Ramadan is the 9th month of the Islamic lunar calendar where Muslims are expected to fast from just before sunrise (Sahur) to sunset (Iftar). This year, fasting times are between approximately 2:40 AM to 9:20 PM. These times change as the month progresses and it is expected that Ramadan will start on 18 June 2015. People observing fasting are expected to go without food, liquids (including water), smoking for the duration of the fast. Some people fast for the entire month during fasting hours and others may fast for a few days.

Although people with diabetes are exempt for medical reasons (especially those in high risk and very high risk-see below for list), many will chose to fast regardless of its implications. Fasting for prolonged periods may put people with diabetes at risk from hypoglycaemia, dehydration and effects of not taking their regular medications in time. Health professionals are encouraged to discuss with their high-risk patients, the potential implications of fasting if patients choose to do so (Diabetes UK - Imam and Mosque).

Patients must be strongly encouraged to stop their fast immediately if they have hypoglycaemia or feel unwell.

There is a popular misconception that testing blood glucose breaks that fast, however Muslim scholars are clear that it does not, and this must be conveyed to patients.

People with diabetes maybe categorised depending on their risk profile as follows. This is only a guide, and clinical judgement should be used when determining risk.

**Very high-risk group**

This group of people must be strongly discouraged from fasting

- Type 1 diabetes
- Insulin treated type 2 diabetes mellitus-especially if more than just od basal insulin
- Pregnancy
- Acute illness
- Renal insufficiency
- Severe hypoglycaemic attacks /DKA/HHS 3 months prior to Ramadan
- Hypoglycaemia unawareness

**High-risk group**

Try to discourage people from fasting

- Living alone and on insulin/co-morbidities
- Old age/frail with ill-health
- People who do intense physical work

**Low risk group**
May fast if they wish to

- People well controlled on prandial glucose regulators such as Repaglinide or Nateglinide
- GLP1 agonists (Exenatide, Liraglutide, Lixisenatide) or DPP4 inhibitors (Sitagliptin, Linagliptin, Saxagliptin) as monotherapy or in combination which does not include Sulphonylureas (Gliclazide, Glibenclamide)

**Very Low Risk group**

May fast if they wish to

- People well controlled on diet alone, Metformin or Pioglitazone
Non-insulin drug changes during Ramadan

The following is a guide for health care professionals and treatment should be individualised according to patient’s build, dietary habits (carbohydrate intake) and their physical activity.

<table>
<thead>
<tr>
<th>Drug</th>
<th>Usual regime</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metformin</td>
<td>500mg OD</td>
<td>Take one in the evening at sunset</td>
</tr>
<tr>
<td></td>
<td>500mg/850mg bd</td>
<td>Take one in evening at sunset and one sunrise</td>
</tr>
<tr>
<td></td>
<td>1g bd</td>
<td>One-third at sunrise and 2/3rd at sunset</td>
</tr>
<tr>
<td></td>
<td>500mg TDS</td>
<td>1/3 sunrise and 2/3rd sunset</td>
</tr>
<tr>
<td>Metformin S/R</td>
<td>500 mg-</td>
<td>one tablet sunset</td>
</tr>
<tr>
<td></td>
<td>1000mg</td>
<td>Take tablets at sunset</td>
</tr>
<tr>
<td></td>
<td>1500 mg</td>
<td>Take tablets at sunset</td>
</tr>
<tr>
<td></td>
<td>2000 mg</td>
<td>Take tablets at sunset</td>
</tr>
<tr>
<td>Gliclazide</td>
<td>80 mg bd</td>
<td>40 mg at sunrise and 80 mg at sunset</td>
</tr>
<tr>
<td></td>
<td>160 mg bd</td>
<td>40-80 mg at sunrise and 80-160 mg at sunset</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Option to change to Repaglinide 500 mcg at PM or DPP4i to reduce risk of hypoglycaemia</td>
</tr>
<tr>
<td>Pioglitazone</td>
<td>Any dose</td>
<td>No change</td>
</tr>
<tr>
<td>DPP4 inhibitors</td>
<td></td>
<td>No change-caution with sulphonylureas (see before)</td>
</tr>
<tr>
<td>GLP1 agonists</td>
<td></td>
<td>May need to reduce dose if severe nausea or if used with sulphonylureas</td>
</tr>
<tr>
<td>Prandial glucose regulators</td>
<td></td>
<td>Reduce sunrise dose to half and same dose at sunset</td>
</tr>
<tr>
<td>SGLT2 inhibitors</td>
<td></td>
<td>Same dose, caution with sulphonylureas (see before)</td>
</tr>
</tbody>
</table>
Insulin Changes during Ramadan

It is difficult to achieve good glycaemic control in people treated with insulin who choose to fast. The duration of the fast may be as long as 17 hours. Avoiding hypoglycaemia and acute complications of hyperglycaemia are priorities. Some patients may benefit from ‘trial runs’, fasting for shorter durations before Ramadan to learn the effects of fasting with insulin.

1. **Basal only** patient should be advised to reduce insulin by 20% -30 % and take at sunset

2. **Mixed insulin BD**

   Preferably change to basal analogue (Lantus/Levemir) at sunset and one bolus at sunset and at sunrise

   Example - The person is on Novomix 30 or Humulin M3 30 units AM and 40 units PM
   - Here, the total insulin dose is 70 units. In these insulins, 30% is short acting (21 units in this example) and 70% long acting (49 units in this example)
   - Split the insulin to basal and bolus components separately. For safety, reduce the basal insulin by 10%. So this patient would take 44 units of Lantus or Levemir and depending on their meals, approximately 10 units of Novorapid or Humalog with their evening meal (around 9:30 PM) and their early morning meal (around 2:40 AM)
   - The same principle applies if they are on a 50:50 mix (Humalog Mix50). Calculate the total dose of insulin, reduce the basal by 10% and give 2 boluses with meals
   - If a patient prefers to stay on mixed regime, they should omit the sunrise dose and take normal dose at sunset (It is unsafe to advise this for people with Type1 diabetes)

3. **Basal bolus**-
   - Patient should continue same dose basal long acting insulin at sunset (some may need dose reductions) and bolus at sunset and sunrise. They do not take the lunchtime insulin.

**Other medicines**

- Statins may be taken with evening meal
- Caution with antihypertensives-dehydration may result in hypotension or acute kidney injury

Guidelines drafted and supported by: Dr S Mushtaq (GPSi Diabetes), Dr H Muhsin (GPSi Diabetes), and Dr A Ali, Consultant Physician, diabetes and endocrinology for MK diabetes care