COVID-19 and diabetes

The vast majority of people who contract COVID-19 will experience only mild symptoms and make a full recovery. However, people with diabetes and/or other long-term conditions are more likely to experience symptoms of greater severity. Some of these may need admission to hospital for supported care and more intensive intervention. Currently, the spectrum of disease suggests that 81% of cases will be *mild*, 14% *severe* and 5% *critical*. The risk does appear to increase in people aged over 70 years, particularly those with comorbid heart disease, diabetes or respiratory disease (Wu and McGoogan, 2020).

A time of unprecedented change

This situation is rapidly evolving and guidance may be subject to change. The following is intended as an aide-mémoire and we have linked you to the currently available advice and guidance. Readers are advised to continue checking the links below for updates

Useful links

- **NHS England:** https://www.nhs.uk/conditions/coronavirus-covid-19
- **Public Health England:** www.gov.uk/government/collections/coronavirus-covid-19-list-of-guidance
- **Patient information for at-risk groups:** https://t.co/MvuVWEKv8v
- **Diabetes UK:** https://www.diabetes.org.uk/about_us/news/coronavirus
- **JDRF:** https://jdrf.org.uk/coronavirus-covid-19-information-for-people-living-with-type-1-diabetes
- **How to advise on sick day rules:** https://bit.ly/39zBPjB
- **Using SGLT2 inhibitors safely during illness:** https://bit.ly/2waxZzY

Prescribing considerations

Be very aware that people with diabetes, in addition to the expected respiratory symptoms of COVID-19, are also at increased risk of metabolic decompensation whilst trying to self-manage their diabetes at home.

- Ensure patients have adequate supplies of medication
- Ensure patients have an increased supply of monitoring equipment at this time. This is especially important for those who require ketone monitoring equipment

Table 1. General advice for managing diabetes during intercurrent illness

S (Sugar)	● Blood glucose levels can rise during illness even if the person is not eating ● Advise to increase blood glucose monitoring if the person has access to it ● Diabetes medications (sulfonylureas and insulin doses) may need to be increased temporarily during illness to manage these raised glucose levels
I (Insulin)	● **NEVER** stop insulin or oral diabetes medications* ● Insulin doses may need to be increased during illness, especially if ketones are present ● Specific advice for people on insulin therapy is available overleaf
C (Carbohydrate)	● Ensure the person maintains hydration and carbohydrate intake ● If the person is not able to eat or is vomiting, advise to replace meals with sugary fluids ● If blood glucose levels are high, maintain fluid intake with sugar-free fluids ● If blood glucose levels are low, encourage regular intake of sugary fluids
K (Ketones)	● In type 1 diabetes, advise to check for ketones every 4–6 hours. If present, check every 2 hours ● Give **extra rapid-acting insulin doses** (in addition to regular doses) based on total daily insulin dose if ketones are present – see insulin algorithm overleaf ● Advise to drink plenty of water to maintain hydration and flush through ketones

*Metformin and SGLT2 inhibitors may need to be temporarily stopped if at risk of dehydration.

Mental health impact

People with diabetes are likely to have increased anxiety at this time. Prolonged self-isolation could have severe consequences on their mental health, especially if they are already known to have anxiety or depression. Consideration needs to be given as to how this can be addressed within the community

Things to consider – managing demand while still delivering routine care

- **BMJ: What should primary care be doing to prepare?** https://bit.ly/2vpMIqh
- **BMJ: Video consultations:** https://doi.org/10.1136/bmj.m998

Author: Su Down, Diabetes Nurse Consultant; on behalf of the Primary Care Diabetes Society

Citation: Down S (2020) COVID-19 and diabetes. *Diabetes & Primary Care* **22**: 25-6

References

JBDS-IP (2020) *Diabetes at the Front Door. A guideline for dealing with glucose related emergencies at the time of acute hospital admission from the Joint British Diabetes Society (JBDS) for Inpatient Care Group*. Available at: https://abcd.care/resource/diabetes-front-door

Wu Z, McGoogan JM (2020) Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72 314 cases from the Chinese Center for Disease Control and Prevention. *JAMA* 24 Feb [Epub ahead of print]. https://doi.org/10.1001/jama.2020.2648

Advice for people on insulin

Feeling unwell?

Type 2 diabetes?

Test blood glucose at least 4 times a day

- Blood glucose less than 11 mmol/L → Take insulin as normal. Take carbohydrates as a meal replacement and sip sugar-free liquids (at least 100 mL/hour if able)
- Blood glucose more than 11 mmol/L → Take carbohydrates as a meal replacement and sip sugar-free liquids (at least 100 mL/hour if able)

Type 1 diabetes?

Test blood glucose and ketones every 4–6 hours, including through the night

- Blood glucose more than 11 mmol/L and either no or low ketones (trace urine ketones or <1.5 mmol/L on blood ketone monitor) → Take carbohydrates as a meal replacement and sip sugar-free liquids (at least 100 mL/hour if able)
- Blood glucose more than 11 mmol/L **and/or** ketones present (>1.5 mmol/L on blood ketone meter or +/++ on urine ketones) → Take carbohydrates as a meal replacement and sip sugar-free liquids (at least 100 mL/hour if able)
- Blood glucose less than 11 mmol/L and no ketones → Take insulin as normal. Take carbohydrates as a meal replacement and sip sugar-free liquids (at least 100 mL/hour if able)

You need food, insulin and fluids to avoid dehydration and serious complications

Blood glucose	Insulin dose*
11–17 mmol/L	Add 2 extra units to each dose
17–22 mmol/L	Add 4 extra units to each dose
>22 mmol/L	Add 6 extra units to each dose

*Take your prescribed insulin according to these blood glucose levels. Once you have given the initial increased dose, contact your GP or DSN for advice if you still feel unsure about adjusting your insulin doses

If you are taking more than 50 units in total daily, you should double the adjustments. All adjustments are incremental and should be reduced gradually as the illness subsides

Test blood glucose every 4 hours

Blood glucose more than 11 mmol/L?

- Yes – repeat process → Test blood glucose every 4 hours
- No → As illness resolves, adjust insulin dose back to normal

Blood ketones greater than 1.5 mmol/L indicate high risk of diabetic ketoacidosis. Consider urgent hospital assessment

- Urine ketones + to ++ (1.5–3.0 mmol/L on blood ketone meter)
- Urine ketones +++ to ++++ (>3.0 mmol/L on blood ketone meter)

Total daily insulin dose	Give an additional 10% of rapid-acting or mixed insulin every 2 hours	Give an additional 20% of rapid-acting or mixed insulin every 2 hours
Up to 14 units	1 unit	2 units
15–24 units	2 units	4 units
25–34 units	3 units	6 units
35–44 units	4 units	8 units
45–54 units	5 units	10 units

If you take more than 54 units or if you are unsure how to alter your dose, contact your specialist team or GP

Test blood glucose level and blood/urine ketones every 2 hours, including through the night

Blood glucose more than 11 mmol/L and ketones present?

- Yes – repeat process → **Blood ketones greater than 1.5 mmol/L indicate high risk of diabetic ketoacidosis. Consider urgent hospital assessment**
- No → As illness resolves, adjust insulin dose back to normal

If you start vomiting, are unable to keep fluids down or are unable to control your blood glucose or ketone levels, SEEK URGENT MEDICAL ADVICE

DO NOT STOP TAKING YOUR INSULIN EVEN IF YOU ARE UNABLE TO EAT

Adapted from:
TREND-UK (2018) *Type 1 diabetes: What to do when you are ill*; and TREND-UK (2020) *Type 2 diabetes: What to do when you are ill*

Useful resources for insulin users

TREND-UK – *What to do when you are ill:*
Type 1 diabetes | Type 2 diabetes