How to manage diabetes during Ramadan (updated March 2023)

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What is Ramadan?

- Ramadan fasting (or *sawm*) is one of the Five Pillars of Islam, considered by believers to be the foundation of Muslim life.
- Fasting occurs in the ninth month of the Islamic calendar (*Hijra*).
- The Islamic calendar is lunar based and has only 354 days. It therefore occurs 11 days earlier each year.
- Ramadan has great religious and cultural importance for Muslims. Healthcare professionals need to understand the impact this has on people with diabetes.
- Worldwide, approximately 116 million people with diabetes fast during Ramadan.[1]

What does fasting entail?

- Fasting entails abstinence from food, liquid and oral medications.
- The fasting period occurs between sunrise (*suhoor*) and sunset (*iftar*).
- Ramadan lasts for 29–30 days.
- In the UK, a fast lasts 10–21 hours, depending on the season in which Ramadan falls.

Who should fast?

All healthy individuals after puberty should fast. Those for whom fasting is detrimental to their health are exempt from doing so. This includes:

- Frail and elderly people.
- Children.
- Pregnant and breastfeeding women.
- People with comorbidities.

To fast, or not to fast?

Risk stratification by a healthcare professional should occur to establish if it is safe to fast. Factors to consider include:

- Type of diabetes.
- Individual risk of hypoglycaemia.
- Patient medications.
- Presence of comorbidities and/or complications.
- Social and work circumstances.
- Previous experience of fasting.[4]

What are the risks of fasting?[1]

During Ramadan, a person with diabetes who decides to fast can be at risk of:

- Hypoglycaemia.
- Hyperglycaemia.
- Dehydration and thrombosis.
- Diabetic ketoacidosis, including euglycaemic DKA.
- Hyperosmolar hyperglycaemic state.[2]

What and why

- Healthcare professionals need to be aware of cultural and religious practices that can impact on a person with diabetes.
- The decision to fast for Ramadan should be made with ample discussion between the individual and healthcare provider.
- A decision should be made after assessing the risks and benefits.
- It is advisable for healthcare providers to work closely with local religious scholars to implement key messages within their community.

Citation: Gilani A (2023) How to manage diabetes in Ramadan. *Diabetes & Primary Care* **25**: 27–9

References *(continued on page 29)*

[1]International Diabetes Federation (IDF), Diabetes and Ramadan (DAR) International Alliance (2021) *Diabetes and Ramadan: Practical Guidelines 2021.* https://bit.ly/3l5KGkB

[2]Hanif S et al (2020) Managing people with diabetes fasting for Ramadan during the COVID-19 pandemic: a South Asian Health Foundation update. *Diabet Med* **37**: 1094–1102

[3]Hassanein M et al (2014) Management of type 2 diabetes in Ramadan: Low-ratio premix insulin working group practical advice. *Indian J Endocrinol Metab* **18**: 794–99

Pre-Ramadan diabetes education

A pre-Ramadan diabetes education session is advised 1–2 months before the fasting period. The benefits of a structured diabetes education programme with a Ramadan focus include fewer hypoglycaemic episodes, weight loss and improved glycaemic control.[1] There are six key areas that should be covered:[1]

- **Risk quantification**. Individuals can be stratified into one of three risk categories identified by IDF-DAR.[1] These are very high risk, high risk or moderate/low risk (***see table overleaf***).
- **When to break the fast**. A fast should be broken if: blood glucose levels are <3.9 or >16.7 mmol/L; there are symptoms of hypoglycaemia; or an acute illness occurs.
- **Exercise**. Light-to-moderate exercise is advisable during Ramadan.
- **Fluids and dietary advice**. A Ramadan nutrition plan is recommended (***see overleaf***).
- **Blood glucose monitoring**. It is advisable to check blood glucose levels several times a day (***see right***).[3] This does not constitute breaking the fast.[4]
- **Medication adjustment**: ***see page 29***

When to check blood glucose during Ramadan fasting[5]

1. Pre-dawn meal (*suhoor*)
2. Morning
3. Midday
4. Mid-afternoon
5. Pre-sunset meal (*iftar*)
6. 2 hours after *iftar*
7. Any time when symptoms of hypo- or hyperglycaemia, or feeling unwell.

British Islamic Medical Association[6] risk categories and recommendations for people with diabetes who fast during Ramadan.

Risk category and religious opinion on fasting (boxed)*	Person characteristics	Comments
Category 1: very high risk **Religious opinion:** Listen to medical advice. MUST NOT fast.	One or more of the following: • Poorly controlled type 1 diabetes • Acute hyperglycaemic diabetes complications within the 3 months prior to Ramadan (DKA, HHS) • Disabling hypoglycaemia: severe hypoglycaemia within the 3 months prior to Ramadan, history of hypoglycaemia unawareness, recurrent hypoglycaemia • Advanced macrovascular complications • T2D requiring insulin (MDI or biphasic insulin therapy) with **no** prior experience of safe fasting • Chronic dialysis or CKD stages 4 and 5 • Pregnancy in pre-existing diabetes, or GDM treated with insulin or SUs • Acute illness • Old age with ill health	If individual insists on fasting, then they should: • Receive structured education • Be followed by a qualified diabetes team and have access for advice during fasting • 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
Category 2: high risk **Religious opinion:** Listen to medical advice. SHOULD NOT fast.	One or more of the following: • Well-controlled T1D • T2D with sustained poor glycaemic control** • T2D requiring insulin (MDI or biphasic insulin therapy) with prior experience of safe fasting • T2D on SGLT2 inhibitors (consider alternatives/pausing during Ramadan) • Stable macrovascular complications of diabetes • CKD stage 3 • Women with T2D who are pregnant or GDM controlled by diet only or metformin • People with comorbid conditions that present additional risk factors • Treatment with drugs that may affect cognitive function • People with diabetes performing intense physical labour	
Category 3: moderate/low risk **Religious opinion:** Listen to medical advice. Decision to use licence not to fast based on discretion of medical opinion and ability of the individual to tolerate fast.	Well-controlled T2D treated with one or more of the following: • Diet and lifestyle therapy • Metformin • Incretin-based therapies (DPP-4 inhibitors, GLP-1 receptor agonists) • Thiazolidinedione (pioglitazone) • Acarbose • Second-generation SUs (moderate risk: regular SMBG advised) • Basal insulin (moderate risk: regular SMBG advised)	People who fast should: • Receive structured education • Check their blood glucose regularly (SMBG) • Adjust medication dose as per recommendations

*In each category, people with diabetes should follow medical opinion if the advice is not to fast due to high probability of harm.
**Consider HbA_{1c} >75 mmol/mol for over 12 months.
If there is uncertainty about which group an individual falls into and they seek to fast, chapter 5 of the IDF/DAR guidelines[1] includes a risk calculator.
CKD=chronic kidney disease; DKA=diabetic ketoacidosis; GDM=gestational diabetes mellitus; HSS=hyperosmolar hyperglycaemic state; MDI=multiple-dose insulin; SGLT2=sodium–glucose cotransporter 2; SMBG=self-monitoring of blood glucose; SU=sulfonylurea; T1D=type 1 diabetes; T2D=type 2 diabetes.

Tips for healthcare professionals

- Most studies (and based on the author's experience) have indicated that the majority of people with diabetes will participate in fasting despite the risks.[7] If this occurs, it is important for healthcare professionals to note this on a patient's medical record and document that advice has been given to minimise any risks of adverse effects.
- To those who choose to fast despite it worsening their health, it can be advised that it is deemed to be against the Quranic principles of Ramadan.
- Those whose medical conditions are exacerbated by fasting can do non-consecutive fasts.
- Review the patient's previous experience of fasting.
- Those who are unable to fast due to the long hours can switch to the winter months, where the duration of fast is shorter.
- People with diabetes can do a 1–2-day trial of fasting during the month preceding Ramadan and review its effects.
- Those who cannot partake in fasting can pay *fidyah*, an obligatory charitable donation when there is a necessity to miss fasting. The current amount is £5 per fast missed.[8]
- Reassure patients who are unable to fast that they can participate in other acts of charity (e.g. giving donations, making and giving food to others).
- Where there is a significant population who partake in fasting, Ramadan education can be delivered in multiple ways: community group education, liaise and work closely with Islamic community leaders, develop Ramadan education patient information leaflets, arrange healthcare professional educational updates, use of media (e.g. local radio stations).

Diet and lifestyle advice

Key messages include:[1]

- Use Ramadan as an opportunity to make healthier food choices.
- Keep well hydrated and drink plenty of water.
- Avoid fried food (e.g. pakoras, samosas).
- Minimise sugary foods.
- Try to eat *suhoor* (morning meal) as late as possible.
- Minimise consumption of caffeine.
- Try to have plenty of fresh fruit and vegetables/salads.
- Try to consume high-fibre and starchy foods as these will release energy slowly. These include: chapatis, rice, oat-based cereals, grains, seeds, beans and pulses.
- Do not consume excessive dates, as these can be high in sugar.

Medication

- Taking oral medications during fasting hours invalidates the fast.[1]
- In general, the bigger dose of antidiabetes medication should be given at *iftar*.
- During Ramadan, it may be prudent to choose antidiabetes agents that have a lower risk of hypoglycaemia.
- Ideally, any new medications should be initiated 6–8 weeks prior to Ramadan.[6]
- The recommendations for dose adjustment for antidiabetes agents are shown in the table below.

Non-insulin dose modifications for people with type 2 diabetes[5]

Metformin

Daily dose remains unchanged.
Immediate release: daily – take at *iftar*;
twice daily – take at *iftar* and *suhoor*; three-times daily – morning dose at *suhoor*, combine afternoon and evening dose at *iftar*.
Prolonged release: take at *iftar*.

Sulfonylurea (SU)

Switch to newer SU (gliclazide, glimepiride) where possible; glibenclamide should be avoided.
Once daily – take at *iftar*. Dose may be reduced in people with good glycaemic control.
Twice daily – *iftar* dose remains unchanged. *Suhoor* dose should be reduced in people with good glycaemic control.[9]
For once-daily SU combination therapy, take at *iftar* and consider reducing the dose by 50%.
For twice-daily SU combination therapy, omit morning dose and take normal dose at *iftar*.

Thiazolidinediones

No dose modifications.
Dose can be taken with *iftar* or *suhoor*.

DPP-4 inhibitors

No dose modifications.

GLP-1 receptor agonists

No dose modifications.
If taking an oral formulation (Rybelsus), take the tablet at *iftar* and wait 30 minutes before consuming any food.

Prandial glucose regulators (glinides)

Three-times daily dosing may be reduced/redistributed to two doses taken with *iftar* and *suhoor*.

SGLT2 inhibitors

No dose modifications.
Dose should be taken with *iftar*.
Extra clear fluids should be ingested during non-fasting periods.
Use with caution in those at risk of fluid depletion.

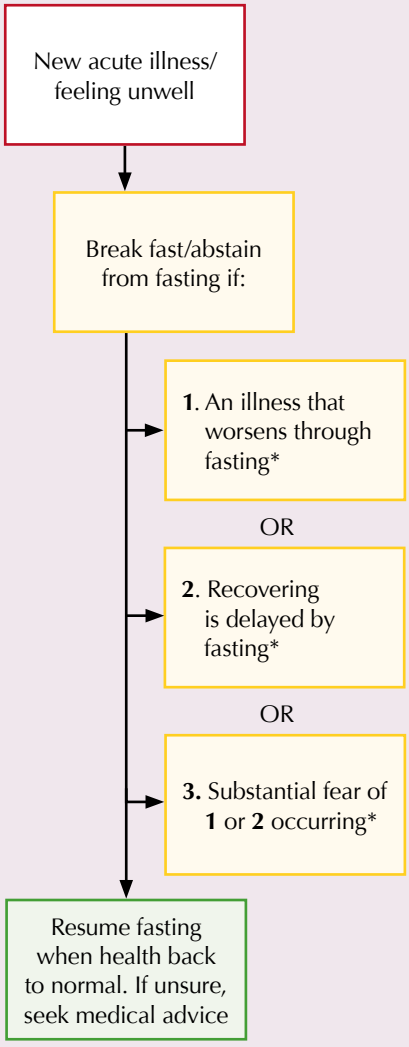
References *(continued)*

[4]Muslim Spiritual Care Provision in the NHS (2020) *Ramadan Health Factsheet 2020*. https://bit.ly/3bCkhrB
[5]Hassanein M et al (2017) Diabetes and Ramadan: Practical guidelines. *Diabetes Res Clin Pract* **126**: 303–16
[6]British Islamic Medical Association (2020) *Ramadan Rapid Review & Recommendations: Risk table and recommendations summary*. https://bit.ly/3bcuCKt
[7]Jabbar A et al (2017) CREED study: Hypoglycaemia during Ramadan in individuals with type 2 diabetes mellitus from three continents. *Diabetes Res Clin Pract* **132**: 19–26
[8]Islamic Relief (2023) *Fidya for missed fasts during Ramadan*. https://bit.ly/3EVOPTu
[9]Ali S et al (2016) Guidelines for managing diabetes in Ramadan. *Diabet Med* **33**: 1315–29
[10]British Islamic Medical Association (2021) *COVID-19 Vaccine Hub – Statements*. https://bit.ly/30cuyEf

Fasting and illness

The act of fasting promotes spiritual benefit and psychological wellbeing. However, an individual's decision to fast should be made by weighing the benefits against the risks of exacerbating illness. Those who become unwell during Ramadan and are considering fasting can use the chart below as a decision-making guide. Healthcare professionals managing those with diabetes can use the risk stratification table **on the previous page** as a shared decision-making guide to determine whether it is suitable to fast.[6]

Receiving a COVID-19 vaccine does not invalidate one's fast.[10]



*Determined by any of the following:

- Prior experience of fasting with such an illness.
- Common knowledge.
- The advice of a clinician.