



## CLINICAL GUIDELINE

# Diabetes Mellitus During Ramadan

A guideline is intended to assist healthcare professionals in the choice of disease-specific treatments.

Clinical judgement should be exercised on the applicability of any guideline, influenced by individual patient characteristics. Clinicians should be mindful of the potential for harmful polypharmacy and increased susceptibility to adverse drug reactions in patients with multiple morbidities or frailty.

If, after discussion with the patient or carer, there are good reasons for not following a guideline, it is good practice to record these and communicate them to others involved in the care of the patient.

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<b>Approval Group:</b>	Medicines Utilisation Subcommittee of ADTC

### Important Note:

The Intranet version of this document is the only version that is maintained. Any printed copies should therefore be viewed as 'Uncontrolled' and as such, may not necessarily contain the latest updates and amendments.

# **Guidelines for the Management of Diabetes Mellitus during Ramadan**

## **NHS Greater Glasgow & Clyde Managed Clinical Network for Diabetes**

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October 2024**

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## Background and general principles

The religious obligation of fasting for the 29 or 30 days of Ramadan, the 9<sup>th</sup> month of the Muslim calendar is for every mentally and physically healthy adult Muslim. Adulthood is determined as the onset of menarche in a female and first seminal discharge in a male (or age 14.5 years if these have not occurred by this age). As the timing of Ramadan is based on the lunar calendar, Ramadan falls ~11 days earlier annually. Therefore over ~35 years, Ramadan passes through all 4 seasons; i.e. shorter fasts in the winter months and longer fasts in the summer. Thus, the fasts will stretch to up to 20 hours in Glasgow in the summer. Typically, the onset of dawn is 1.5-3 hours before sunrise, and is astronomically or mathematically calculated or arbitrarily determined depending on the preferred methodology used by one's local mosque. Owing to the temperate location of Scotland, valid difference of opinion exists in relation to the onset of the fast in summer months, **but typically fasts are  $\geq$  18 hours from May until the end of August.**

For the Muslim, fasting primarily involves the abstaining from food, drink and conjugal relations. The use of medication is dependent on the route the medication is consumed. As a general rule, all forms of oro-nasal medication that results in the medication going below the throat is not permitted. Similarly, rectal administration of medication would invalidate the fast. The permissibility or otherwise of different drug routes are summarised in **Box 1. Use of subcutaneous, intramuscular e.g., insulin injections generally does NOT invalidate the fast.** Intravenous treatments, especially if the drug/purpose is used for nutrition or a large volume are considered to invalidate the fast, but there is a difference of scholarly opinion in this matter. **Checking one's capillary blood glucose and giving venous or arterial blood samples also do not invalidate the fast.**

### Box 1 - Summary of differing opinion regarding medication routes\*

*All agree not allowed* —Oral, rectal, nasogastric†

*Majority agree not allowed* —Inhaled, intravenous

*All agree allowed* —Topical, intramuscular, subcutaneous

*Majority agree allowed* —Eye, ear

\* Sunni Islamic opinions

† Nasal and buccal may be allowed if there is no risk of passage into the throat and beyond

Adapted from [Mahmood et al. BMJ 2022;376:e063613](#)

The above restrictions are lifted out with the hours of fasting. However, it is common practice to have one meal (known as Suhoor or Sehri) just before dusk and another (known as iftar) after sunset. The size of such meals and consumption of other meals will vary, particularly in relation to the duration of the fasting period.

## Terminating the fast and exemptions from fasting on health grounds

Islam permits, and indeed supports, those with appropriate ailments to terminate the fast or be exempted from fasting, the two main options being:

- Making up the missed fast when health permits them to do so—either when the illness is no longer present, such as in acute illness, or when the illness is not worsened by fasting at another point in time in relation to chronic illness.
- An exemption from fasting in those whose illness will not permit them to keeping fasts indefinitely, this being replaced by a requirement to feed the poor.

Appropriate ailments can also include: 1) effects of old age; 2) frailty; 3) a condition which is stable, but through fasting, the condition can adversely affect health, or increase the risk of doing so e.g., anorexia. This also includes the abstaining from the use of medication which can cause the aforementioned e.g., epilepsy, hypoadrenalism when on hydrocortisone. Whilst the default is for pregnant and breastfeeding mothers to fast, if there is **ANY** concern or risk to mother or baby, then **fasts can and should be not be undertaken, or terminated (if concern arises), with subsequent fasts or make up fasts not kept until safe to do so.**

It is important that people with diabetes recognize the nature of their ailment so as to determine whether they would be expected to make up the fast at a later date when safe or appropriate to do so, or else feed a poor person for missed fasts if such an opportunity is not foreseen. Thus, people with diabetes thus need a thorough assessment, as the type of diabetes, regular treatment, acute issues, complications/comorbidities, social and lifestyle factors to determine what is best for them.

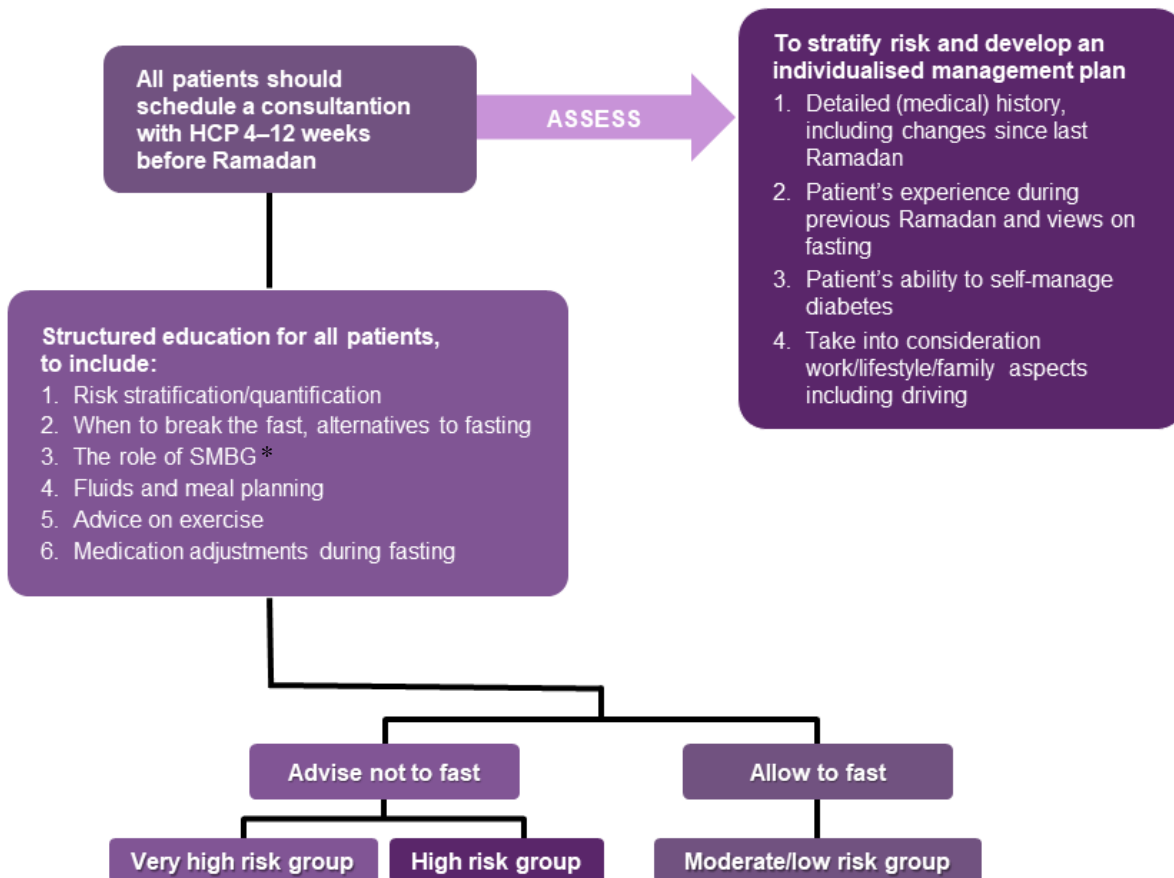
## Managing my patient

In general, safe fasting and feasting is usually possible for the majority of people with type 2 diabetes if they follow medical advice. The flow diagram below provides general guidance on risk stratifying patients and advice on fasting status. Although people with type 1 diabetes are advised not to fast, they should be considered on a case by case basis if on a basal bolus insulin regime, have good control, have had and follow appropriate education principles pertaining to self-management. The latest [IDF-DAR \(International Diabetes Federation and the Diabetes and Ramadan International Alliance\) Practical Guidelines 2021](#), provides all the necessary and detailed guidance in relation to the management of people with diabetes who intend to fast (with the exception of [driving guidance](#)). The main update from the previous [2017 Practical Guidelines](#) is the adoption of a risk scoring system, rather than the use of the well-known tabulated form of risk stratification. Although welcomed, there are significant limitations of the scoring system and this will be addressed later in the guideline. This local guidance summarizes key elements of the latest IDF-DAR guidance with relevant caution given to the scoring system. The guideline also incorporates key advice and guidance in [the BMJ practice pointer 'Advising patients with existing conditions about fasting during Ramadan'](#). Together, these resources will help facilitate HCPs in their consultations however the original resource should be referred to if further information or clarification is needed.

**Ultimately, all guidance referred to is informative and not authoritative or prescriptive and thus the application is at HCP discretion. Thus the application of any recommendations, particularly in relation to a positive decision to embark on fasting in Ramadan, should not replace clinical judgement if any differences arise and should not be undertaken by patients without involvement of their responsible HCP.**

## Initial review and risk stratifying patients

Figure 1 provides a useful pathway for HCPs to follow when managing patients in relation to Ramadan. At present there is no formal structured education programme in place in GGC, however, HCPs may wish to consider arranging one-to-one sessions for their patients with relevant members of the MDT to address the areas highlighted.



**Figure 1: You and your patient – an overview**

\*SMBG – Self-monitoring blood glucose

As of 2021, in an attempt to simplify risk and make it more patient-centric, the [latest IDF-DAR guidance](#) has moved away from a more prescriptive risk quantification approach to a risk scoring system. They have abolished the very high risk category. Whilst the new scoring system is welcomed, [it is not evidence based or validated and has significant limitations and may not meet the needs of some individual patients and may overquantify risk](#). Thus, it is advisable to follow the pathway in Figure 2 to help determine the risk for your patient. **Regardless of the risk assessment is used, as stated earlier, there is no substitute for clinical discretion and patient involvement in the decision-making process.**

Appendices 1-4 have information on: the latest IDF-DAR risk quantification (Appendix 1 and 2), our previous IDF-DAR-based risk stratification table (Appendix 3) and factors to consider that may alter/lower risk (Appendix 4).

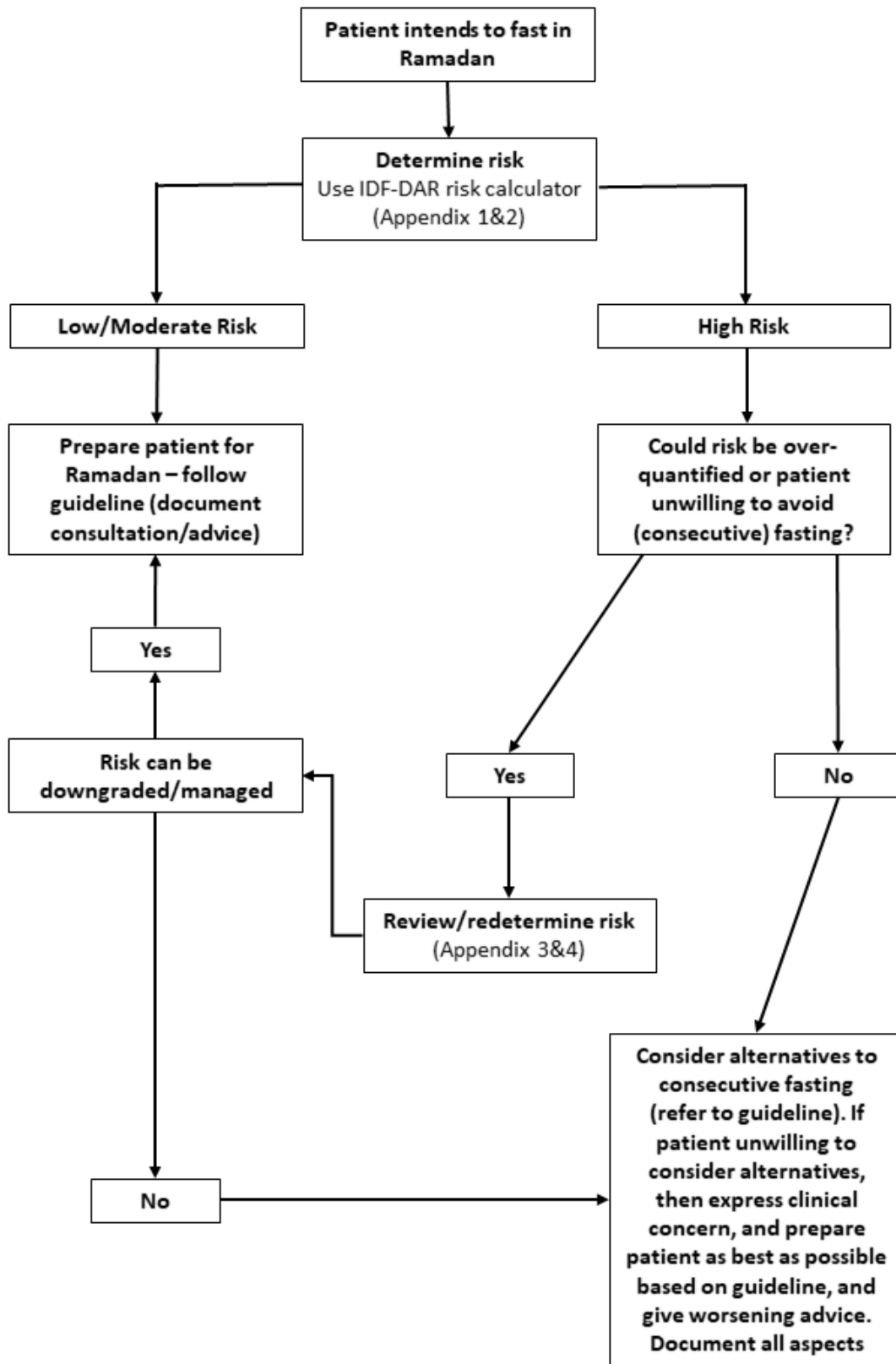


Figure 2: Risk quantifying/stratifying your patient

Co-morbidities and complications from their diabetes including cognition, older age and frailty, multi-dose necessary drug treatments; and factors such as concordance with medication ability and reliability for the patient to monitor blood glucose, access to specialist advice during the month and language barriers, role of driving (especially if on insulin and sulphonylureas) all should be explored in the pre-Ramadan work up.

In relation to pregnancy and breast feeding, in addition to the [general advice in the BMJ guidance](#), further consideration needs to be given to pregnancy-specific conditions/factors, e.g. hyperemesis, pregnancy-induced hypertension, pre-eclampsia and any other maternal/foetal factors that may be present/relevant. In such circumstances where there is uncertainty, or more importantly the mother insists on fasting despite it not considered safe to do so, discussion with the author of these guidelines or one of the reviewing consultants listed at the end of this guideline is advised.

[Although the latest evidence on DKA manifesting is not conclusive](#), seasonal factors should not be overlooked (Table 2), particularly in the summer months. These factors may influence a decision to temporarily abstain from fasting/consider fasting in the winter months. This may be of particular relevance to those on basal bolus insulin, twice daily insulin and sulphonylureas. Refer to [Summer–winter switching of the Ramadan fasts in people with diabetes living in temperate regions](#) for further guidance.

**Table 2: Risks to be considered during longer fasts**

Risk	Issue
Dehydration	Heat, activity and inadequate oral intake
DKA/HHS	More likely if poor baseline glycaemic control, although published evidence does not show increased risk of DKA
Hyperglycaemia	Can lead to the above 2. ≥3-5 x risk of hospital admission
Hypoglycaemia	insulin: CHO mismatch, use of (long acting) sulphonylureas & secretagogues ≥3-5 x risk of hospital admission

DKA / HHS – diabetic ketoacidosis / hyperosmolar hyperglycaemic state  
CHO - carbohydrates

### Religious sensitivities and advising your patient

Ultimately the decision to fast or not rests with the patient. It is worthwhile noting that the majority of Muslims adhere to one of 4 legal schools when it comes to rulings relating to religious actions and obligations. However, some Muslims may opt to follow another legal school (or no legal school) particularly when faced with a degree of hardship when in situations where there are complexities involved. Thus, if one legal school does not permit the use of ear drops whilst another one does, it would be considered valid for a patient to follow such an opinion. Not all patients are aware of these aspects and therefore this should be mentioned to them, in case they wish to explore.



In general, if a doctor feels it is in a patient's best interest not to fast and the decision has been based on a thorough assessment of all the medical and religious factors, then from a religious perspective, the patient is at the very least recommended to follow this advice, while some scholars may deem this verging on obligatory for some patients. Some patients may only accept such advice from a Muslim doctor knowledgeable enough in the clinical aspects of the case, although the logistics of achieving may not be plausible. In such a circumstance where it is not plausible, the patient should be advised to speak to a religious authority whom they trust conveying the clinical advice and reasoning given to them, so that they can explore their options. Finally, it may be appropriate for a patient to be given a list of questions to ask their imam or scholar if the doctor needs further information to help facilitate any medical opinion that needs to be reached.

It should be recognised that patients can find it difficult for social and religious reasons not to fast. It is therefore important that you:

- Reassure them that due to their ailment they are not contravening the Islamic Law (the Shari'ah), but actually correctly following it.
- Highlight that the maintenance of good health is imperative in Islam even during Ramadan.
- Inform them that religious leaders have strongly advised that those with health conditions seek professional advice and comply with this before fasting
- Remind them that the chronically ill may substitute fasting by providing food each day for the "poor". This act of generosity instead of fasting (called fidya) does not diminish a patient's reward from God and that patient should not forget about the other voluntary acts out with fasting that they can continue to participate in during the month e.g., the congregation night prayer and giving in charity.

[The BMJ guidance](#) has further information and guidance on the principles related dispensations and exemptions related to fasting due to health grounds. Information on the interaction between Islamic law (Shari'ah) and secular law e.g. safe driving when on insulin, please read the relevant sections in: [Diabetes, driving and fasting during Ramadan: the interplay between secular and religious law](#).

### **Trial/voluntary fasts prior to Ramadan**

Muslims are encouraged to keep voluntary fasts throughout the year included on specific dates in the Muslim calendar, including the month prior to Ramadan. Voluntary fasts can be broken even in the absence of an ordinarily valid reason. This provides an opportunity for the HCP and the patient to 'test' if fasting is safe and/or manageable in a relaxed manner. Box 2 summarises the value of trial fasting in preparation for Ramadan.

## Box 2 – Trial fasts

### Benefits

- *To evaluate individualised risks, especially if*
  - *A condition is new since the previous Ramadan*
  - *Circumstances or condition severity have changed*
  - *There have been medication changes*
  - *Medication change may be required during Ramadan*
- *To assess risk of dehydration and adequacy of nutritional changes*
- *To allow acclimatisation*
- *To assess whether fasting causes complications (e.g. deterioration in glycaemic control) and to therefore fine-tune changes to medication or decide that fasting is too high a risk*

### Advice for conducting trial fasts

- *Be adaptable*
- *Patients might want specific instruction, such as the number of days they should perform trial fasts*
  - *There is no supporting literature, but in our experience three to five “practice fasts” in the month before Ramadan (when fasting hours are similar) or, in higher risk cases, during shorter winter fasting days, is helpful. These could be consecutive days or, if risk is higher, non-consecutive*
- *Consider asking patients to document their trial fasts: what they ate, timings, etc*
- *Patients may be more willing to terminate trial fasts than Ramadan fasts if difficulty occurs*

Adapted from [Mahmood et al, BMJ 2022;376:e063613](#)

## Dietary advice

The latest IDF-DAR [Diabetes and Ramadan Practical Guidelines](#), provide comprehensive advice on all aspects of diet, including ethnic-specific advice on meal plan.

### Hydration

Limitation of fluid intake and prolonged fasts during the summer months poses a risk of dehydration. Fasting individuals should drink sufficient water after opening their fast and before beginning the next fast to prevent dehydration and caffeine containing drinks should be avoided to prevent diuresis.

Many patients will opt to pray the voluntary night (taraweeh) prayer either in the mosque or at home. This can involve prolonged periods of standing in a warm environment. Therefore, patients should carry additional fluid with them to consume between prayers, so as to not miss out on replenishing stores in the narrow time-frame in the summer fasts. As a general rule, two litres should be consumed during the non-fasting window, but medical advice should be sought/provided if this guidance needs modification based on lifestyle (e.g., strenuous work) or co-morbidities (e.g., heart failure or kidney disease).

## *Diet*

Fasting individuals should be advised to consume balanced meals both at Iftar and Suhoor.

### *Carbohydrates*

Ideally, carbohydrates should make up 45-50% of the total daily caloric intake. Slow energy release carbohydrates should be consumed such as wheat, oats, lentils, barley, semolina, beans and rice before and after fasting. A fibre intake of 20-35grams per day is recommended to help provide satiety whilst fasting. These include bran, cereals, whole wheat, grains and seeds, potatoes with the skin, vegetables and almost all fruit.

Foods that contain refined carbohydrates, processed grains and starchy foods should be consumed in limited quantities. These include sugary beverages, which are popular during the summer fasting months, traditional desserts, cakes, biscuits, chocolates, white rice, white bread, white potatoes and low fibre cereals.

Dates, which are the traditional food to be consumed when opening the fast can be consumed, but an excessive quantity should be avoided, particularly if other sugar-rich foods are being consumed at the same time.

### *Protein*

Protein should make up 20-30% of the total daily caloric intake, around 1.2g/kg of body weight. Protein enhances satiety and helps to build lean body mass. Foods such as fish, skinless poultry, dairy, nuts, seeds and legumes, such as chick peas, dhal and beans, are recommended.

### *Fat*

The daily fat intake should be limited to less than 30-35% of the total daily caloric intake. Saturated fat should be limited to less than 7% of the daily fat intake and polyunsaturated fatty acids (PUFAs) and monounsaturated fatty acids (MUFAs) such as olive oil or vegetable oil should make up the rest of the intake. Oily fish such as sardines, tuna and salmon are also beneficial.

Cooking methods involving deep frying and excessive use of oil should be avoided and instead a healthier approach of shallow frying, grilling or baking should be adopted such as samosas baked and not fried, cooking chapattis without oil. Oily curries can be made healthier by reducing the amount of oil used and using more onions and tomatoes to bulk out the curry.

## **Modifying/titrating anti-diabetic medication and insulin therapy**

The current international guidance covers all oral and injectable therapies. It has to be recognized that the evidence base is modest however, and ever evolving. Tables 2 and 3 summarise the key advice from current guidelines and is modified to reflect the longer fasts observed in our locality. As mentioned previously, **additional factors such as current**

**HbA1c & glucose levels, co-morbidities, complications, pregnancy, driving and history of hypoglycaemia and hyperglycaemia need to be taken into account. Thus the guidance does NOT replace clinical judgement.**

It should be noted that 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 2-4 am until 9:15-10 pm) 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 appropriate** . 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
	<b>Changes to metformin dosing</b>
<b>Metformin</b>	<p style="text-align: center;"><b>Once-daily dosing</b> (Both immediate and slow release) No dose modification usually required Take in the evening (at Iftar)</p>
	<p style="text-align: center;"><b>Twice-daily dosing</b> (Both immediate and slow release) No dose modification usually required Take in the evening (at Iftar) and morning (at Suhoor)</p>
	<p style="text-align: center;"><b>Three times daily dosing</b> Morning dose to be taken at Suhoor (morning) Combine afternoon dose with evening dose &amp; take in the evening (at Iftar)</p>
<b>Acarbose</b>	No dose modification as the risk of hypoglycaemia is low.
<b>Thiazolidinediones (TZDs)</b>	No dose modifications. Dose can be taken in the evening (at Iftar) or in the morning (at Suhoor).
<b>Glucagon-like peptide -1 receptor agonist (GLP-1 RAs)</b>	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.
	<b>Changes to SU and short acting insulin secretagogue dosing</b>
<b>Sulfonylureas (SU) or short acting secretagogues e.g. repaglinide</b>	<p><b>Once-daily dosing</b> Take in the evening (at Iftar)</p>
	<p style="text-align: center;"><b>Twice-daily dosing Same morning and evening dose</b> 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;"><b>Twice-daily dosing Higher morning and lower evening dose</b> 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;"><b>Twice-daily dosing Lower morning and higher evening dose</b> Both doses remain unchanged. Consider reducing the morning dose (at Suhoor) in patients with well-controlled blood glucose levels by 25-50%.</p>
Note: Higher risk of hypoglycaemia with SUs	
	<p><b>Three-times daily dosing</b> 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><b>Older drugs in the class and long-acting or modified release SU</b></p> <p><b>Modified release sulfonylureas:</b> Change to short acting preparation e.g. gliclazide due to the risk of hypoglycaemia with modified release sulfonylureas and follow the advice above.  <b>Older drugs</b> (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.  <b>Second generation Sulfonylureas</b> (gliclazide, glimepiride) should be used in preference due to the lower risk of hypoglycaemia.</p>
<b>Dipeptidyl Peptidase -4 (DPP-4) inhibitors</b>	No dose modifications.
<b>Sodium glucose co-transporter 2 (SGLT-2) inhibitors</b>	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.

Adapted from the International Diabetes Federation and the Diabetes and Ramadan International Alliance (IDF-DAR).

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

Insulin Therapy	Dosing Advice
<b>Basal therapy</b>	<ul style="list-style-type: none"> <li>Once daily dosing - To be administered in the evening (at Iftar). Reduce dose by 15-30%.</li> <li>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.</li> <li>Basal Bolus dosing/ Basal Plus- Reduce basal dose by 15- 30%. <b>Note:</b> <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></li> </ul>
<b>Rapid – or short-acting prandial /bolus insulin</b>	<ul style="list-style-type: none"> <li>Take normal dose in the evening (at Iftar). Omit lunchtime dose. Reduce the morning dose (at Suhoor) by 25-50%.</li> </ul>
<b>Biphasic insulin e.g. 30/70, 25/75, 50/50</b>  <b>(high risk group – winter fasting likely to be most practical and safest option when Ramadan in summer)</b>	<ul style="list-style-type: none"> <li>Once daily dosing – Take normal dose in the evening (at Iftar).</li> <li>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.).</li> <li>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.).</li> <li>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.).</li> <li>Three times daily dosing – Omit lunch-time dose. Adjust morning dose and evening dose as for twice daily dosing above.</li> </ul>

### Recommended timings to check blood glucose levels and hypoglycaemia during Ramadan fasting

If fasting during Ramadan, people with diabetes who already test their blood glucose or have a blood glucose meter in line with NHS GG&C trust policy 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-Iftar and if they experience symptoms of hypoglycaemia, hyperglycaemia or feeling unwell. 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 Iftar and if they experience symptoms of hypoglycaemia, hyperglycaemia or feeling unwell.

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

In relation to driving, the [flow diagram](#) in the recent review on this subject will aid further discussion and decision-making and ensure that the medico-legal requirements are observed.

## **Terminating the fast because of health grounds, sick day rules and alternatives to (consecutive) fasting**

Finally, it should be noted that if an individual starts fasting and because of a deterioration in health it becomes very difficult, or unbearable, or unsafe to continue fasting, from the religious perspective, the individual is permitted and indeed encouraged or mandated to terminate the fast and treat their health with immediate effect. There is no penalty for the individual if they do this, and they would make up the fast in the same way one would if they were ill and had not fasted in the first place.

**Current GGC sick day rules guidance for patients with T1DM and on insulin remain applicable during Ramadan, with patients strongly encouraged to break their fast, particularly where hydration is advised.**

### **Please Note: All patients should break their fast if:**

- **Blood glucose <4.0 mmol/L** if on insulin or sulfonylureas (e.g. gliclazide) or insulin secretagogues e.g. repaglinide
- **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, and driving is necessary**

Alternatives to consecutive fasting during Ramadan will be influenced by the underlying factors that have prevented this in the first place. A summary of alternatives include

- If the length of a summer fast is the prohibitive factor, then patients can make up the number of fasts by switching to fasting during winter months, when the duration is typically 10-11 hours.
- If disease exacerbation might occur, consider non-consecutive fasts (such as alternate days or a one day break after every two to four fasts), making the rest of the fasts up throughout the rest of the year at one's convenience
- If a perpetual/permanent circumstance arises that prevents fasting, then paying the fidyah (feeding of poor people) is an alternative to fasting. In such a circumstance, the individual may wish to discuss this with a religious authority they trust.

## **Post Ramadan Review**

Wherever practically possible, a post Ramadan review should be undertaken by one of the HCPs involved with the care of a patient who has (attempted) fasting during the month. Ideally this should be within a couple of months after the month has finished. However, even if it is delayed, the review is invaluable. The review should:

- Cover what went well or otherwise

- Explore unexpected findings/experiences
- Thoughts on fasting the subsequent Ramadan
- Address any plans to undertake voluntary fasts or make-up missed fasts during the year
- Be an opportunity to modify current treatment
- Have a summary entered on to SCI Diabetes

### **Local expertise**

Dr Nazim Ghouri, Consultant Diabetologist (Queen Elizabeth University Hospital and Gartnavel General Hospital) has experience in advising and managing patients with diabetes and general medical problems in the context of Ramadan. He has also published on the subject, spoken at national meetings and reviews guidance for other NHS trusts and organisations. He is also religiously knowledgeable in the legal rulings and has access to local scholars if the need arises to seek further religious guidance. He is supported by the colleagues listed in the acknowledgements, who can also offer advice when needed.

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- We would like to also acknowledge the South East London Prescribing committee for sharing their Ramadan guidance and allowing us to incorporate concepts and material.

### **The following resources on Ramadan are useful and accurate for further reading for HCPs:**

- Ramadan and Diabetes: A Narrative Review and Practice Update. Diabetes Ther. 2020 Nov; 11(11): 2477–2520. <https://link.springer.com/article/10.1007/s13300-020-00886-y>
- British Islamic Medical Association Ramadan Compendium. <https://britishima.org/ramadan/compendium/>

### **The following web resources on Ramadan are useful and accurate for patients:**

<http://www.communitiesinaction.org/Ramadan%20Health%20and%20Spirituality%20Guide.pdf>



## Appendix 1: IDF-DAR 2021 risk scoring elements

TABLE 1: ELEMENTS FOR RISK CALCULATION AND SUGGESTED RISK SCORE FOR PEOPLE WITH DIABETES MELLITUS (DM) THAT SEEK TO FAST DURING RAMADAN			
Risk Element	Risk Score	Risk Element	Risk Score
<b>1. Diabetes type and duration</b>		<b>8. MVD Complications/Comorbidities</b>	
Type 1 diabetes	1	Unstable MVD	6.5
Type 2 diabetes	0	Stable MVD	2
<b>2. Duration of Diabetes (years)</b>		No MVD	
A duration of $\geq 10$	1	<b>9. Renal Complications/Comorbidities</b>	
A duration of $< 10$	0	eGFR $< 30$ mL/min	6.5
<b>3. Presence of hypoglycaemia</b>		eGFR 30–45 mL/min	4
Hypoglycaemia unawareness	6.5	eGFR 45–60 mL/min	2
Recent Severe hypoglycaemia	5.5	eGFR $> 60$ mL/min	0
Multiple weekly Hypoglycaemia	3.5	<b>10. Pregnancy*</b>	
Hypoglycaemia less than 1 time per week	1	Pregnant not within targets*	6.5
No hypoglycaemia	0	Pregnant within targets*	3.5
<b>4. Level of glycaemic control</b>		Not pregnant	
HbA1c levels $> 9\%$ (11.7 mmol/L)	2	<b>11. Frailty and Cognitive function</b>	
HbA1c levels 7.5–9% (9.4–11.7 mmol/L)	1	Impaired cognitive function or Frail	6.5
HbA1c levels $< 7.5\%$ (9.4 mmol/L)	0	$> 70$ years old with no home support	3.5
<b>5. Type of treatment</b>		No frailty or loss in cognitive function	
Multiple daily mixed insulin injections	3	<b>12. Physical Labour</b>	
Basal Bolus/insulin pump	2.5	Highly Intense physical labour	4
Once daily Mixed insulin	2	Moderate Intense Physical Labour	2
Basal Insulin	1.5	No physical labour	0
Glibenclamide	1	<b>13. Previous Ramadan Experience</b>	
Gliclazide/MR or Glimepride or Repaglanide	0.5	Overall negative experience	1
Other therapy not including SU or Insulin	0	No negative or positive experience	0
<b>6. Self-Monitoring of Blood Glucose (SMBG)</b>		<b>14. Fasting hours (location)</b>	
Indicated but not conducted	2	$\geq 16$ hours	1
Indicated but conducted sub-optimally	1	$< 16$ hours	0
Conducted as indicated	0		
<b>7. Acute complications</b>			
DKA/ HONC in the last 3 months	3	DKA — Diabetic Ketoacidosis	
DKA/ HONC in the last 6 months	2	HONC — Hyperglycaemic Hyperosmolar Nonketotic Coma	
DKA/ HONC in the last 12 months	1	eGFR — Estimated glomerular filtration rate	
No DKA or HONC	0	MVD — Macrovascular disease	

\*Pregnant and breastfeeding women have the right to not fast regardless of whether they have diabetes

## Appendix 2: IDF-DAR 2021 risk scoring table

TABLE 2: MEDICAL & RELIGIOUS RISK SCORE RECOMMENDATIONS		
Risk score/level	Medical Recommendations	Religious Recommendations
<b>LOW RISK</b> 0-3 points	<p>Fasting is probably safe</p> <ol style="list-style-type: none"> <li>1. Medical Evaluation</li> <li>2. Medication adjustment</li> <li>3. Strict monitoring</li> </ol>	<ol style="list-style-type: none"> <li>1. Fasting is obligatory</li> <li>2. Advice not to fast is not allowed, unless patient is unable to fast due to the physical burden of fasting or needing to take medication or food or drink during the fasting hours</li> </ol>
<b>MODERATE RISK</b> 3.5-6 points	<p>Fasting safety is uncertain</p> <ol style="list-style-type: none"> <li>1. Medical Evaluation</li> <li>2. Medication adjustment</li> <li>3. Strict monitoring</li> </ol>	<ol style="list-style-type: none"> <li>1. Fasting is preferred but patients may choose not to fast if they are concerned about their health after consulting the doctor and taking into account the full medical circumstances and patient's own previous experiences</li> <li>2. If the patient does fast, they must follow medical recommendations including regular blood glucose monitoring</li> </ol>
<b>HIGH RISK</b> >6 points	<p>Fasting is probably unsafe</p>	<p>Advise against fasting</p>

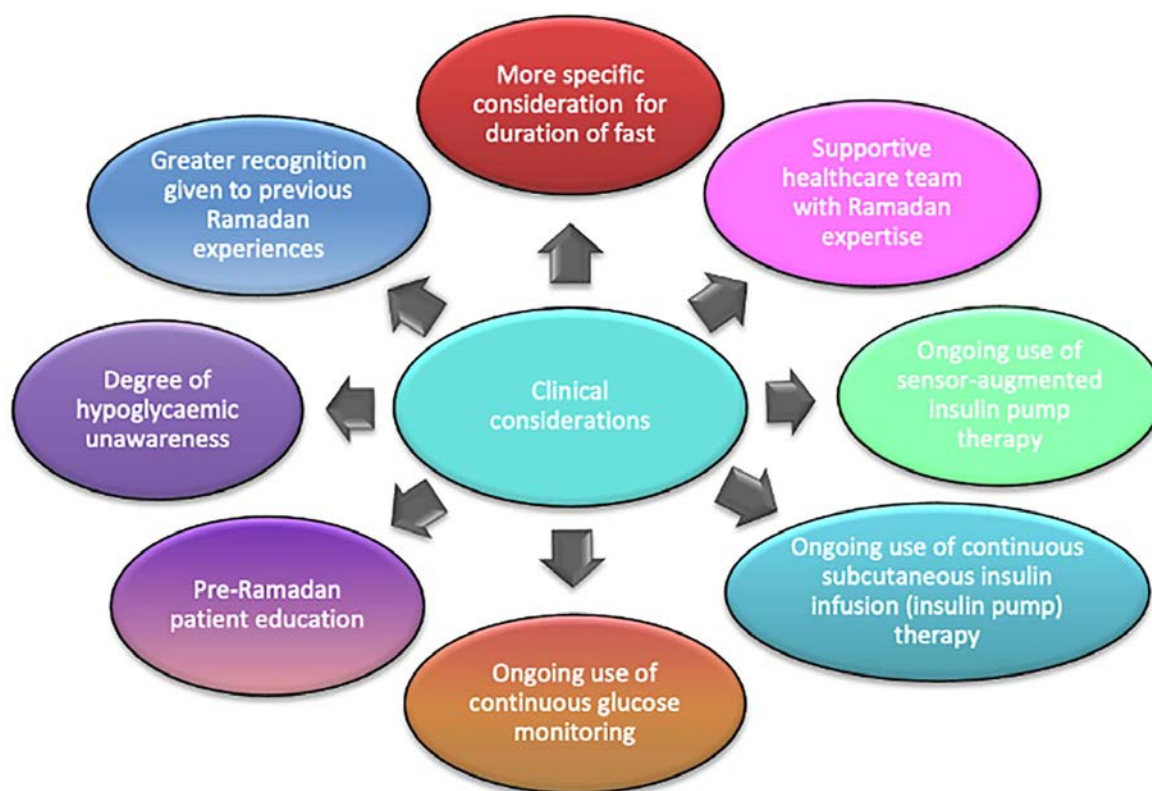
\*Pregnant and breastfeeding women have the right to not fast regardless of whether they have diabetes

### Appendix 3: Risk stratification of patients and recommendations if with diabetes intending to fast.

Risk category and Religious Opinion of Fasting <sup>a</sup>	Patient Characteristics	Comments
<p><b>Category 1: very high risk</b></p> <p><b>Advise MUST NOT fast</b></p>	<p><b>One or more of the following:</b></p> <ul style="list-style-type: none"> <li>• Severe hypoglycaemia within the 3 months prior to Ramadan <sup>b</sup></li> <li>• DKA within the 3 months prior to Ramadan</li> <li>• Hyperosmolar hyperglycaemic coma within the 3 months prior to Ramadan</li> <li>• History of recurrent hypoglycaemia</li> <li>• History of hypoglycaemia unawareness</li> <li>• Poorly controlled T1DM</li> <li>• Acute illness</li> <li>• Pregnancy in pre-existing T1DM/T2DM or GDM treated with insulin</li> <li>• Chronic dialysis or CKD stage 4 &amp; 5</li> <li>• Advanced macrovascular complications</li> <li>• Old age with ill health</li> </ul>	<p><b>If patients wish to fast they should be supported and should:</b></p> <ul style="list-style-type: none"> <li>• Receive structured education</li> <li>• Be followed by a qualified diabetes team</li> <li>• Check their blood glucose regularly (SMBG)</li> <li>• Adjust medication dose as per recommendations</li> <li>• Be prepared to break the fast in case of hypo-or hyperglycaemia</li> <li>• Be prepared to stop the fast in case of frequent hypo-or hyperglycaemia or worsening of other related medical conditions</li> </ul>
<p><b>Category 2: high risk</b></p> <p><b>Advise should NOT fast</b></p>	<p><b>One or more of the following:</b></p> <ul style="list-style-type: none"> <li>• T2DM with sustained poor glycaemic control <sup>c</sup></li> <li>• Well-controlled T1DM</li> <li>• Well-controlled T2DM on MDI or mixed insulin</li> <li>• Pregnant T2DM or GDM controlled by diet only or metformin</li> <li>• CKD stage 3</li> <li>• Stable macrovascular complications</li> <li>• Patients with comorbid conditions that present additional risk factors</li> <li>• People with diabetes performing intense physical labour</li> <li>• Treatment with drugs that may affect cognitive function</li> </ul>	
<p><b>Category 3: moderate/low risk</b></p> <p><b>Decision to not fast based on discretion of medical opinion and ability of the individual to tolerate fast</b></p>	<p><b>Well-controlled T2DM treated with one or more of the following:</b></p> <ul style="list-style-type: none"> <li>• Lifestyle therapy</li> <li>• Metformin</li> <li>• Acarbose</li> <li>• Thiazolidinediones</li> <li>• Second-generation SUs</li> <li>• Incretin-based therapy (DPP-4 inhibitors or GLP-1 RAs)</li> <li>• SGLT2 inhibitors</li> <li>• Basal Insulin</li> </ul>	<p><b>Patients who fast should:</b></p> <ul style="list-style-type: none"> <li>• Receive structured education</li> <li>• Check their blood glucose (SMBG) regularly/as advised</li> <li>• Adjust medication dose as per recommendations</li> </ul>
<p><b>Abbreviations</b></p> <p>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><b>Notes</b></p> <p><sup>a</sup> 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><sup>b</sup> Hypoglycaemia that is not due to accidental error in insulin dose.</p> <p><sup>c</sup> The level of glycaemic control is to be agreed upon between doctor and patient and based on a multitude of factors.</p>		

Adapted from the International Diabetes Federation and the Diabetes and Ramadan International Alliance (IDF-DAR). Individual patient circumstances cannot be overlooked or understated (including favourable circumstances) need to be considered and this should be discussed fully with the patient (and where appropriate their family).

#### Appendix 4: Factors to consider which may alter risk



Factors that may lower risk categorisation	Factors that may increase risk categorisation
Prior positive experience of safe Ramadan	Prior negative experience of safe Ramadan
Fasts $\leq$ 12-14 hours duration	
Pre-Ramadan education	
Supportive healthcare team with Ramadan experience	
Use of flash/continuous glucose monitoring	
Satisfactory glycaemic control on insulin pump therapy	

Adapted from <https://doi.org/10.1016/j.diabres.2021.108835>

For patients with T1DM, an alternative expert-developed risk stratification has been recently developed and can be used if the aforementioned options have not been felt to be adequate or appropriate –

[https://www.thelancet.com/journals/landia/article/PIIS2213-8587\(20\)30219-9/fulltext](https://www.thelancet.com/journals/landia/article/PIIS2213-8587(20)30219-9/fulltext)