

Diabetes and COVID-19

A helpful article published in the Lancet Diabetes and Endocrinology Journal on April 23 by a 19-member panel led by Stefan R. Bornstein from Dresden University.

Diabetes is known to be a major risk factor for the development of severe pneumonia or sepsis due to virus infections.

Data from several sources suggests the risk for death from COVID-19 is up to 50% higher in people with diabetes than those without.

Evidence also suggests risks associated with COVID-19 are greater with poor glycaemic control and it has been found that the virus is associated with an increased risk for diabetic ketoacidosis and new onset diabetes.

Based on this advice the panel reporting in the Lancet made the following consensus recommendations:

1. Infection Prevention and Outpatient Care:

- Inform the patient with diabetes of the importance of optimal metabolic control. This is particularly important in individuals with type 1 diabetes who should be reminded of home monitoring and sick day rules.
- Optimisation of current therapy if appropriate.
- Caution with premature discontinuation of established therapy.
- Use of telemedicine and connected health models if possible to maintain maximal self-isolation.

2. For hospital patients:

- Monitor for new onset diabetes in all patients hospitalised with COVID-19

3. Management of infected patients with diabetes on intensive care units:

- Plasma glucose monitoring, electrolytes, pH, blood ketones
- Beta hydroxybutyrate liberal indication for early IV insulin therapy in severe disease courses (acute respiratory distress syndrome, hyper-inflammation) for exact titration, avoiding variable subcutaneous resorption
- Management of commonly-seen very high insulin consumption.

4. Therapeutic aims:

- A plasma glucose concentration between 4-8 mmol/L for outpatients or 4-10 mmol/L for inpatient/intensive care, with possible upward adjustment of the lower value for frail patients to 5 mmol/L.
- Glycosylated haemoglobin less than 53 mmol/mol 7%
- Continuous glucose monitoring/flash glucose monitoring targets time in range 3.9 to 10 mmol/L greater than 70% of the time or greater than 50% in frail and older people – hypoglycaemia considered to be less than 3.9 mmol/L less than 4% or less than 1% in frail and older people.

Medications - what to stop and caveats for using others

Metformin and SGLT2 inhibitors should not be discontinued in outpatients and those patients who do not have evidence of COVID-19

The panel advised that with inpatients both metformin and SGLT2 sodium-glucose cotransporter-2 inhibitors should be stopped in patients with COVID-19 and type 2 diabetes. This reduced the risk of acute metabolic decompensation.

For both drug classes concerns include increased risk of dehydration, acute kidney injury and chronic kidney disease, so close monitoring of renal function is recommended.

Metformin also increases the risk for lactic acidosis and SGLT2 inhibitors increase the risk for diabetic ketoacidosis.

Both glucagon-like peptide 1, GLP-1 receptor agonists and dipeptidyl peptidase-4 (DPP/4) inhibitors can be continued, with the latter being generally being well-tolerated.

However, patients taking GLP-1 agonists should be carefully monitored for dehydration and adequate fluid intake and regular meals encouraged.

Insulin therapy should never be stopped and may need to be started in new onset patients or those with hyperglycaemia after being taken off other agents.

Blood glucose monitoring should be encouraged every two to four hours or using continued glucose monitoring.

Insulin dose should be adjusted based on these, which will be quite elevated in people with COVID-19. Intravenous insulin infusion may be necessary.

Use of angiotensin converting enzyme (ACE) inhibitors and angiotensin 2 receptor blockers (ARBs) should be continued.

Evidence to date is reassuring on this issue and all major cardiology societies recommend patients remain on these agents.

Statin use should also be maintained. It is considered that their long-term benefits are substantial and there is a potential for actually tipping the balance towards a cytokine storm by rebound rises in interleukin 6 and IL-1 beta if they were to be discontinued.

Considerable care is required in fluid balance as there is a risk that excess fluid can exacerbate pulmonary oedema in severely inflamed lung.

Potassium balance needs to be considered carefully in the context of insulin treatment – hypokalaemia is a common feature in COVID-19. This is possibly associated with hyperaldosteronism induced by high concentrations of angiotensin 2 and this can be exacerbated following initiation of insulin.

Other Clinical Considerations

Because patients with type 2 diabetes and fatty liver disease may be at increased risk for a cytokine storm and severe COVID-19 disease, screening for any hyperinflammation is recommended.

This includes looking for laboratory trends, for example increased ferritin, increased platelet counts, raised CRP or raised ESR. These are important and could also help identify sub-groups of patients for whom immunosuppression, steroids, immunoglobulins, selected cytokine blockades could improve outcomes.

Despite its advantages in patients with type 2 diabetes and obesity, elective metabolic surgery should be postponed during the COVID-19 outbreak.

Because SARS-CoV-2 can induce long-term metabolic alterations in patients who have been infected, careful cardiometabolic monitoring of patients who have had COVID-19 is advised.

The experts stressed that all recommendations and reflections are based on our expert opinion and await the outcome of randomised clinical trials.

It is essential that any patient with any abnormal symptoms of any kind or abnormal sugars or any patient with diabetes seeks medical advice urgently.

In this respect The London General Practice remains open for video consultations, face to face consultations if not COVID-related and home visits.

We are also able to offer laboratory investigations and imaging as required on an urgent basis.

Please do not change your treatment without any immediate medical advice.

The London General Practice