How to manage diabetes during Ramadan

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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.
- Not everyone has to fast. An individual can be exempt if they have an illness whereby fasting is detrimental.

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.

What are the risks of fasting?

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

- Hypoglycaemia.
- Hyperglycaemia.
- Dehydration and thrombosis.
- Diabetic ketoacidosis.[1]

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 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 (2019) How to manage diabetes in Ramadan. *Diabetes & Primary Care*

References

[1]International Diabetes Federation (IDF), Diabetes and Ramadan (DAR) International Alliance (2016) *Diabetes and Ramadan: Practical Guidelines*. https://bit.ly/2kursXj

[2]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

[3]Muslim Spiritual Care Provision in the NHS (2017) *Ramadan Health Fact Sheet 2017*. https://bit.ly/2P61VSU

[4]Hassanein M et al (2017) Diabetes and Ramadan: Practical guidelines. *Diabetes Res Clin Pract* **126**: 303–16

[5]Ali S et al (2016) Guidelines for managing diabetes in Ramadan. *Diabet Med* **33**: 1315–29

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 over page**).
- **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 below).
- **Blood glucose monitoring**. It is advisable to check blood glucose levels several times a day[2] (**see right**). This does not constitute breaking the fast[3].
- **Medication adjustment**: **see over page**

When to check blood glucose during Ramadan fasting[4]

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.

Medication

- In general, the bigger dose of antidiabetes medication should be given at *iftar*.
- During Ramadan, it may be prudent to pick antidiabetes agents that have a lower risk of hypoglycaemia.
- The recommendations for dose adjustment for antidiabetes agents are shown in the table below.

IDF-DAR[1] 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: • Severe hypoglycaemia within the 3 months prior to Ramadan • DKA within the 3 months prior to Ramadan • Hyperosmolar hyperglycaemia within the 3 months prior to Ramadan • History of recurrent hypoglycaemia • History of hypoglycaemia unawareness • Poorly controlled type 1 diabetes • Acute illness • Pregnancy in pre-existing diabetes, or GDM treated with insulin or sulfonylureas • Chronic dialysis or CKD stages 4 and 5 • Advanced macrovascular complications • 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: • T2D with sustained poor glycaemic control** • Well-controlled T1D • Well-controlled T2D on MDI or mixed insulin • Pregnant T2D or GDM controlled by diet only or metformin • CKD stage 3 • Stable macrovascular complications • People with comorbid conditions that present additional risk factors • People with diabetes performing intense physical labour • Treatment with drugs that may affect cognitive function	
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: • Lifestyle therapy • Metformin • Thiazolidinedione • Second-generation SUs • Incretin-based therapy • SGLT2 inhibitor • Basal insulin	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.

**The level of glycaemic control is to be agreed upon with the individual, according to a multitude of factors.

CKD=chronic kidney disease; DKA=diabetic ketoacidosis; GDM=gestational diabetes mellitus; 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.

Non-insulin dose modifications for people with type 2 diabetes[4]

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[5].
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*.

Prandial glucose regulators (glinides)
Three-times daily dosing may be reduced/redistributed to two doses taken with *iftar* and *suhoor*.

GLP-1 receptor agonists
No dose modifications.

DPP-4 inhibitors
No dose modifications.

SGLT2 inhibitors
No dose modifications.
Dose should be taken with *iftar*.
Extra clear fluids should be ingested during non-fasting periods.
Should not be used in the elderly, people with renal impairment, hypotensive people or those taking diuretics.

Diet and lifestyle advice

Key messages[1] include:

- Low glycaemic index (GI), high fibre foods for slow energy release.
- Begin *iftar* with 1–2 dates to raise blood glucose levels and plenty of water to overcome dehydration.
- Avoid other sugary foods.
- Eat balanced meals: 45–50% carbohydrate, 20–30% protein and <35% fat.
- Take *suhoor* as late as possible.
- Maintain hydration with water and non-sweetened beverages overnight between *iftar* and *suhoor*.
- Eat foods that induce satiety (i.e. with protein and fibre).