

# Diabetes and COVID-19—the meeting of two pandemics: what are the concerns?

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**T**he coronavirus disease 2019 (COVID-19) pandemic has occurred on a background of the diabetes pandemic.<sup>1</sup> The former has had an immediate and obvious international impact, while the latter has been long recognised and continues to worsen. While of different aetiologies, both are significant public health challenges requiring commitment from governments, and partnership with public health practitioners, the healthcare workforce and communities.

COVID-19, caused by SARS-CoV-2 coronavirus, has spread rapidly throughout the world affecting more than three million to date with thousands dying (<http://who.sprinklr.com/>). In contrast, the prolonged diabetes pandemic<sup>1</sup> affects an estimated 9.3% (463 million) of adults globally, and is projected to increase to 10.2% by 2030 and 10.9% by 2045.<sup>2</sup> In New Zealand, diabetes affects 7% of those ≥15 years,<sup>3</sup> and a considerable number of children aged <15 years.<sup>4</sup> Notably, the rates of diabetes are higher among Māori, Pacific and South Asian compared with New Zealand Europeans,<sup>3</sup> particularly those living in deprived situations. These groups are especially vulnerable to the far reaching impacts of the COVID-19 crisis, as they are disproportionately exposed to risk, which is potentially exacerbated through sudden loss of jobs and income, and reduced access to usual social support and healthcare.<sup>5</sup>

Diabetes is a risk factor for infection, more so in those with poor glycaemic control and those aged ≥60 years.<sup>6</sup> Although there is no published evidence yet, those with diabetes are probably more likely to acquire COVID-19 infection. The risk of upper respiratory tract infection, lower tract respiratory infection or pneumonia is greater in those with

diabetes compared with the general population.<sup>6</sup> Furthermore, those with diabetes and infection have worse outcomes, including a higher risk of hospitalisation and death.

Most published clinical and epidemiological COVID-19 studies to date report on hospitalised patients. They consistently report that diabetes is a common co-morbidity with prevalence rates of up to 34%, and those with diabetes have more severe disease than those without.<sup>7</sup> Among 7,162 US cases with near-complete data, 784 (10.9%) had diabetes, of whom over half were hospitalised and 148 (18.9%) required ICU admission.<sup>8</sup> The proportion requiring ICU admission was similar to those with cardiovascular disease (20.4%), but higher than those with chronic lung disease (14.3%), or an immunocompromised condition (15.5%). In China, of 1,099 hospitalised COVID-19 cases, 81 (7.4%) had diabetes, of whom 34.6% developed severe disease, compared with 41/165 (24.8%) with hypertension, 10/27 (37.0%) with coronary artery disease, 67/261 (25.7%) with any co-existing disorder, and 106/838 (12.6%) in those with no co-existing disorder.<sup>9</sup>

Few reports include mortality data but they show a high proportion of COVID-19 deaths are in those with diabetes. In a Chinese study of 191 hospitalised COVID-19 cases, 19% had diabetes and 54 died, of whom 17 (31%) had diabetes.<sup>10</sup> Similarly, in Italy 32% of 1,890 COVID-19 deaths had diabetes.<sup>11</sup> Further, although there are methodological challenges with estimating the COVID-19 case fatality rate, such as accurately determining the most appropriate denominator, it is nevertheless higher among those with diabetes. In China, the case fatality rate among 44,672 confirmed

cases was 2.8% overall, compared with 7.3% for diabetes, 10.5% for cardiovascular disease, 6.3% for chronic respiratory disease, 6.0% for hypertension and 5.6% for cancer.<sup>12</sup>

The reasons for poor outcomes from COVID-19 among those with diabetes are not fully understood. Current understanding is that it is multifactorial. Proposed risk factors include: uncontrolled blood glucose levels prior to and when infected with coronavirus; lack of, or reduced contact with usual diabetes healthcare professionals; and inappropriate discontinuation of a patient's ACE (angiotensin converting enzyme) inhibitor or ARB (angiotensin receptor blocker). The latter has occurred due to the observation that the coronavirus binds to cells through ACE2. These medicines may increase ACE2 levels with the theoretical potential that there is increased uptake of the coronavirus. However, stopping these medications is more detrimental in most circumstances ([www.nzssd.org.nz](http://www.nzssd.org.nz); [www.easd.org](http://www.easd.org); [www.diabetes.org/coronavirus-covid-19](http://www.diabetes.org/coronavirus-covid-19)).

The current infectious disease pandemic highlights that substantially greater

attention needs to be given to diabetes, if we are to avoid unnecessary and inequitable outcomes from COVID-19. All steps need to be taken and maintained to protect this high-risk group through the nation-wide public health measures to prevent transmission, ensuring the influenza vaccination has been given, and undertaking workplace risk assessments. Furthermore, ensuring people with diabetes can continue to be regularly reviewed by their primary care or specialist diabetes health care providers is paramount, and patients need to be aware that there should be a very low threshold for the assessment of respiratory symptoms and coronavirus testing, particularly as the severity of COVID-19 infection may be obscured by a milder presentation.<sup>13</sup> For those hospitalised, it is important to achieve good glycaemic control and strive for blood glucose readings of 4–10 mmol/L, and where possible involve diabetes specialist teams early, to prevent poor outcomes.<sup>13,14</sup>

Thus, in responding to the COVID-19 crisis, decisions and policies need to include diabetes, if health inequities are not to be exaggerated.<sup>5</sup>

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#### Competing interests:

Nil.

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