Study documents devastating effects of Long COVID two years after infection

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A study recently published in Nature Medicine comprehensively assessed for the first time a broad range of impacts of COVID-19 up to two years after SARS-CoV-2 infection. It found that of 80 long-term consequences or sequelae of the disease, individuals with past infection remained at risk for 48 or 60 percent of them at two years post-infection. This compared to an elevated risk at one year post-infection for 69 or 86 percent of sequelae.

The implications of this fundamental result are staggering. It means that long past infection, people remain at risk for a broad array of serious, life-threatening health events impacting over half their body systems.

These events include hospitalization, stroke, chest pain, development of a variety of heart arrhythmias, heart failure, blood clots, dizziness, diarrhea, vomiting, kidney failure, loss of hearing, and loss of smell. They also include the onset of a variety of disorders including diabetes, inflammation of the pancreas, irritable bowel syndrome, liver abnormalities, mental disorders, opioid use disorder, joint pain, muscle pain, arthritis, headache disorders, memory disorders, and shortness of breath.

If there is any good news in the study, it is that the risks nearly all declined over time, including a return to baseline risk relative to the control group for some of the most serious events such as heart attack, pericarditis and myocarditis, cardiac arrest and death.

However, the risk did increase over two years for some events such as the development of inflammation of the bile ducts, called cholangitis. Furthermore, for the 60 percent of sequelae where the risk remains elevated, the rate of reduction of risk is considerably flattened over time, suggesting these risks could remain elevated above normal for a long time to come.

The study, conducted by noted Long COVID researcher Dr. Ziyad Al-Aly and his team at the Washington University in St. Louis, examined the differential risks for COVID-19 patients who had been hospitalized with the disease vs. those who had not. It found that individuals who had been hospitalized with COVID-19 had significantly higher risks over time for all sequelae, including at two years post-infection, than those who had not been hospitalized.

Notably, hospitalized individuals remained at significantly increased risk of death at two years post-infection, whereas individuals not hospitalized for COVID-19 had a risk of death similar to the control group after two years. The hospitalized cohort remained at elevated risk for 65 percent of COVID-19 sequelae at two years versus 60 percent for the overall COVID-19 population.

Individuals infected but not hospitalized for COVID-19 remained at elevated risk for 31 percent of sequelae at two years, including cardiovascular, coagulation, endocrine, gastrointestinal, kidney, mental health, musculoskeletal and neurologic sequelae.

Looking at changes in risk over time, these non-hospitalized individuals' risk of death returned to baseline after 6 months post-infection. Their risk of hospitalization only returned to baseline in the final three months of the two-year period, meaning they were at increased risk of hospitalization for approximately 1.75 years post-infection. This was also the case for another 20 sequelae for which non-hospitalized patients returned to a baseline risk at two years, meaning that non-hospitalized patients are at risk for 57 percent of sequelae for 1.75 years.

Another important finding of the study is that at two years, Long COVID sequelae among non-hospitalized patients generated 80.4 disability-adjusted life years (DALYs) for every 1,000 people. By this metric, a DALY represents a year of healthy life lost to illness. Among hospitalized patients, the figure rose to a staggering 642.8 DALYs per 1,000 people. These figures are far higher than the burden of disability caused by both heart disease and cancer, which cause roughly 52 and 50 DALYs for every 1,000 Americans, respectively.

Commenting on the elevated DALY figures associated with COVID-19 infection, Dr. Al-Aly told CNN, "When I looked at that initially, I was really shocked. That's actually a huge number." He added, "I think that we need to understand that infections lead to chronic disease and we need to take infection seriously."

The study had numerous strengths that increase the confidence in its results. It used a large electronic health record data set from the United States Veterans Affairs administration. This data set included large numbers of patients, with 138,818 COVID-19 patients and nearly 6 million control patients.

The researchers also conducted a number of sensitivity analyses to check for possible impacts of certain inclusion criteria for both the COVID-19 and control groups, as well for possible biases of the particular statistical methods used. These sensitivity analyses found that the results were not impacted. They included varying criteria related to vaccination status over time, re-infection with SARS-CoV-2, and the probability of healthcare utilization.

The study also used a "negative outcome control." This means that they also studied outcomes that have not been reported in

Long COVID patients, and thus they did not expect to see an elevated risk with COVID-19 at only two years post-infection. This was to ensure that there was as expected no differential risk between the COVID-19 and control groups. If they also found elevated risks of these kinds of outcomes, it would indicate potential problems with their statistical methodology.

For the negative outcome control, they looked at a number of cancers and confirmed that there was no differential risk in the development of cancer between the COVID-19 and control groups. Cancer is a particularly useful outcome to study at two years, because the development of cancer nearly always occurs over a longer timeframe. Thus, even if COVID-19 does end up being associated with increased risks of cancer at 5, 10, 15, etc., years post-infection, it would not be an issue at merely 2 years.

There are some limitations to the study. One limitation is that the researchers could not exclude from the control group individuals who developed COVID-19 but either were not tested at all, or self-tested or otherwise had a test outside the Veterans Affairs healthcare system. These tests would not be available in their data.

The net effect of this limitation, however, would be to improperly assign some risks of COVID-19 sequelae to the control group, and thus it would lower the differential magnitude of risks between the COVID-19 and control groups. So if anything, the study likely somewhat understates the risks of developing COVID-19 sequelae.

Another limitation is that being a US Veterans Affairs study, the population is not representative in two key respects. First it is an overwhelmingly male population and thus women are underrepresented. The researchers did not detect sex-specific differences in risk, but had too few women to detect anything but very large differences that one would not expect based on what is already known about Long COVID. Second, being a US-based study, the results are not representative of the entire world.

Of course the United States is an advanced industrialized nation, and as noted by leading worldwide COVID-19 experts in a recent Lancet editorial, its healthcare system has access to resources unavailable in most nations.

Even studying Long COVID sequelae in underdeveloped, resource poor nations is enormously challenging due to a lack of requisite infrastructure and resources, let alone their ability to manage tens of thousands and possibly millions of debilitated citizens. As the authors of the editorial note:

> As we learn from the COVID-19 pandemic and better prepare for emerging threats, it is crucial to further investigate post-infection syndromes. These investigations will contribute to future pandemic preparedness and ensure that [low and middle income countries] are not once again marginalised in these efforts.

The pandemic has proven to be a global mass disabling event, as Long COVID advocates began to warn as early as 2020. As noted by the editorial, anywhere from 10 to 45 percent of those who suffer COVID-19 end up with Long COVID. Assuming conservatively that half of the 8.1 billion people alive worldwide have had at least one infection with SARS-CoV-2, that leads to a minimum of 405 million people now living with Long COVID globally, a monumental figure which exceeds the population of the United States.

A separate review article recently published in Nature detailing the specific biological mechanisms by which COVID-19 is thought to cause Long COVID notes that uncovering these mechanisms has been challenging because SARS-CoV-2 infection has an unprecedented array of effects on the body.

Despite the intensity and diversity of the research summarized, there is still much to learn and no theory about the causes of Long COVID is yet emerging as a leading one. The review article concludes:

> The oncoming burden of long COVID faced by patients, health-care providers, governments and economies is so large as to be unfathomable, which is possibly why minimal high-level planning is currently allocated to it.

However, the authors are too charitable. The ruling class is not merely failing to plan for the oncoming burden of Long COVID because the burden is unfathomable. Rather, they are simply criminally indifferent to it and will not let any amount of human suffering come between them and their accumulation of wealth through the exploitation of the working class.

If adequate resources are to be invested worldwide in confronting the present and growing burden of Long COVID, the working class must organize and overthrow the capitalist system, take control of society's wealth and invest it in human need.