Ramadan: impact on diabetes and other chronic diseases

During Ramadan, many of our Muslim patients will want to fast, fasting being one of the five pillars of the Muslim faith. How best can we support them in this?

The fast of Ramadan lasts from dawn to sunset for a period of 29 or 30 days. Following the lunar calendar, the fasting month is brought forward by about 10 days each year, and currently falls during the UK spring months.

In 2024, Ramadan will start on 10 March and end on 9 April. During this time, people will generally eat two meals a day: one before sunrise (Suhoor) and one after sunset (Iftar). **No fluids or food are taken during daylight hours. This includes water and, often, medicines too.**

Impact of fasting

A BMJ Practice Pointer acknowledged that fasting may impact chronic disease control (BMJ 2022;376e:063613). The authors recommended a structured pre-Ramadan review for people with:

- Diabetes.
- Adrenal insufficiency.
- Thyroid disease.
- Cancer.
- Epilepsy.
- Severe enduring mental illness.
- Eating disorders.
- Those who are pregnant or breastfeeding.
- Occupational factors, e.g. shift workers and those operating heavy machinery.

Many Muslims, even those who could seek exemption, want to participate in fasting in Ramadan. We will want to respect that decision and work with people to achieve the best outcomes.

- Start planning for Ramadan at least 6–8w before: pre-Ramadan education reduces the risk of harm.
- Dietary advice that applies to the rest of the year should be followed in Ramadan, but the meals, particularly Iftar (the evening meal), are often celebratory in nature and involve higher calorie and sugar intake than normal. Suhoor (the morning meal) is often relatively small, so, for some, drug dose adjustments are needed to get people through the day without problems.
- Pay special attention to medications that can cause dehydration (diuretics) or hypoglycaemia (insulin/sulphonylurea), or that may be affected by change in routine (antiepileptics/thyroid medication).
- Seek specialist input for patients where there is any uncertainty about how to safely manage fasting.

Consider a brief 'trial' fast in the months before Ramadan to monitor the effect on disease management. For example, this might be an opportunity to monitor blood glucose and adjust insulin dosing.

For those who cannot fast safely, there are other options permitted by religious leaders:

- A delay in fasting to allow a period of acute illness or pregnancy/breastfeeding to pass.
- Charity (fidyah) for those unable to make up their fasts.

The remainder of this article relates to diabetes (type 1 and 2) in Ramadan.

Diabetes management in Ramadan

In 2021, the International Diabetes Federation (IDF) (funded by an unrestricted educational grant by Sanofi) updated its helpful guide on diabetes during Ramadan. Here are the key points.

The main risks during Ramadan are of hypo- and hyperglycaemia, diabetic ketoacidosis and dehydration (which can lead to thrombosis).

Stratify patients into one of three categories – high, moderate and low risk – using the IDF-DAR risk calculator. Management is based on risk. As you look at the scoring system below, bear in mind that:

- Those scoring ≤3 are considered low risk.
- Those scoring 3.5–6 are moderate risk.
- Those scoring >6 are high risk.

Risk Factor		Score
Diabetes type		
	Type 1	1
	Type 2	0
Diabetes duration		
	<10y	0
	≥10y	1
Hypoglycaemia		
	Hypoglycaemia unaware	6.5
	Recent severe hypoglycaemia	5.5
	Multiple weekly hypoglycaemic events	3.5
	Hypoglycaemia <once per week	1
	No hypoglycaemia	0
Level of glycaemic control		
	HbA1c >75mmol/mol (9%)	2
	HbA1c 58–74mmol/mol	1
	HbA1c <58mmol/mol (7.5%)	0
Type of treatment		
	Multiple daily mixed insulin injections	3
	Basal bolus/insulin pump	2.5
	Once-daily mixed insulin	2
	Basal insulin	1.5
	Glibenclamide	1
	Gliclazide/MR or glimepiride or repaglinide	0.5
	Other therapy not including SU or insulin	0
Self-monitoring of blood glucose		
	Advised and not completed	2
	Completed suboptimally	1
	Completed as indicated	0
Acute complications (DKA/HONK)		
	In past 3 months	3
	In past 6 months	2
	In past year	1
	No DKA/HONK	0
Macrovascular complications		
	Unstable	6.5
	Stable	2
	None	0
Renal complications		
	eGFR <30ml/min	6.5
	eGFR 30–45ml/min	4
	eGFR 45–60ml/min	2
	eGFR >60ml/min	0
Pregnancy		
	Pregnant: poorly controlled	6.5
	Pregnant: well controlled	3.5

	Not pregnant	0
Frailty and cognitive function		
	Frail or cognitive impairment >70 and no home support Not frail	6.5 3.5 0
Physical labour		
	Intense Moderate None	4 2 0
Previous Ramadan experience		
	Overall negative No negative experience	1 0
Fast duration (hours)		
	≥16 <16	1 0

On the basis of the score from the table above, the suggested management is as follows:

Management during Ramadan		
High risk (score >6)	**Moderate risk** (score 3.5–6)	**Low risk** (score 0–3)
Should not fast.	**Should be advised not to fast.**	**Should be able to fast.**
If they wish to fast, they should: • Receive structured education. • Check blood glucose regularly (guidance does not specify what 'regularly' means, but moderate to low risk groups are expected to check sugar 1–2x a day, and type 1s at least 6x a day – decide frequency of monitoring based on risk). • Adjust medication dose as per tables below. • **Be prepared to break the fast in case of hypo- or hyperglycaemia or other illness.**		Before fasting: • Provide structured education. • Adjust medication dose as per tables below. • **Check blood glucose 1–2x/day during fasting.**

Patient education

Pre-Ramadan education should take place a minimum of 6–8 weeks before Ramadan, and be repeated annually.

It should involve:

- **A structured risk assessment.**
- **Self-monitoring blood glucose training:**
  - Teach how for those who might not normally do this as part of their diabetes management.
  - How to adjust medication depending on results (see below).
- **Dietary advice:**
  - Divide daily calories between Suhoor and Iftar, plus 1–2 snacks if necessary.
  - Ensure meals are well balanced: 45–50% carbohydrate (ideally unrefined carbohydrates), 20–30% protein, <35% fat (preferably mono- and polyunsaturated).
  - Include low glycaemic index, high-fibre foods that release energy slowly before and after fasting, e.g. granary bread, beans, rice.
  - Include plenty of fruit, vegetables and salads.
  - Minimise foods that are high in saturated fats, e.g. ghee, samosas, pakoras. Use small amounts of oil when cooking, e.g. olive, rapeseed.
  - Avoid sugary desserts.
  - Keep hydrated between sunset and sunrise by drinking water or other non-sweetened beverages. Avoid caffeinated and sweetened drinks.
- **Exercise:** avoid vigorous exercise (increased risk of hypos and dehydration), especially in the hours just before sunset.
- **Break the fast if:**
  - Blood sugar <3.9 or >16.6.
  - Symptoms of hypo- or hyperglycaemia, or dehydration, develop.

- Symptoms of acute illness develop.

(In most countries, measuring blood sugar is not considered to be breaking the fast, but, in some areas, it is – ask!)

Adjusting medication

The following is a guide summarised from the International Diabetes Federation. Seek expert advice if you are uncertain, or there is significant hypo- or hyperglycaemia, or if the patient has other complications.

	Usually taken:	*During Ramadan*
Metformin	Once daily	Take with Iftar (evening meal)
	Twice daily	Take with Iftar and Suhoor (morning meal)
	Three times daily	Take morning dose with Suhoor Take lunchtime and evening doses together with Iftar
Slow-release metformin	Once daily	Take with Iftar
Sulphonylurea	Once daily	Take with Iftar
	Twice daily	If well controlled, take lower-than-usual dose with Suhoor Take normal dose with Iftar
Gliptins		No dose adjustment needed
Pioglitazone		No dose adjustment needed – take with Iftar
Gliflozins (SGLT2 inhibitors)		Use with caution but no dose adjustment needed. Take with Iftar. Increase fluids in non-fasting hours if possible.
GLP-1s		No dose adjustment needed
On multiple medications	Variable	Those on more than 3 medications are at higher risk of hypoglycaemia. Doses of insulin and sulphonylurea should be reduced by 25–50%.

Insulin in Ramadan

We strongly suggest you take advice on this unless you are confident about managing insulin doses in the context of the physiological changes that occur in fasting.

	Usually taken:	*During Ramadan:*	
Long-acting basal insulins	Once-daily without short-acting insulin	Reduce dose by 15–30% and take with Iftar	
	Twice daily without short-acting insulin	Take usual **morning** dose with **Iftar (the evening meal!)** Reduce usual **evening** dose by 50% and take with **Suhoor (the morning meal!)**	
	When using with multiple short-acting injections	Reduce dose by 30–40% and take with Iftar	
Short-acting insulin	-	Reduce Suhoor dose by 25–50% Omit lunchtime dose Normal dose with Iftar	
Pre-mixed insulin	Once daily	Take normal dose with Iftar	
	Twice daily	Reduce Suhoor dose by 25–50% Normal dose with Iftar	
	Three times daily	Give with Iftar and Suhoor, adjusting dose every 3 days based on blood sugars. When adjusting dose, use the following:	
		Fasting/pre-meal blood glucose:	Adjust pre-mixed insulin by:
		<3.9 or symptoms of hypoglycaemia	Reduce by 4 units
		3.9–5	Reduce by 2 units
		5–7	No change
		7–11.1	Increase by 2 units
		>11.1	Increase by 4 units
Insulin pumps	-	*Basal rate:* reduce basal rate by 2–40% in first 3–4h of fasting	

		Increase dose by 0–30% after Iftar *Bolus rate:* normal carbohydrate counting applies

Dose adjustments depending on blood sugar

This is fractionally different from the dose adjustment above for pre-mixed insulin (the cut off is 7.2 not 7, for reasons that are not explained in the document).

Fasting/pre-meal blood glucose	**Adjust long-acting basal insulin by (this will be begin given with Iftar) or short-acting insulin by:**
<3.9 or symptoms of hypoglycaemia	Reduce by 4 units
3.9–5	Reduce by 2 units
5–7.2	No change
7.2–11.1	Increase by 2 units
>11.1	Increase by 4 units

When to check blood sugar

In type 1 diabetes, patients should check pre-Suhoor (first meal of the day), mid-morning, noon, mid-afternoon, before the sunset meal of Iftar and before bed AND at any time when there are symptoms of hypoglycaemia.

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- Plan ahead – think about this 4–6w before Ramadan as it may involve changing medication, particularly insulins.
- Encourage a healthy diet, normal exercise, and modifying foods to include more slow-release carbohydrates and fibre.
- Encourage blood sugar monitoring if symptoms of hypoglycaemia or feeling unwell.
- Discuss the need to break the fast if hypos, or intercurrent illness or complications develop.
- Adjust drug regimens as necessary.

Useful resources:

Websites (all resources are hyperlinked for ease of use in Red Whale Knowledge)

- IDF – DAR Risk Calculator (to help shared decision-making around fasting)
- British Islamic Medical Association – Ramadan compendium (for health professionals)
- British Islamic Medical Association – Ramadan and diabetes guidance launched by Diabetes UK (patient factsheet)