South Asian Health Foundation and A. Menarini Farmaceutica Internazionale SRL have created this booklet as an educational resource for health care professionals.

How to manage diabetes during Ramadan

Guidance for Healthcare Professionals (HCPs) – Diabetes Medication Management During Ramadan

Ramadan is the observation of *Sawm*, one of the five pillars of Islam. Fasting is undertaken from sunrise *(Suhoor)* to sunset *(Iftaar)* during the lunar month of Ramadan. The pillars of Islam are *Shahada* (declaration of faith in Allah, and the prophet (peace be upon him)), *Salah* (prayers fives times a day), *Zakat* (giving to charitable causes), and *Hajj* (the sacred pilgrimage to Mecca at least once in a lifetime). Ramadan is obligatory for all Muslims from the age of puberty if health issues do not preclude fasting safely. Most Muslim patients with diabetes would want to fast, unless otherwise advised by a healthcare professional. This decision will often be guided by the Imam and family members too.
The tables contained in this document outline diabetes care, fasting, and medications management during Ramadan. This should form part of the discussion with your patients at a pre-Ramadan assessment clinical review. These should be discussed at a pre-Ramadan assessment clinical review. Treatment changes are ideally informed by exploring the experience of the patient during prior Ramadan fasts.

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Clinical Notes

Metformin — Alongside lifestyle advice and modification, metformin is recommended to most patients with type 2 diabetes.
Ramadan-specific Advice: No dose change is advised during Ramadan with metformin taken with the meal before *Iftaar* and with the *Suhoor* meal. For TDS regimens, combine the lunchtime dose with the evening dose.

SGLT2-i — Sodium-glucose co-transporter-2 inhibitors (SGLT2-i), such as canagliflozin, dapagliflozin, empagliflozin, are now recommended as soon as metformin tolerance is confirmed in T2DM patients with any heart failure, CKD, established atherosclerotic CVD, or QRISK-2 or 3 score of > 10% aged 40 and over or an elevated lifetime risk of CVD (defined as the presence of 1 or more CVD risk factors under 40 year).
Ramadan-specific Advice: It is important to maintain good hydration to reduce risk of postural hypotension. To avoid this issue, the SGLT2-i could be given with the *Iftaar* meal.
There is an increased risk of euglycaemic DKA and testing for ketones, when unwell, is essential.

DPP-4i — *Dipeptidyl peptidase-4 inhibitor (DPP4 inhibitors)* remain useful agents to improve glycaemic control whilst minimising hypoglycemia and achieving weight neutrality.
Ramadan-specific Advice: Usually, no change in dose is required.

SU — *Sulfonylurea (SU):* SUs such as gliclazide are used much less than before because of their association with hypoglycaemia and weight gain. Studies have shown clear evidence of reduced hypoglycaemia, during Ramadan, with DPP-4is versus SUs.
Ramadan-specific Advice: In most cases, preparation for Ramadan is an opportunity to stop or adjust the dose of of SU, focus on lifestyle changes and in advance of Ramadan consider alternatives such as a SGLT2-i or DPP-4i. In some cases, the morning dose of the SU may need to be reduced with the *Suhoor* meal and maintained with the *Iftaar* meal to reduce the potential for hypoglycaemia.

Clinical Notes

GLP1-RA — *Glucagon-like peptide-1 receptor agonists* (GLP1-RA): These agents have a low risk of hypoglycemia together with reductions in HbA1c and weight loss. The safety of these agents has been established in clinical trials specifically during Ramdan.
Ramadan-specific Advice: The common side-effects of nausea and vomiting could increase the risk of dehydration. Therefore, these agents should be started at least 4–8 weeks prior to Ramadan to ensure tolerance. In some cases, dose reduction may be needed.

Insulin — Advice on changing insulin doses will be dependent on the specific insulin regimen. There are no stipulations against glucose testing during Ramadan.
Ramadan-specific Advice: In a basal-bolus regimen, the long-acting dose, should be given with the *Iftaar* meal in the evening. A 20% dose reduction should be considered and could be titrated upwards as needed. The bolus insulin dose (now only twice a day as there are only 2 meals) would need to be adjusted, usually upwards, to the food intake at the two main meals.
In a bd regimen, the morning dose could be given with the now bigger evening meal *(Iftaar)*. 50% of the usual evening dose could be given with the morning *(Suhoor)* meal.

Other Notes: Pioglitazone does not require adjustment. Other agents such as diuretics are best given in the evening. This will also apply to other agents such as aspirin, and anti-hypertensive agents (to avoid hypotension associated with volume depletion).

Adapted from, Ibrahim M, Davies MJ, Ahmad E, *et al*. Recommendations for management of diabetes during Ramadan: update 2020, applying the principles of the ADA/EASD consensus. *BMJ Open Diabetes Research and Care* 2020;**8**:e001248. doi: 10.1136/bmjdrc-2020-001248

Identification of High-Risk Patients Unsuitable for Fasting

Pre-Ramadan assessment, with shared-decision making with the patient, is essential to facilitate safe fasting. There are many risk calculators, such as the one on the Diabetes and Ramadan website (www.daralliance.org). The table below offers a guide to aid discussion with the patient. The main risks to the patient are in relation to hypoglycaemia, hyperglycaemia, DKA, and unstable glycaemia. Patients with Type 1 diabetes should seek advice from a specialist diabetes team.

Categories of risk in patients with type 2 diabetes who fast during Ramadan

Very high risk: fasting not recommended
• Severe hypoglycaemia within the 3 months prior to Ramadan. • Severe hyperglycaemia: ranging 12 to 16 mmol/l fasting or premeal or HbA1c >86 mmol/mol (>10%). • Recurrent hypoglycaemia or hypoglycaemia unawareness. • DKA/hyperosmolar hyperglycaemic state within the 3 months prior to Ramadan. • Acute illness, Pregnancy, Chronic dialysis, or dementia or cognitive dysfunction, physically-demanding job.
High risk: may choose not to fast
• Moderate hyperglycaemia: ranging 8 to 14 or HbA1c 64–86 mmol/mol (8%–10%)). • Significant microvascular or macrovascular complications. • Living alone and treated with insulin or SU. • Comorbidities: eg heart failure, stroke, malignancy, CKD 3 and above, frailty/ elderly >75 years of age.
Moderate risk: may choose to fast with caution and advice
• No or stable complications and HbA1c <64 mmol/mol (<8%) treated with lifestyle intervention, metformin, SGLT2-i, DPP-4i, pioglitazone, GLP1-RA, stable insulin regimes
Low risk: may choose to fast
• No complications and HbA1c <53 mmol/mol (<7%) treated with lifestyle intervention, and/or metformin, SGLT2-i, DPP-4i, pioglitazone, GLP1-RA

Adapted from several resources, main resource: Ibrahim M, Davies MJ, Ahmad E, *et al.* Recommendations for management of diabetes during Ramadan: update 2020, applying the principles of the ADA/EASD consensus. *BMJ Open Diabetes Research and Care* 2020;**8**:e001248. doi: 10.1136/bmjdrc-2020-001248

Counselling advice: Guidance for Diabetes Patients Desiring to Fast

Patient resources are readily accessible on www.diabetes.org.uk, and for awareness contains similar information to below.

Ramadan should be a time of spiritual development, whilst maintaining, or even improving, your physical health and general well-being. There are some important principles that will help you achieve this safely and effectively.

1. **Engage with the Diabetes Care Team**
   - Make sure you see your diabetes care team so that advice can be given to you on whether it is safe for you to fast or not. Fasting will affect your blood glucose levels and your and blood pressure. Some of your medications will need to be changed during Ramadan.
   - For most patients it will be safe to fast once you have discussed your medications and other issues with the diabetes care team

2. **Regular blood glucose checking- if you are already testing**
   - You are allowed to continue checking your glucose levels throughout the fast period in between *Suhoor* and *Iftaar*. This is very important to avoid low glucose levels (hypoglycaemia) and high glucose levels (hyperglycaemia).
   - Look out for sweating, fast heart rate, intense hunger, dizziness, fainting, confusion, nausea, vomiting. If this happens, check your blood glucose immediately and act on it, even if it means that the fast is broken.

3. **Stay well-hydrated and plan physical activity to avoid dehydration**
   - Make sure you are drinking plenty of fluids when you are not fasting in between *Iftaar* and *Suhoor* (when you not fasting and allowed to eat). If the weather is hot during Ramadan, try to stay in a cool area and reduce your physical activity during the fasting period.
   - Foods such as cucumbers, tomatoes, apples, carrots, melons, all contain a lot of water that is slowly absorbed and will reduce thirst during the fasting period.

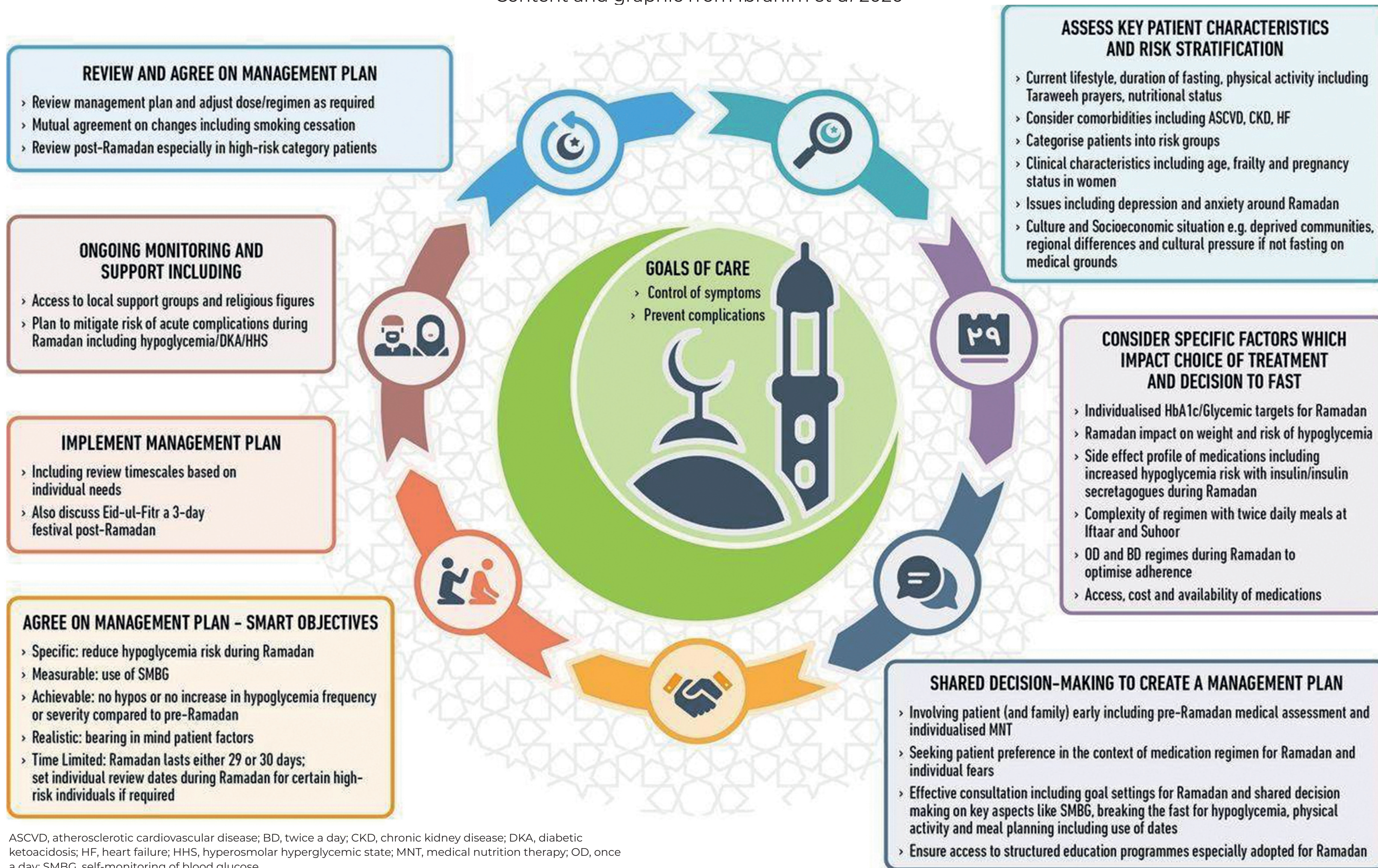
4. **Be careful with the amount of sugary, high-carb, foods with meals**
   - A few dried dates are a good idea to break the fast at *Iftaar*. The sugars are absorbed slowly.
   - Continue to avoid swings in blood glucose levels by only eating small portions of sweet foods.

5. **Ensure that you have a balanced Suhoor and Iftaar meal**
   - Each meal should have a good balance of protein, a small amount fat, and some carbohydrate. There should still be the idea of a minimum of 5 portions of vegetables/fruits across the meals and in-between.
   - Do not be tempted to over-eat and put weight on during the month of Ramadan.

Adapted from various sources including Diabetes UK Ramadan advice and The Diabetes and Ramadan website https://www.daralliance.org accessed January 2024.

Decision cycle for patient-centred glycaemic management in Muslim patients during Ramadan

Content and graphic from Ibrahim *et al* 2020



ASCVD, atherosclerotic cardiovascular disease; BD, twice a day; CKD, chronic kidney disease; DKA, diabetic ketoacidosis; HF, heart failure; HHS, hyperosmolar hyperglycemic state; MNT, medical nutrition therapy; OD, once a day; SMBG, self-monitoring of blood glucose.

Ibrahim M, Davies MJ, Ahmad E, *et al*. Recommendations for management of diabetes during Ramadan: update 2020, applying the principles of the ADA/EASD consensus. *BMJ Open Diabetes Research and Care 2020;***8**:e001248. doi: 10.1136/bmjdrc-2020-001248