15, 2020, the CDC reported that while people aged 18-39 years represented less than 2% of deaths in the U.S., they constituted 36.5% of the total cases (8). Since mid-July, young people represented a large case group in all three states hit the hardest with COVID-19 (8):

- Florida: People aged 25-34 years accounted for 1% of deaths, but 21% of cases.
- California: People aged 18-34 years accounted for 1.2% of deaths, but 34.4% of cases
- Arizona: People aged 20-44 years accounted for 6% of deaths, but 50% of cases

“This new surge could be related to young adults not being as careful with social distancing as bars and restaurants reopened when cases plateaued earlier in the spring. They didn't respect social distancing as things reopened. Those were the groups that you saw getting together in close quarters.”

————— **Dr. Eduardo Mireles** —————

Cabodevila, Pulmonologist, Cleveland Clinic (8)

“Inhalation of smoke from combustible (i.e., tobacco) and non-combustible (i.e., e-cigarette) sources have profound effects on the airways and the lungs...irritants disrupt the airway epithelial barrier, and this disruption and loss of protection make it easier to contract infections.”

“When exposed to a virus like COVID, smokers with injured lung capacity are at a greater disadvantage compared with those who don't smoke and have healthy lungs.”

“Feeling invincible is great — which most young adults think they

————— **Dr. Laren Tan** —————

Pulmonologist, Founder and Director of the Loma Linda University Health Comprehensive Program for Obstructive Airway Diseases (1)

What Makes Young People Susceptible to COVID-19?

Currently, there is a lack of medical explanation for why young people are increasingly infected by SARS-CoV-2. They are typically in good health condition and do not have many of the chronic diseases that place older generations at a greater risk of COVID-19. However, this can lead to an overall sentiment of invincibility which may not always be well-founded. It is fairly common for young people to not visit healthcare providers regularly unless something goes wrong – this may lead underlying health problems to be missed which can increase their risk for COVID-19 (1).

Just as it has been observed in many other age groups, declining adherence to social gathering rules as we progressed through the pandemic has been one of the leading causes for the rising COVID-19 cases in young people. As many countries around the world continued to relax restrictions following the initial lockdown and opened up bars, restaurants, and other social venues, some young people began to congregate without necessarily following social distancing or mask wearing rules – both of which have been identified as effective community prevention strategies to prevent the spread of SARS-CoV-2 (1,9).

Smoking has been identified as an important risk factor that makes young people vulnerable to severe disease from COVID-19. There are now reports of young adults smoking at higher rates than adolescents, which places them at significant risk of severe disease even if they have low rates of most chronic diseases (10). Findings from a recent study from the U.S., which included a nationally representative sample of about 8,400 men and women aged 18-25 years, shows that while medical vulnerability for severe disease is 16.1% for non-smokers, it is 31.5% for the full study sample, which included smokers (11). The risk of medical vulnerability to severe disease is halved when smokers are removed from the sample (10).

“We do know that for some people, and we don't always know who, some of it has to do with the way our own immune system reacts and our genetic makeup. Some people have very severe illness and some people have long-lasting impacts, even with a milder form of the illness...these long-term impacts are also being reported by people who haven't been hospitalized.”

“But the things that we're hearing from young people is that fatigue, difficulty even sitting up, profound fatigue that lasts for a long period of time...For those people who do have pneumonia, difficulty breathing, shortness of breath that can last a long time.”

“Some groups, more likely to be men than women, reported increased blood clotting following positive COVID-19 cases. And that can lead to clotting of the arteries around the heart and heart attacks, or it can lead to challenges with brain injury or with what we call pulmonary embolisms – big blood clots in the lungs that can actually happen weeks later”

“Some teens and young adults in parts of the world have experienced a post-viral syndrome that can cause inflammation of the blood vessels.”

“We are learning more and we are learning that there can be long-term impacts that can be quite severe, even for young people.”

————— **Dr. Bonnie Henry** —————

British Columbia Health Officer (2)

“Cardiac involvement in athletes has further elevated the concerns. A 27-year-old professional basketball player, recovered from COVID-19, and experienced sudden death during training. Several college athletes have been found to have myocarditis (14), including 4 of 26 (15%) in a prospective study from Ohio State University (15), along with one of major league baseball's top pitchers. Collectively, these young, healthy individuals had mild COVID-19 but were subsequently found to have unsuspected cardiac pathology. This same demographic group—young and healthy—are the most common to lack symptoms after SARS-CoV-2 infections, which raises the question of how many athletes have occult cardiac disease?”

————— Topol —————
2020 (12)

Young People's Experience With COVID-19

In terms of COVID-19 symptoms, there are no differences between age groups; young people also exhibit shortness of breath, fever, muscle pain, headaches, and problems with a loss of smells and taste (8). Current epidemiological data suggests that the physical impact of COVID-19 tends to be less severe in young adults compared to older adults (8). The symptoms may take a few days to appear after the infection – many young people may show few or no symptoms (6). A majority of individuals in their 20s and 30s recover quickly (6). However, the impact of COVID-19 does not always end at a rapid recovery. Some young people, especially those with other underlying health conditions or those who smoke, may experience severe disease and potential long-term impact on their health (8).

Furthermore, even young people who have mild symptoms can experience substantial detrimental impact post-recovery, which may inhibit their ability to return to their normal life activities. Even though young people are less likely to be admitted to ICU or die, it is still possible for them to be sick enough to be admitted to ICU and experience the impacts of severe disease (8).

In our previous INSIGHT “[Long-Term Health Impact of COVID-19: Emerging Updates](#)”, we presented the current understanding of the long-term physical and mental health impact of this disease. It should be noted that much of what is currently known is based on results from a handful of small studies, hypotheses based on the pathophysiology of SARS-CoV-2 and the aftermath of infection observed from other coronaviruses, as well as anecdotes shared by patients and healthcare providers. It has been proposed that severe illness can have long-term repercussions for young people by limiting their ability to move, exercise, as well as negatively impacting brain activity, especially if they experienced delirium while in ICU, which can jeopardize their quality of life for the years to come (8).

The large majority of the scientific literature thus far do not focus on the long-term impact of COVID-19 on young people, however, tales from survivors in this age group illustrate the severe consequences this disease can have.

For example, Daniel, a 28-year old environmental researcher from the U.K., recovered from COVID-19 but his life is no longer the same as before. He says he now lives with extreme tiredness and fatigue that comes and goes, difficulty with breathing, brain fog, challenges with concentrating and short-term memory which make speaking, reading, and writing a lot harder (13). Daniel's doctor has advised him not to return to full-time work and his symptoms have not improved overtime and remain severe (13). Stories such as these are now becoming more common, with warnings of potential permanent lung damage, which includes scarring and reduced lower respiratory capacity (13). One highly concerning aspect of COVID-19 that often does not receive enough media coverage is the possibility of re-infection with SARS-CoV-2 after already recovering from the disease once, and young people are not immune from this possibility either. For example, Jordan, a 29-year old lawyer from the U.S., first tested positive for SARS-CoV-2 in April 2020, which led to severe disease characterized by shortness of breath, light-headedness, and extreme fatigue (13). In late June 2020, he experienced the same symptoms again and was tested positive for a second time (13). There is a common misconception that once people get infected and test positive for antibodies, they will be fine. Yet, Jordan's second test did not indicate it was a second strain of SARS-CoV-2, and his doctor believes it may have been a flare up and he can test positive for a third time (13).

“The thing that we don't yet fully appreciate is what happens when you get infected, and you get serious disease, and you recover?”

"We don't know the extent of full recovery or partial recovery, so there's a lot we need to learn."

————— **Dr. Anthony Fauci** —————

Director of the National Institute of Allergy and Infectious Diseases

Final Words: COVID-19 Is Not Worth the Risk

The COVID-19 pandemic has taken a tremendous toll on the younger and older generations alike around the world. It is recognized that following preventative measures enforced by public health officials is not always easy, whether in the context of the developing or the developed world, when young people may need to take part in precarious work opportunities to still earn an income to survive. There are also the added mental health challenges of the pandemic – during these truly unprecedented times that have heightened a sense of isolation among everyone, young people may find solace from social activities to feel connected to others. Despite these difficult circumstances, the importance of minimizing the risk of getting COVID-19 can not be neglected (Exhibit 1). If it has not been enough to hear about the detrimental impact of this disease from public health officials, a young survivor from the U.S. has a message for young people:

“After the Spanish flu, we had the Roaring '20s. That could be the case after coronavirus. This is temporary. But don't risk your life. You can die from this. Wear a mask. Avoid crowds. Wash your hands. Don't touch your face. I don't think anybody should see someone die over one or two hours of fun.”

Kevin Garcia

Queens, New York (13)

Exhibit 1: Five Messages to Our Youth

- Y** You are not immune to COVID-19
- O** Outcomes in the longer term may be worse than the initial infection
- U** Unless you take this seriously, you put yourself and your peers at risk
- T** To prevent COVID-19 should be your priority (social distancing, hand hygiene)
- H** History repeats itself. Ignoring the consequences of this pandemic is not an option

Contributors



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