

COVID-19 Guidelines for Diabetes Services

Statewide Diabetes Clinical Network

Guideline purpose

Planning and delivery of the response to COVID-19 is led by the individual Hospital and Health Service (HHS). This document provides general guidance for consideration by diabetes endocrine services to complement HHS planning and response activities.

Interstate experience at times of high community transmission of COVID-19 identified hyperglycaemia and its management as a common clinical challenge for services when managing people admitted with COVID-19 disease. This guide is intended to support health professionals managing hyperglycaemia in the inpatient ward setting.

General

- There are no specific requirements for people with diabetes in relation to:
 - COVID-19 screening and triage
 - Isolation requirements/capacity
 - Equipment and medicines
- Diabetes and hyperglycaemia are risk factors for severe illness and death in COVID-19 disease.
- People with pre-existing diabetes are at risk for unstable diabetes and developing acute complications.
- Newly detected hyperglycaemia is common in COVID-19 disease patients.
- Dexamethasone used in the treatment of COVID-19 increases the likelihood of hyperglycaemia in people with and without diabetes.

Workforce and funding considerations

These issues will be considered in the next iteration of this guideline. For more information, see [Work permissions and restrictions framework for workers in health care settings](#).

Outpatient Services

- Maintain outpatient services for people at greatest risk from acute complications of diabetes including:
 - Diabetes in Pregnancy
 - Rapid Access Clinics for example:
 - Diabetes in children
 - Category 1 type 1 diabetes (including newly diagnosed type 1 diabetes)
 - Category 1 endocrine
 - High-Risk Foot

Inpatient Services

- Consider redirecting diabetes services to support inpatient glycaemic management of people admitted with COVID disease.
- Identify sources of expert endocrine advice accessible by staff on wards.

Inpatient management of hyperglycaemia and diabetes in adults with COVID-19

Clinical Context

Diabetes and hyperglycaemia are risk factors for severe illness and death in COVID-19 disease. People with pre-existing diabetes are at risk for unstable diabetes and developing acute complications. Newly detected hyperglycaemia is common in COVID-19 disease patients. Dexamethasone used in treatment for COVID-19 increases the likelihood of hyperglycaemia in people with and without diabetes.

This guide is intended to support health professionals who infrequently manage or prescribe for people with diabetes in the inpatient setting. Table 1 shows included and excluded clinical settings.

This guide is to be used in conjunction with the [Queensland Insulin Subcutaneous Order and Blood Glucose Record – Adult](#) form, which includes suggestions for commencing and adjusting insulin regimens.

Table 1 Applicability of this guide to clinical areas

Applicable (included)	Not applicable (excluded)
<p>This guide is applicable for:</p> <ul style="list-style-type: none">• Assessment of people admitted to inpatient wards• Management of diabetes in people with COVID-19 disease	<p>This guide is not applicable to:</p> <ul style="list-style-type: none">• Paediatric patients• Intensive Care Units—Insulin infusions are more commonly used• Virtual Care Wards• Pregnant women with any type of diabetes (T1DM, T2DM, GDM):<ul style="list-style-type: none">○ Different treatment targets apply○ Consult Obstetric Medicine service○ Refer to Queensland Clinical Guideline: <i>Maternity care for mothers and babies during the COVID-19 pandemic</i> (https://www.health.qld.gov.au/qcg)

Consultation with Diabetes and Endocrinology Specialists

Seek advice from specialist diabetes or endocrine services regarding:

- Type 1 diabetes
- Diabetic ketoacidosis (DKA)
- Blood Glucose level (BGL) greater than 20 mmol/L for more than 6 hours (consecutive)
- BGL greater than 16 mmol/L for more than 24 hours (consecutive)
- Severe hypoglycaemia — One BGL less than 3 mmol/L
- Recurrent hypoglycaemia — Two or more BGL less than 4 mmol/L in 48 hours

If required, seek advice for any other diabetes related concern.

Assessment and Glucose Monitoring

Glucose monitoring requirements for patient scenarios are defined in Table 2 **Glucose monitoring for inpatients** Table 2. General glycaemic targets are provided in Table 3 **Glycaemia targets**.

Dexamethasone increases the likelihood of hyperglycaemia and requires additional glucose monitoring.

Additional considerations for glucose monitoring:

- Record BGLs in the [Insulin Subcutaneous Order and Blood Glucose Record – Adult](#) form
 - Follow alerts and instructions
- Increase or decrease capillary glucose monitoring frequency as clinically indicated (e.g. consider stability of glycaemia)
- If newly detected hyperglycaemia (fasting blood glucose greater than or equal to 7.0 mmol/L OR random blood glucose greater than or equal to 11.1 mmol/L):
 - Monitor blood glucose QID
 - Perform formal (laboratory) HbA1c to assess for undiagnosed diabetes
- If pre-existing diabetes, perform formal (laboratory) HbA1c on admission

Table 2 Glucose monitoring for inpatients

Scenario	Risk of adverse glycaemic event (BGL less than 4 mmol/L; OR BGL greater than 16 mmol/L; OR DKA)	Glucose monitoring
NO diabetes; BUT NO Dexamethasone	Low	Single glucose measure at admission (laboratory or finger-prick)
NO diabetes; AND Dexamethasone	Hyperglycaemia potential	BD glucose measure (AM before breakfast and PM before dinner) for 72 hours from commencement of Dexamethasone
Diabetes; BUT NO Insulin/sulphonylurea*	Hyperglycaemia potential	BD glucose measure (AM before breakfast and PM before dinner)
Diabetes AND Dexamethasone	Hyperglycaemia likely	QID glucose measure (before meals and before bed)
Diabetes AND Insulin/sulphonylurea*	Hypoglycaemia and hyperglycaemia potential	QID glucose measure (before meals and before bed)
Diabetes AND SGLT-2 inhibitors*	DKA potential (even if glucose normal)	Measure ketones QID until SGLT-2 inhibitor ceased for 72 hours. Follow DKA protocol if required

*GLP-1 agonists and DPP-IV inhibitors do not contribute significantly to risk of adverse glycaemic events. Refer to Table 4 Examples of non-insulin glucose-lowering medications by class.

Table 3 Glycaemia targets

Aspect	Target range
General population	<ul style="list-style-type: none"> • 4.0 – 12.0 mmol/L fasting and pre-meals • Target range can be individualised
End of life care	<ul style="list-style-type: none"> • Avoid symptomatic hyperglycaemia or hypoglycaemia

Managing diabetes in inpatients with COVID-19 disease

Non-insulin glucose-lowering medications

- On admission, withhold:
 - Metformin, Sulphonylurea, GLP-1 agonist, SGLT-2 inhibitor
 - Refer to Section *Insulin management*
- DPP-IV inhibitor may be continued
- Consider recommencing non-insulin glucose-lowering medications when clinically stable (e.g., resolution of sepsis or systematic inflammatory response, resumption of normal diet, stabilised renal function at baseline, awaiting discharge) [refer to Section *Discharge and Follow-up*]
- Multiple drug classes may be present in combination therapies

Table 4 Examples of non-insulin glucose-lowering medications by class

Class	Examples
Sulphonylureas	<ul style="list-style-type: none"> • gliclazide, glimepiride, glipizide, glibenclamide
GLP-1 agonists	<ul style="list-style-type: none"> • semaglutide, dulaglutide, liraglutide, exenatide
SGLT-2 inhibitors	<ul style="list-style-type: none"> • empagliflozin, dapagliflozin, ertugliflozin
DPP-IV inhibitors	<ul style="list-style-type: none"> • linagliptin, saxagliptin, sitagliptin, vildagliptin, alogliptin
Biguanidine	<ul style="list-style-type: none"> • metformin

Insulin management

Aspect	Considerations
Type 1 Diabetes	<ul style="list-style-type: none"> • Continue insulin regimen
Type 2 diabetes (NOT requiring insulin pre-hospitalisation)	<ul style="list-style-type: none"> • Withhold non-insulin glucose-lowering medications [refer to Section '<i>Pre-admission non-insulin glucose-lowering medications</i>'] • If hyperglycaemia (one BGL (pre-meal/bedtime) greater than 16.0 mmol/L; OR two BGL greater 12.0 mmol/L in 24 hours), initiate insulin
Type 2 diabetes (Requiring insulin pre-hospitalisation)	<ul style="list-style-type: none"> • Continue usual insulin regimen • Consider amending regimen (particularly if glycaemic control is suboptimal) to: <ul style="list-style-type: none"> ◦ Insulin (long acting) once daily AND insulin (short acting) three times daily with meals (basal-bolus)
Initiation, titration, and management of insulin	<ul style="list-style-type: none"> • Refer to Queensland Insulin Subcutaneous Order and Blood Glucose Record – Adult form
Adjusting insulin when COMMENCING Dexamethasone	<ul style="list-style-type: none"> • Initiation of high-dose dexamethasone (greater than 4 mg/day) usually increases insulin requirement significantly (expected 40-80% increase) • When commencing dexamethasone: <ul style="list-style-type: none"> ◦ Consider proactively increasing insulin dose and prescribing supplemental insulin orders ◦ Alternatively, adjust insulin dose on the following day, based on extra supplemental insulin doses received in the preceding 24 hours
Adjusting insulin when CEASING Dexamethasone	<ul style="list-style-type: none"> • Hyperglycaemic effect of dexamethasone will wane over 48 hours. • Insulin requirements are likely to return to pre-dexamethasone requirement levels by 48 hours post last dose. • When ceasing Dexamethasone: <ul style="list-style-type: none"> ◦ 24 hours after ceasing Dexamethasone, reduce insulin moderately <ul style="list-style-type: none"> ▪ Suggested: reduce insulin dose by 50% of the increase on baseline requirements ◦ 48 hours after ceasing Dexamethasone, reduce insulin significantly <ul style="list-style-type: none"> ▪ Suggested: reduce insulin dose back to baseline

Discharge and Follow-up

Aspect	Considerations
Pre-existing diabetes	<ul style="list-style-type: none"> • Recommence pre-admission glucose-lowering medications or insulin regimen • Resume SGLT-2 inhibitors at discharge only when patient has resumed normal caloric intake • If admission HbA1c greater than 9.0%, consider escalation in glucose-lowering medications or new insulin treatment • Diabetes education service for insulin initiation and education • Arrange follow-up with patient's usual diabetes treatment team (or discuss with Endocrinology & Diabetes team for follow-up plans) and General Practitioner
Newly detected hyperglycaemia	<ul style="list-style-type: none"> • If HbA1c less than 6.5%: <ul style="list-style-type: none"> ○ BGL less than 10 mmol/L upon cessation of dexamethasone: <ul style="list-style-type: none"> ▪ No further action required before discharge. Arrange GP follow-up in 4 weeks ○ BGL greater than 10 mmol/L upon cessation of dexamethasone: <ul style="list-style-type: none"> ▪ Commence glucose-lowering medications ▪ Arrange GP follow-up within 2-4 weeks • If HbA1c 6.5–8.0%: <ul style="list-style-type: none"> ○ Commence glucose-lowering medications ○ Arrange GP follow up within 2-4 weeks • If HbA1c greater than 8.0%: <ul style="list-style-type: none"> ○ Discuss with Endocrinology and Diabetes team for individual treatment and follow-up plans

Version control

Version	Date	Author	Feedback / change	Date approved by CSRG	Proposed review date
V1.0	March 2020	Diabetes Network Steering Committee	Endorsed by Diabetes Network Steering Committee		May 2022
V2.0	May 2020	Diabetes Network Steering Committee	Endorsed by Diabetes Network Steering Committee		May 2022
V3.0	December 2021	Diabetes Network Steering Committee	Added workforce and funding reference. Formatting changes. Approved by CSRG.	22/12/2021	May 2022