Education, Dedication, Care
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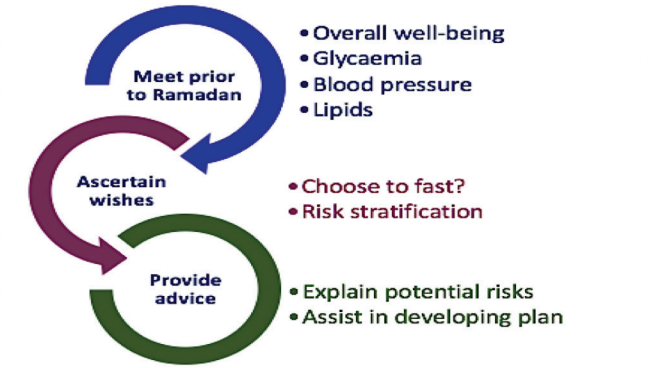
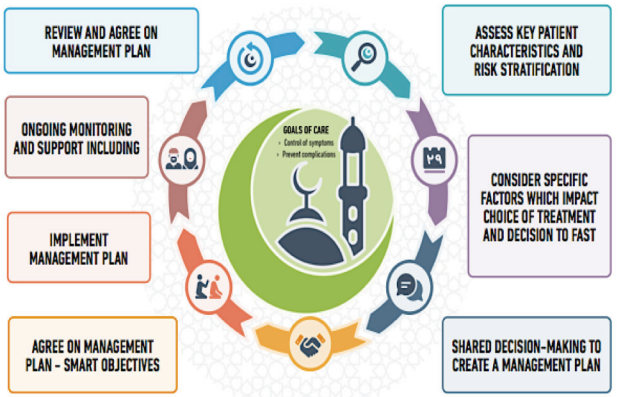
Center for Diabetes Education

Optimizing Ramadan Fasting Applying the ADA/EASD Consensus



8 to 6 weeks prior to Ramadan

DECISION CYCLE FOR PATIENT-CENTRED GLYCAEMIC MANAGEMENT IN MUSLIM PATIENTS DURING RAMADAN[1]



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Patient education & Advise Sessions

Risk Stratification

Encourage very high risk and high risk individuals not to fast

VERY HIGH RISK- FASTING NOT RECOMMENDED	HIGH RISK- MAY CHOOSE NOT TO FAST	MODERATE RISK- MAY CHOOSE TO FAST WITH CAUTION	LOW RISK- MAY CHOOSE TO FAST
1. Severe hypoglycemia within 3 months 2. Severe hyperglycemia - average glucose >16.7mmol/l (300mg/dl) or HbA1c >86mmol/l (10%) 3. Recurrent hypoglycemia or hypoglycemia unawareness 4. DKA/HHS within 3 months 5. Acute illness 6. Intense physical labor 7. Pregnancy 8. Chronic dialysis 9. Dementia/cognitive deficits	1. Moderate hyperglycemia (average glucose 8.3-16.7mmol/l (150-300mg/dl) or HbA1c 64-86mmol/mol (8-10%)) 2. Significant microvascular or macrovascular complications 3. Living alone and treated with insulin or sulfonylureas 4. Comorbid conditions like heart failure, stroke, malignancy etc. 5. Elderly >75 years of age	1. Healthy individuals with HbA1c <64 mmol/mol (8%) treated with • lifestyle intervention • metformin • thiazolidinedione (TZD) • incretin-based therapies • SGLT2i* • short-acting insulin secretagogues	1. Healthy individuals with HbA1c <53 mmol/mol (7%) treated with • lifestyle intervention • metformin • TZD • incretin-based therapies

Self-monitoring of blood glucose

Recommendation during Ramadan both group (control + intervention)

No	Timing of SMBG
1	*Mid-day (Noon)*
2	*2 hours Pre-Iftar*
3	*Pre-Iftar*
4	*2 hours Post-Iftar*
5	*Pre-Sahoor*
6	*2 hours Post-Sahoor*
7 or more	***At any symptoms or signs of hypoglycemia***

To be done Irrespective of the type or regimen of treatment

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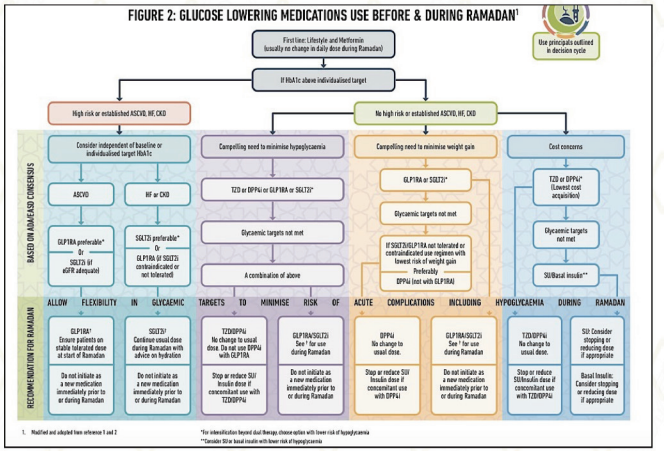
Avoid complications

- Use frequent glucose monitoring in those at higher risk of hypoglycaemia (use of insulin or SU).
- Advice patients that blood glucose testing does not break fast.
- Advice individuals to stop the fast in case of acute illness and if BG level of <3.9mmol/L (<70mg/dl) or >16.6mmol/L (>300mg/dl).
- Avoid excessive physical activity before the sunset meal, in those with high risk of hypoglycaemia, those on insulin or SUs.

Recommended medical therapy changes during Ramadan for patients with type 2 diabetes

Prior to Ramadan	During Ramadan
Metformin	No change in total daily dose. • If on once a day, take with Iftaar meal. • For those on twice a day, take usual doses at Iftaar and Suhoor meals. • If on three times a day, combine the lunch time dose with Iftaar meal and take the morning dose at Suhoor. • For slow release preparation, take with Iftaar meal
SGLT2i	No dose change is usually required but patients should be well established on these prior to start of Ramadan. Ensure adequate hydration during permissible hours and take usual dose with Iftaar meal.
DPP4 inhibitor	No dose change is usually required but consider reducing the dose of concomitant Sulfonylurea (SU) or stopping SU.
Sulfonylurea (SU)	Consider either substituting, stopping or reducing the dose especially if well-controlled diabetes prior to Ramadan. • If on once a day, take the usual dose at Iftaar meal. • If on twice a day, take usual dose at Iftaar meal and 50% of the usual dose with Suhoor meal.
GLP-1RA	No dose change is usually required but patients should be established on a stable tolerated dose a few weeks prior to start of Ramadan. If not tolerated, either reduce the dose or stop the GLP-1RA, especially if nausea or vomiting
Insulin	Please follow the guidance on the next slide



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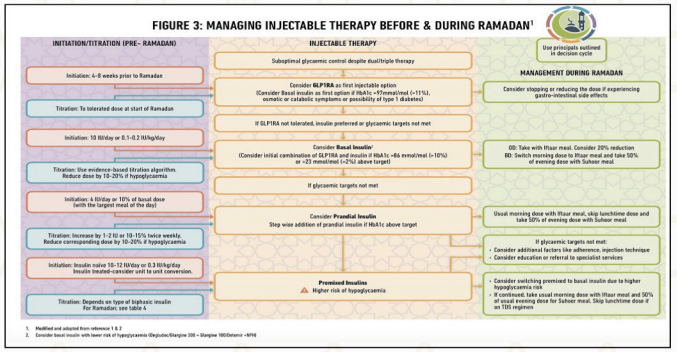
Managing insulin therapy during Ramadan

Prior to Ramadan	During Ramadan
If taking SU with insulin	Consider stopping SU
For any insulin	Try to titrate and establish dose to achieve adequate glycaemic control prior to start of Ramadan and then adjust dose during Ramadan accordingly.
Basal insulin	Once a day: Take with Iftaar meal, but consider a 20% reduction from usual dose. Twice a day: Take the usual morning dose with Iftaar meal and 50% of the usual evening dose for Suhoor meal.
Rapid-acting analogues	Take the usual morning dose with Iftaar meal, skip the usual lunch time dose and take 50% of the usual evening dose for Suhoor meal if required.
Premixed insulins	Take the usual morning dose with Iftaar meal and 50% of the usual evening dose for Suhoor meal. Skip the usual lunch time dose if on three times a day regimen.

Managing Premixed insulin therapy during Ramadan

Algorithm for premixed insulin titration during Ramadan	
Fasting pre-Iftar- pre-Suhoor BG	**Insulin adjustment**
>16.6 mmol/L (300 mg/dl)	Break the fast Increase daily insulin dose by 20%
>10 mmol/L (180 mg/dl)	Increase insulin daily dose by 10%
5.5–10 mmol/L (100–180 mg/dl)	No change
<3.9 mmol/L (70 mg/dl)	Break the fast Reduce insulin daily dose by 20%
<2.8 mmol/L (50 mg/dl)	Break the fast Stop Insulin Or Reduce insulin daily dose by 30–40%



Recommended therapeutic intervention

Recommended therapeutic intervention based on the ADA/EASD recommendations

If concerned about hypoglycemia or had previous hypoglycemia

- **If on Metformin only,**
  - Add DDP4 Inhibitor or Pioglitazone or GLP-1 RA (if accept injectable)
- **If on Combination Metformin & SU or SU only**
  - Change SU to DDP4 Inhibitor (preferred)
  - Change SU to Pioglitazone
  - Change SU to GLP-1 RA (preferred if accept injectable)
  - Change older SU to modern SU if applicable (with lower hypoglycemia and cv safety profile e.g. Gliclazide or Glimepiride)
  - Change SU to SGLT2 Inhibitor*
- **If above A1c target on any of the above recommended**
  - Combine any of the above recommended EXCEPT DDP4 Inhibitor with GLP-1 RA
  - Add Basal insulin with low risk for hypoglycemia (2nd or 1st generation e.g. Glargine U300/ Degludec then Glargine U100 / Detemir (preferred if accept injectable)
  - Add modern SU (with lower hypoglycemia and cv safety profile e.g. Gliclazide or Glimepiride) if refuses injectable

If concerned about weight or desire weight reduction

- **If on Metformin only,**
  - Add GLP-1 RA (preferred & if accept injectable)
  - Add SGLT2 Inhibitor*
  - Add DDP4 Inhibitor (If NOT on GLP-1 RA and/or does NOT accept injectable)
- **If on Combination Metformin & SU, Pioglitazone or SU or Pioglitazone only**
  - Change Pioglitazone to GLP-1 RA if not on DDP4 Inhibitor (preferred)
  - Change Pioglitazone to SGLT2 Inhibitor*
  - Change Pioglitazone to DDP4 Inhibitor
  - Change SU to GLP-1 RA if not on DDP4 Inhibitor (preferred & if accept injectable)
  - Change SU to SGLT2 Inhibitor*
  - Change SU to DDP4 Inhibitor if not on GLP-1 RA
- **If above A1c target on any of the above recommended**
  - Combine any of the above recommended EXCEPT DDP4 Inhibitor with GLP-1 RA
  - Careful addition of 2nd or 1st generation basal insulin or modern SU (better to avoid if have other option)

ASCVD, Heart failure or at risk for CVD, CKD
(NOT TO FAST particularly if active or recent) BUT if insist to fast

- If not on any medications or on Metformin only,
  - Add GLP-1 RA with proven CV and renal benefit and stop DDP4 Inhibitor if any (preferred for ASCVD)
  - Add SGLT2 Inhibitor (preferred for ASCVD, HF, CKD)
- If above A1c target in any of the above recommended
  - Combine any of the above recommended EXCEPT DDP4 Inhibitor with GLP-1 RA
  - Add DDP4 Inhibitor if not on GLP-1 RA or pioglitazone or 2nd or 1st generation basal insulin or modern SU with low risk for hypoglycemia and proven CV safety

In addition, DO usual necessary medical therapy changes during Ramadan for other medications

* Be aware of the possibility of hypovolemia with SGLT2 Inhibitors particularly in elderly patients, those with renal impairment, hypotensive patients or those on diuretics

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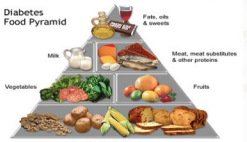
Ongoing support and review

- Ensure access to local support groups including religious clerics if needed.
- Review times scales based on individual needs and risk factors.
- Provide written plans to mitigate needs of acute complications.
- Ramadan offers a unique opportunity to address additional risk factors like weight and smoking cessation, so support your patients who are motivated.
- Discuss Eid festival including dietary advice.
- Review post-Ramadan in very high risk and high risk

Nutrition and Ramadan



Goals for nutrition during Ramadan

MNT (Medical Nutrition Therapy) should be provided by a registered dietitian or nutrition professional and should include:

- Principles of healthy eating behaviors
  - Reducing risk of dehydration
- Preventive methods for hypoglycemia
- Proper portion intake
- Incorporating dates into the meal plan
- Physical activity after meals
- Meal planning during Eid
  - Portion control

Consumption of Dates

- Daily consumption of dates is a deeply rooted tradition among Muslims, especially during Ramadan.
- Recommended to break the fast with dates – emulating Prophet Mohammad
- Two to three dates can be eaten safely when breaking fast IF other carbohydrates are reduced at that time.

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A Note About Physical Activity

- **Physical activity should be encouraged during Ramadan**
  - Show caution with anything strenuous, especially before the sunset meal
    - ✓ those on insulin or insulin secretagogues
- **Taraweeh prayer after Iftaar**
  - Since it involves repeated cycles of rising, kneeling, and bowing, it could be considered part of daily physical activity
- **Focus on impact of excessive physical activity**
  - may lead to a higher risk of hypoglycemia
  - should be avoided especially before the sunset meal
  - To avoid dehydration, recommend drinking non-caloric fluids before and after Taraweeh and any activity before/after Iftar or Suhoor

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