

South East London Clinical Guidance for the Management of Diabetes in Ramadan for Healthcare Professionals in Primary Care

1. Introduction

- Fasting during Ramadan is one of the five pillars of Islam. The timing of Ramadan is based on the lunar calendar (355 days per lunar year), therefore Ramadan varies year to year occurring 10–11 days earlier every year¹.
- When followers observe the fast they must refrain from eating and drinking between dawn and sunset. In some parts of the world, daylight can last up to 20 hours in the peak of summer¹. Two meals are generally eaten during each 24hour period:
 - **Suhoor** – the meal eaten early in the morning before fasting
 - **Iftar** – the meal eaten after sunset
- The month-long (29–30 day) fast is obligatory for all healthy Muslims who have reached puberty². There is an intense desire to participate in fasting, even among those who could **seek exemption**, such as the elderly, children, the infirm and pregnant women².
- Please see [Diabetes and Ramadan Practical Guidelines](#) written in collaboration with the International Diabetes Federation (IDF) and the Diabetes and Ramadan (DAR) International Alliance or [Diabetes UK](#) for further information on Ramadan.

2. Purpose and Scope

With the worldwide prevalence of diabetes increasing, the number of people with diabetes who fast during Ramadan is set to rise. Therefore the importance of effective guidelines for the management of diabetes during Ramadan fasting is clear.

This guidance aims to provide support and education to:

- a. Primary care health care professionals (HCPs)
- b. People diagnosed with diabetes who are fasting during Ramadan.

When fasting may significantly affect the health of the faster or when a subject is sick, Islam **exempts** that person from fasting. However, a significant number of people persist in fasting against the advice of their doctors and the permission of religious authorities. All people are instructed to follow medical advice and should not fast if the probability of harm is high. These recommendations are approved by the IDF, Diabetes UK and Islamic Scholars.

This guidance is designed for people with Type 1 and Type 2 diabetes mellitus, over the age of 16 years. Please refer all people managed under specialist diabetes teams (community or hospital) back to the specialist team for advice and guidance on the management of diabetes during Ramadan.

This guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient. Where individuals do not feel that they have the expertise to advise, advice should be sought from diabetes specialist teams in line with local commissioning arrangements.

3. Key components of a Ramadan-focused educational programme (IDF-DAR)²

There are a number of risks associated with fasting for people with diabetes including:

- **Diabetic ketoacidosis**
- **Hypoglycaemia**
- **Hyperglycaemia**
- **Dehydration**
- **Thrombosis**

Therefore, education is key to reduce these risks. **All people with diabetes who are contemplating fasting** should schedule a visit with their healthcare professional 2-3 months in advance of Ramadan, or discuss at their annual review. The healthcare professional and the patient should undertake risk stratification, and for those wishing to fast, develop an individualised management plan.

When undertaking risk stratification, to quantify risk, consider each of the following categories (in table 1) and refer to table 2.

a. Detailed patient history	b. Type of diabetes	c. Patient medications	d. Individual hypoglycaemia risk
e. Presence of complications and/or comorbidities	f. Individual social and work circumstances	g. Patient's ability to self-manage diabetes	h. Previous Ramadan experience

Table 1: Categories to consider for risk stratification

Once the level of risk has been identified and the patient confirms they wish to fast, an individualised management plan should be developed. Things to be covered within the management plan should include advice on the following:

- a) The role of Self-Monitoring of Blood Glucose (SMBG)
- b) Driving (eg following [Driving and Vehicle Licencing Agency \(DVLA\) guidance](#) and implications for fasting) (see <https://drc.bmj.com/content/6/1/e000520> for further information)
- c) When to exercise
- d) Fluids and meal planning
- e) Medication adjustments during fasting (see section 5) and after fasting
- f) When to break the fast
- g) Identification, management and reporting of hypoglycaemia and hyperglycaemia
- h) Who to contact if the patient needs support

For further information please refer to the IDF-DAR [Diabetes and Ramadan Practical Guidelines](#).

Table 2: Adapted from the International Diabetes Federation and the Diabetes and Ramadan International Alliance (IDF-DAR) risk categories and recommendations for patients with diabetes who fast during Ramadan^{2,8}

Risk category and Religious Opinion of Fasting ^a	Patient Characteristics	Comments
<p>Category 1: very high risk</p> <p>Advise MUST NOT fast</p>	<p>One or more of the following:</p> <ul style="list-style-type: none"> Severe hypoglycaemia within the 3 months prior to Ramadan^b DKA within the 3 months prior to Ramadan Hyperosmolar hyperglycaemic state within the 3 months prior to Ramadan History of recurrent hypoglycaemia History of hypoglycaemia unawareness Poorly controlled T1DM Acute illness Pregnancy in pre-existing diabetes or GDM treated with insulin or sulfonylureas Chronic dialysis or CKD stage 4 & 5 Advanced macrovascular diabetic complications Old age with ill health Type 2 diabetes requiring insulin (MDI or mixed insulin) with no prior experience of safe fasting* 	<p>If patients wish to fast they should be supported and should:</p> <ul style="list-style-type: none"> Receive structured education Be followed by a qualified diabetes team Check their blood glucose regularly (SMBG) Adjust medication dose as per recommendations Be prepared to break the fast in case of hypo- or hyperglycaemia Be prepared to stop the fast in case of frequent hypo- or hyperglycaemia or worsening of other related medical conditions
<p>Category 2: high risk</p> <p>Advise should NOT fast</p>	<p>One or more of the following:</p> <ul style="list-style-type: none"> T2DM with sustained poor glycaemic control^c Well-controlled T1DM Well-controlled T2DM on MDI or mixed insulin with prior experience of safe fasting Pregnant T2DM or GDM controlled by diet only or metformin CKD stage 3 Stable macrovascular diabetes complications Patients with comorbid conditions that present additional risk factors People with diabetes performing intense physical labour Treatment with drugs that may affect cognitive function Type 2 diabetes on SGLT-2 inhibitors (consider alternatives/stopping)* 	<p>Patients who fast should:</p> <ul style="list-style-type: none"> Receive structured education Check their blood glucose regularly (SMBG) Adjust medication dose as per recommendations
<p>Category 3: moderate/low risk</p> <p>Decision to not fast based on discretion of medical opinion and ability of the individual to tolerate fast</p>	<p>Well-controlled T2DM treated with one or more of the following:</p> <ul style="list-style-type: none"> Lifestyle therapy Metformin Acarbose Thiazolidinediones Second-generation SU's (moderate risk, regular SMBG advised) Incretin-based therapy (DPP-4 inhibitors or GLP-1 RAs) Basal Insulin (moderate risk, regular SMBG advised) 	<p>Patients who fast should:</p> <ul style="list-style-type: none"> Receive structured education Check their blood glucose regularly (SMBG) Adjust medication dose as per recommendations
<p>Abbreviations¹: CKD – chronic kidney disease; DKA – diabetic ketoacidosis; DPP-4 - dipeptidyl peptidase-4-; GDM – gestational diabetes mellitus; GLP-1 RA – glucagon-like peptide-1 receptor agonist; MDI – multiple dose insulin; SGLT-2 – sodium-glucose co-transporter 2; SMBG- self-monitoring of blood glucose; SU – sulfonylurea; T1DM – Type 1 diabetes mellitus; T2DM – Type 2 diabetes mellitus.</p>		
<p>Notes^{1 a} In all categories, people with diabetes should be advised to follow medical opinion due to probability of harm. The decision to fast is a personal decision for the person with diabetes, who should be supported to achieve best possible outcomes.</p>		
<p>^b Hypoglycaemia that is not due to accidental error in insulin dose.</p>		
<p>^c The level of glycaemic control is to be agreed upon between doctor and patient according to a multitude of factors. Consider HbA1c >75mmol/mol for over 12 months</p>		
<p>* risk upgraded in light of covid-19 pandemic⁸</p>		

Please Note: All patients should break their fast if^{1,3}:

- **Blood glucose <4.0 mmol/L** if on insulin or sulfonylureas (e.g. gliclazide) or insulin secretagogues e.g repaglinide
- **Blood glucose >16.0 mmol/L**
- **Symptoms of hypoglycaemia, hyperglycaemia, dehydration or acute illness occur EVEN if in fasting time**
- **Driving with blood glucose <5.0 mmol and if on insulin or sulfonylureas (e.g. gliclazide) or insulin secretagogues e.g repaglinide**

4. Recommended timings to check blood glucose levels during Ramadan fasting

If fasting during Ramadan, people with diabetes may need to test blood glucose levels more frequently and/or at different times of the day to usual in order to monitor blood glucose levels, determine appropriate dosing and reduce the risks of hypo and hyperglycaemia.

For those classified within the low or moderate risk category, it would be advisable for the patient to monitor up to four times a day. Suggested times for testing include pre-Suhoor, midday, pre-Iftar³ and if they experience symptoms of hypoglycaemia, hyperglycaemia or feeling unwell¹. For those classified within the high risk or very high-risk category, more frequent monitoring will be required. Suggested times for testing include pre-Suhoor, when waking/morning, midday to late afternoon, pre-Iftar, 2 hours post Iftar³ and if they experience symptoms of hypoglycaemia, hyperglycaemia or feeling unwell¹.

In addition, further monitoring may be needed, for example:

- To meet [DVLA requirements](#)
- During periods of illness
- If hypoglycaemia is suspected
- Previous history of hypoglycaemia
- Current HbA1c/blood glucose levels

5. Pharmacological management of people with T2DM^{1,2}

Table 3 provides a guide to dose adjustments for people who fast during Ramadan. Additional factors such as current HbA1c & glucose levels, co-morbidities, driving and history of hypoglycaemia and hyperglycaemia need to be taken into account. It is common practice during Ramadan to have the larger evening meal at Iftar and a smaller meal at Suhoor with long periods of fasting (for example for the UK in 2019, times are predicted to be between 2-3am until 8-9pm) in between. Therefore the recommendations below suggest higher doses of medication in the evening with Iftar. If meal patterns are different for individuals, adjustments will need to be made. As with all changes to diet and medication, people should be advised to self-monitor their blood glucose levels as further titrations or adjustments may need to be made.

Table 3: A guide to dose adjustments for people taking antidiabetic agents who fast during Ramadan

Medicine	Dosing Advice
	Changes to metformin dosing
Metformin	<p style="text-align: center;">Once-daily dosing <i>(Both immediate and slow release)</i></p> <p>No dose modification usually required</p> <p>Take in the evening (at Iftar)</p>
	<p style="text-align: center;">Twice-daily dosing <i>(Both immediate and slow release)</i></p> <p>No dose modification usually required</p> <p>Take in the evening (at Iftar) and morning (at Suhoor)</p>
	<p style="text-align: center;">Three times daily dosing</p> <p>Morning dose to be taken at Suhoor (morning)</p> <p>Combine afternoon dose with evening dose & take in the evening (at Iftar)</p>
Acarbose	No dose modification as the risk of hypoglycaemia is low.
Thiazolidinediones (TZDs)	No dose modifications. Dose can be taken in the evening (at Iftar) or in the morning (at Suhoor).
Glucagon-like peptide -1 receptor agonist (GLP-1 RAs)	As long as GLP-1 RAs have been appropriately initiated prior to Ramadan (at least 6-8 weeks before), no further dose modifications are required. If initiated less than 6 weeks before, consult initiating prescriber for advice.
	Changes to SU and short acting insulin secretagogue dosing
Sulfonylureas (SU) or short acting secretagogues e.g. repaglinide	<p>Once-daily dosing Take in the evening (at Iftar)</p>
	<p style="text-align: center;">Twice-daily dosing Same morning and evening dose</p> <p>Evening dose (at Iftar) remains unchanged. Consider reducing the morning dose (at Suhoor) in patients with well-controlled blood glucose levels by 25-50%.</p>
	<p style="text-align: center;">Twice-daily dosing Higher morning and lower evening dose</p> <p>Switch morning and evening dose. Consider also reducing the morning dose (at Suhoor) in patients with well-controlled blood glucose levels by 25-50%.</p>
	<p style="text-align: center;">Twice-daily dosing Lower morning and higher evening dose</p> <p>Both doses remain unchanged. Consider reducing the morning dose (at Suhoor) in patients with well-controlled blood glucose levels by 25-50%.</p>
<p>Note: Higher risk of hypoglycaemia with SUs</p>	<p>Three-times daily dosing</p> <p>Stop lunch time dosing. Switch morning and evening dose if the higher dose is in the morning. Consider reducing the morning dose (at Suhoor) in patients with well-controlled blood glucose levels by 25-50%.</p>
	<p style="text-align: center;">Older drugs in the class and long-acting or modified release SU</p> <p>Modified release sulfonylureas: Change to short acting preparation e.g. gliclazide due to the risk of hypoglycaemia with modified release sulfonylureas and follow the advice above.</p> <p>Older drugs (e.g. glibenclamide) carry a higher risk of hypoglycaemia and should be avoided. Change to short acting preparation e.g. gliclazide due to the risk of hypoglycaemia with modified release sulfonylureas and follow the advice above.</p> <p>Second generation Sulfonylureas (gliclazide, glimepiride) should be used in preference due to the lower risk of hypoglycaemia.</p>
Dipeptidyl Peptidase -4 (DPP-4) inhibitors	No dose modifications.
Sodium glucose co-transporter 2 (SGLT-2) inhibitors	As long as SGLT-2 inhibitors have been appropriately initiated prior to Ramadan (at least 4 weeks before), no further dose modifications are required. If initiated less than 4 weeks before, consult initiating prescriber for advice. Take in the evening (at Iftar). Ensure adequate hydration.

Table 4: A guide to dose adjustments for people who fast during Ramadan with insulin

Insulin Therapy ²	Dosing Advice
Basal therapy	<ul style="list-style-type: none"> Once daily dosing - To be administered in the evening (at Iftar). Reduce dose by 15-30%. Twice daily dosing - Lower dose to be taken in the morning (at Suhoor). Reduce dose by 25-50%. Higher dose to be taken in the evening (at Iftar). No change to this dose. Basal Bolus dosing/ Basal Plus- Reduce basal dose by 15- 30%. Note: <i>Bolus as per usual strategy with meals e.g. not to be taken if the patient is not eating. Adjust bolus to intake.</i>
Rapid – or short-acting prandial /bolus insulin	<ul style="list-style-type: none"> Take normal dose in the evening (at Iftar). Omit lunchtime dose. Reduce the morning dose (at Suhoor) by 25-50%.
Biphasic insulin e.g. 30/70, 25/75, 50/50 (high risk group)	<ul style="list-style-type: none"> Once daily dosing – Take normal dose in the evening (at Iftar).
	<ul style="list-style-type: none"> Twice daily dosing (if equivalent doses in morning and evening) – Reduce morning dose by 50% and take in the morning (at Suhoor). Evening dose remains unchanged, take in the evening (at Iftar). (Consider further reduction of morning dose if time between evening (Iftar) and morning (Suhoor) meals is less than 5 hours.).
Biphasic insulin e.g. 30/70, 25/75, 50/50 (high risk group)	<ul style="list-style-type: none"> Twice daily dosing (if higher dose in morning) - Switch the morning and evening dose. Consider reducing the switched dose in the morning (at Suhoor) by 50% if necessary. (Consider further reduction of morning dose if time between evening (Iftar) and morning (Suhoor) meals is less than 5 hours.).
	<ul style="list-style-type: none"> Twice daily dosing (if lower dose in morning) - Consider reducing morning dose by 50% if required and take in the morning (at Suhoor). Evening dose remains unchanged. Take at Iftar. (Consider further reduction of morning dose if time between evening (Iftar) and morning (Suhoor) meals is less than 5 hours.).
	<ul style="list-style-type: none"> Three times daily dosing – Omit lunch-time dose. Adjust morning dose and evening dose as for twice daily dosing above.

6. Lifestyle and dietary advice for patients during Ramadan

Please see [patient leaflet](#) for:

- Dietary advice relating to fluid intake and meal planning
- When to exercise
- Dealing with hypoglycaemia and when to break the fast

For further information on a Ramadan-focused educational programme please refer to the IDF-DAR [Diabetes and Ramadan Practical Guidelines](#).

7. Lifestyle and medication changes after Ramadan

The end of Ramadan is followed by a 3-day festival known as Eid ul-Fitr⁵. This is usually marked with festivities, sharing of food, and sweet beverages. Patients with diabetes should be advised about the risks of hyperglycaemia during this time, as many individuals overindulge in eating and drinking. When the month of Ramadan ends, the patient's therapeutic regimen should be adjusted and may be changed back to its previous regimen⁵.

Switching back to usual medication regimen after Ramadan

Patients should be advised to switch back to their usual regimen and doses after Ramadan has ended i.e. to revert to usual doses from the morning following Ramadan (first day of Eid-ul-Fitr). All medication doses will be the same as before Ramadan however advice should be given for the following situations if morning and evening doses or

timings have been swapped during Ramadan to avoid stacking of the dose taken at last Iftar and first usual morning dose.

Medication	Dosing advice
Sulfonylureas (SU) or short acting secretagogues e.g. repaglinide	<p>Take usual dose on first day following Ramadan (Eid-ul- Fitr) unless patient's morning and evening doses have been swapped during Ramadan (to give a higher dose in the evening and lower dose in the morning during Ramadan). In which case:</p> <ul style="list-style-type: none"> - Last iftar of Ramadan (evening) – reduce dose by 50% - First day following Ramadan (Eid-ul- Fitr) – usual dose and switch back to usual doses/timings
Basal therapy	<p>Once daily dosing: Take usual dose on first day following Ramadan (Eid-ul- Fitr) unless patient's dose timing has been changed to evening from morning during Ramadan. In this case:</p> <ul style="list-style-type: none"> - Last iftar of Ramadan (evening) – reduce basal insulin dose by 50% to avoid stacking the next day - First day following Ramadan (Eid-ul- Fitr) – usual dose and switch back to usual doses/timings <p>Twice daily dosing: Take usual dose on first day following Ramadan (Eid-ul- Fitr) unless patient's morning and evening doses have been swapped during Ramadan (to give a higher dose in the evening and lower dose in the morning during Ramadan). In this case:</p> <ul style="list-style-type: none"> - Last iftar of Ramadan (evening) – reduce dose by 50% to avoid stacking the next day - First day following Ramadan (Eid-ul- Fitr) – usual dose and switch back to usual doses/timings
Biphasic insulin	<p>Once daily dosing: Take usual dose on first day following Ramadan (Eid-ul- Fitr) unless patient's morning and evening doses have been swapped during Ramadan (to give a higher dose in the evening and lower dose in the morning during Ramadan). In this case:</p> <ul style="list-style-type: none"> - Last iftar of Ramadan (evening) – reduce biphasic insulin dose by 50% to avoid stacking the next day - First day following Ramadan (Eid-ul- Fitr) – usual dose and switch back to usual doses/timings <p>Twice and three times a day dosing: Take usual dose on first day following Ramadan (Eid-ul- Fitr) unless patient's morning and evening doses have been swapped during Ramadan (to give a higher dose in the evening and lower dose in the morning during Ramadan). In this case:</p> <ul style="list-style-type: none"> - Last iftar of Ramadan (evening) – reduce biphasic insulin dose by 50% to avoid stacking the next day - First day following Ramadan (Eid-ul- Fitr) – usual dose and switch back to usual doses/timings

Reference

1. Diabetes and Ramadan: Practical Guidelines International Diabetes Federation (IDF), in collaboration with the Diabetes and Ramadan (DAR) International Alliance. Published April 2016.
2. Hassanein. M, Al-Arouj. M, Hamdy. O, et al. On behalf of the International Diabetes Federation (IDF), in collaboration with the Diabetes and Ramadan (DAR) International Alliance Diabetes and Ramadan: Practical guidelines. Diabetes Research and Clinical Practice. Published March 2017, 303-216.
3. European Association for the Study of Diabetes 2019. Diabetes and Ramadan accessed <https://www.easd.org/education/easd-e-learning.html> 17.03.2019
4. Muslim Aid accessed via <https://www.muslimaid.org> on 26.03.2018.
5. Ibrahim. M, Abu Al Magd. M, Annabi. F A, et al. Recommendations for management of diabetes during Ramadan: update 2015. *BMJ Open Diabetes and Research and care*. Published June 2015, 1-10.
6. Ghouri N, Hussain S, Mohammed G et al. 2018. Diabetes, driving and fasting during Ramadan: the interplay between secular and religious law. *BMJ Open Diabetes Research and Care* 2018;6:e000520
7. Local clinical expertise
8. British Islamic Medical Association. Ramadan Rapid Review & Recommendations 2020. Accessed at <https://britishima.org/ramadan-rapid-review/> 28.4.20