

# Diabetes Management in The Face of the Coronavirus Pandemic

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Short Communication

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## Abstract

*In the midst of the COVID-19 pandemic, many diabetics have found themselves lost in trying to understand how to best manage diabetes symptoms and complications. Current research shows that diabetics are more at risk of acquiring serious complications as a result of COVID-19 such as diabetic ketoacidosis, adult respiratory distress syndrome, etc. These risks come from the fact that the COVID-19 virus attacks a similar receptor which is upregulated in most diabetic patients' cases. Therefore, extra precautions must be taken for this population group in regard to management and treatment of symptoms in order to curb the potential for decreased outcomes.*

As of the end of April 2020, over 2,800,000 cases of Novel Coronavirus (COVID-19) exist across the world, with over 930,000 existing just within the borders of the United States. As cases continue to increase at an exponential rate, many other diseases and general ailments are disregarded or overshadowed by the weight of the current pandemic. One of these diseases is Diabetes. Currently, there is no evidence to show that people with diabetes are more likely to be susceptible to COVID-19, but susceptibility is only factor to consider when determining the risk and mortality rates from a disease such as this one. In regard to complications, however, diabetes as a comorbidity to COVID-19 acts as a gateway for more serious complications such as Adult Respiratory Distress syndrome or multi-organ failure. According to an April 2020 article from the Lancet, in some global regions 20-50% of patients with COVID-19 had active diabetes and many of these patients showed a significantly worse outcome potential due to this comorbidity.

In the past, Diabetes has played a large role in increasing complications for patients that acquire other diseases such as MERS-CoV and SARS-CoV-2. In addition, there is currently much research looking into the mechanism by which COVID-19 gains entry into human cells specifically, and some of this research points towards the ACE2 receptor as an entry point, a receptor which is also upregulated in cases of acute

hyperglycemia such as with diabetes patients. This suggests that diabetes could be not only be a risk factor for a worsening COVID-19 infection, but COVID-19 could also play a reverse role in triggering the onset of diabetes in certain patients. Current research also shows that hyperglycemia may also lead to defects in immune responses such as impaired monocyte/macrophage and neutrophil function, all factors which may expose diabetics to a larger potential risk for complications from acquiring COVID-19. Despite all of these advancements in the understanding of COVID-19, one fact remains – it is important for those with diabetes to understand what actions they can take to stay health and protect themselves during the current pandemic.

As with all viral and bacterial infections, the first step to preventing and/or treating infections such as COVID-19 is to wash hands often with soap and water for at least 20 seconds and avoid close contact with people who are either suspected of or known to be carrying the infection. For diabetics specifically, it is also important to consider extra precautions that need to be taken due to the current pandemic. One common worry for type 1 diabetics is the risk of diabetic ketoacidosis (DKA), where the body breaks down fat into ketones very quickly and lowers the pH level of the blood, leaving the body in an acidic state. When battling a viral infection, diabetics are at an

increased risk of experiencing DKA, but this can be managed by effectively tracking blood glucose levels and checking for ketones if logs have registered a blood glucose level greater than 240 mg/dl twice in a row. In addition, continuing to stick to a medication schedule is crucial to managing diabetes in situations where it may not be easy to shift medicine dosage and/or brands. For patients who are feeling sick, insulin and other prescribed medications must continue to be taken in order to reduce the risk of unmanaged diabetes, which can spiral into other complications that harm the body as it is battling the virus. Currently, there is no indication that insulin availability has decreased or will decrease in the near future. Beyond insulin, it is also important to understand that over-the-counter (OTC) medications that may be taken during this time can have a direct effect on a person's ability to manage their diabetes. For example, many cough syrups can increase blood glucose levels while other pain and fever reducers such as aspirin or acetaminophen can reduce blood glucose and have a toxic effect on the liver and kidneys. In addition, medications containing ibuprofen can also increase the hypoglycemic effect on insulin. These medications, in conjunction with an unmanaged case of diabetes can prove to be harmful and/or fatal for patients who also acquire COVID-19 at the same time.

As with any infectious disease, there is always a worry that certain populations are more at risk for acquiring an infection and being prone to worsening complications as a result. For diabetes specifically, there is currently no data available regarding whether there is a higher risk of acquiring the COVID-19 virus and there is also no specific management plan listed as a standard of care for these patients. However, there are many steps that can be taken in order to better prepare diabetics in the case that they do acquire the virus. One example of this is rigorous glucose monitoring to ensure that patients are able to quickly notice if there are changes to their daily averages. In addition, diabetics should consult with their physicians on warning signs that might indicate an episode of DKA, hyperglycemia, or other episodic symptoms. These symptoms may indicate that a diabetic need to visit the hospital for proper treatment and management of their diabetes. Finally, diabetes management in the face of an active case of COVID-19 must not be handled solely by a primary care physician or diabetes specialist. This will require the collaboration of infectious disease specialist, endocrinologists, pulmonologists, and more. Only then will patients receive the correct combination of treatment in order to reduce the risk of potential complications and/or fatality in the face of the COVID-19 crisis.

## References

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