

27. Management of diabetes during Ramadaan

Fasting during the holy month of Ramadaan constitutes one of the five fundamental pillars of Islam. Muslims abstain from food and drink from dawn (*Suhur*) to dusk (*Iftaar*). Despite the fact that those who are ill are exempted from this obligation, many Muslims with diabetes mellitus still wish to fast. It is increasingly important that medical professionals be aware of potential risks associated with fasting during Ramadaan, and with approaches to mitigate those risks.

This section outlines criteria that define which diabetics can safely fast during Ramadaan, emphasises the importance of planning and education before Ramadaan, and provides guidelines on adjustments that need to be made at a therapeutic level to minimise the risks associated with fasting during Ramadaan.

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27.1 Fasting during Ramadaan

Fasting during the holy month of Ramadaan constitutes one of the five fundamental pillars of Islam. Muslims abstain from food and drink from dawn (*Suhur*) to dusk (*Iftaar*). Despite the fact that those who are ill are exempted from this obligation, many Muslims with diabetes mellitus (diabetes) still wish to fast.¹ Patients with diabetes that fast are at risk of hypoglycaemia, hyperglycaemia and dehydration. Those who plan to fast need to undergo an assessment of risk before Ramadaan, and must participate in a structured education programme addressing meal planning, physical activity, dosage and timing of medications, glucose monitoring and the recognition and management of untoward events, including hypoglycaemia.²

The following individuals with diabetes are permitted to fast:

- Well-controlled patients with type 2 diabetes being treated with insulin, a short-acting insulin secretagogue (glinide), or a sulphonylurea, or a combination oral or oral plus insulin treatment. These patients can fast, provided they consult a healthcare professional several months before Ramadaan and make the necessary changes to their therapy.
- Well-controlled patients being treated with dietary adjustment alone, monotherapy with metformin, dipeptidyl peptidase-4 (DPP-4) inhibitors, or thiazolidinediones, and who are otherwise healthy.

Fasting is contraindicated in individuals with:

- Type 1 diabetes
- Severe and recurrent episodes of hypoglycaemia with unawareness
- Poor glycaemic control
- Ketoacidosis within the three months before Ramadaan
- Hyperosmolar hyperglycaemic state within the three months before Ramadaan
- Severe acute illness

- Occupations that require intense physical labour
- Co-morbidities, such as advanced macrovascular complications, renal insufficiency, cognitive dysfunction, and uncontrolled epilepsy (particularly when precipitated by hypoglycaemia)
- Pregnant women

27.2 Approach to patients with type 2 diabetes planning to fast during Ramadaan³

The patients should be assessed two to four months before Ramadaan.⁴

27.2.1 Medical assessment

The healthcare provider should follow an individualised approach for each patient. The overall glycaemic control, blood pressure, lipid profile and renal function should be assessed. Body weight and body mass index should be measured and recorded. The diabetes medication regimens should be assessed, and the treatment of choice, timing and dosage adjustments should be communicated to the patient.

27.2.2 Ramadaan-focused education

Patients and carers should be educated on the effects of fasting on diabetes. Aspects addressed should include meal planning, appropriate levels of exercise and blood-glucose monitoring. They should also be taught how to recognise and manage acute complications (e.g. hypoglycaemia, hyperglycaemia, dehydration), and when it is appropriate to break the fast

27.2.3 Diet-controlled patients

- Split the daily calorie allowance over two to three smaller meals during the non-fasting interval.
- Eat complex carbohydrates (e.g. oatmeal, bran, brown rice) at *Suhur* (pre-dawn meal), and simple carbohydrates at *Iftaar* (sunset meal).
- Avoid foods with a high sugar and fat content.
- Ensure an adequate fluid intake during the nonfasting interval.

27.2.4 Oral hypoglycaemic agents

- Individualise the choice of treatment.
- DPP-4 inhibitors, rapid-acting insulin secretagogues and thiazolidinediones may be used at meal times without dose adjustments.
- Ensure an adequate fluid intake during the nonfasting interval.

27.2.4.1 Metformin

The daily doses should be modified as follows:

- Two thirds after *Iftaar*
- One third at *Suhur*

If the patient is taking modified-release metformin once daily, take dose should be taken after *Iftaar* rather than at *Suhur*.

27.2.4.2 Sulphonylureas

Consider the following dose adjustments:

- Reduce the morning dose if taking the drug twice daily. For example, change a twice-daily dose of gliclazide 80 mg to 80 mg at *Iftaar* and 40 mg at *Suhur*.
- Consider a timing adjustment. For example, if taking a once-daily dose, switch it to *Iftaar*.⁵
- Consider switching from glibenclamide to gliclazide, glimepiride or glinide.⁶

27.2.4.3 DPP-4 inhibitors

DPP-4 inhibitors are an alternative to sulphonylureas if the risk of hypoglycaemia is high.⁷

27.2.4.4 Thiazolidinediones

No adjustment of thiazolidinediones is necessary.⁸

27.2.4.5 Acarbose

The usual doses of acarbose can be taken during meals

27.2.4.6 Oral short-acting insulin secretagogues

The glinides (e.g. repaglinide) are short acting and can be taken twice daily, at *Suhur* and *Iftaar*.

27.2.5 Injectable agents (type 2 diabetes)

27.2.5.1 Insulin

Ideally, overnight intermediate-acting insulin should be injected, plus a rapid-acting insulin before meals. Adjustment to treatment will be necessary. For example,

the insulin glargine dose may have to be reduced by 20%. In the case of pre-mixed insulin, the usual breakfast dose should be administered in the evening (*Iftaar*), and 50-75% of the usual evening dose should be taken in the morning (*Suhur*).⁴ An alternative would be to use Mix 50/50[®] preparation in the evening instead of a biphasic (30/70 or 25/75) pre-mixed insulin in order to achieve better postprandial control.⁹

27.2.5.2 Glucagon-like peptide-1 agonists

If a glucagon-like peptide-1 (GLP-1) agonist is used in combination with a sulphonylurea, no adjustment of the GLP-1 agonist is necessary. The dose of the sulphonylurea will have to be reduced.¹⁰

27.3 Approach to patients with type 1 diabetes planning to fast during Ramadan

Patients with type 1 diabetes constitute a very high-risk group, for whom fasting is not recommended. Notwithstanding medical advice to the contrary, many patients still choose to fast. The recommendations below may be extended to insulin-treated type 2 diabetes patients receiving multiple-dose injection therapy. Those who wish to fast must be well controlled.¹¹ Treatment options include the following:

- Reduction in total dose of insulin to 70 % of the patients usual dose, with 60 % given as basal insulin in the evening, and 40 % short-acting split between the two main meals.¹²
- Short-acting insulin analogues, such as insulin lispro, offer the advantage of lower two-hour postprandial glucose concentrations after *Iftaar*, and fewer hypoglycaemic events than regular human insulin.¹³
- Basal insulin should be reduced by 20%, and the dosage of short-acting insulin taken before *Suhur* and *Iftaar* can be calculated using carbohydrate counting based on the quantity and quality (carbohydrate content) of the meal.¹⁴
- Insulin-pump therapy may provide greater safety than conventional insulin regimens used in Ramadan, especially with respect to hypoglycaemia that necessitates breaking of the fast.¹⁴

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