Digesting the facts on post-meal glucose and diabetes

1

Blood glucose control for type 1 and type 2 diabetes

In diabetes, the body cannot produce enough or cannot respond to insulin.

This means glucose can stay in the bloodstream.

When blood glucose levels become too high it is known as hyperglycaemia.

When this happens after eating it is known as **post-meal hyperglycaemia.**

This can have a number of negative impacts[4] and may increase diabetes management and healthcare resource use[5].

Long-term impact of hyperglycaemia:

- Kidney disease or failure[1]
- Cardiovascular complications[1]
- Eye disease[1]
- Increased risk of death[1,3]

2

The level of blood glucose concentration measured 1-2 hours after eating is known as post-meal or post-prandial glucose (PPG)

When blood glucose levels become too high after eating this is known as post-meal hyperglycaemia

3

PPG is an important part of the picture for overall blood glucose control

Average measure

- Average blood glucose concentration.
- Usually measured every 3 months.
- Does not measure short-term fluctuations over 24 hours.

HbA1c (glycated haemoglobin)

Blood glucose after eating

- Blood glucose concentration measured 1-2 hours after eating.

Blood glucose after fasting

- Blood glucose concentration measured after not eating or drinking for 6-12 hours.

The goal of diabetes therapy should be to achieve near to normal levels in all three measures[6].

PPG

FPG (fasting plasma glucose)

The use of a mealtime insulin primarily seeks to control PPG, and therapy with a basal (long-acting) insulin primarily seeks to control blood glucose between meals and overnight, including fasting plasma glucose (FPG)[7,8].

4

Inadequate PPG control occurs frequently in people with type 1 and type 2 diabetes treated with insulin[5,9]

People with diabetes may spend 50% of their day in a post-meal hyperglycaemic state[10]

5

Prevalence of post-meal hyperglycaemia in people with type 1 and type 2 diabetes

In a study of more than 900 people with diabetes, being treated with mealtime insulin[5]:

62% experienced **post-meal hyperglycaemia** in the past week

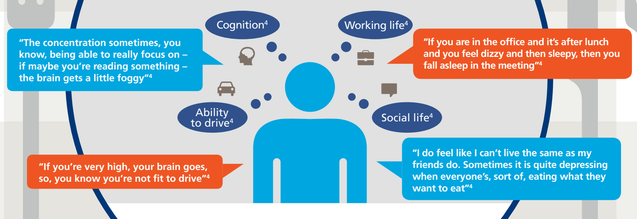
30% experienced **post-meal hyperglycaemia 3 or more times** in the past week

6

Physical impact of post-meal hyperglycaemia

Hot and sweaty[4] · Tiredness[4] · Dizziness[4]

Impact on daily life



Emotional and cognitive impacts

Post-meal hyperglycaemia can leave people: **demoralised, scared, unsociable and irritable[4].**

7

Economic impact of post-meal hyperglycaemia

- Post-meal hyperglycaemia is associated with greater use of healthcare resources, including significantly greater contact with healthcare professionals[5].
- People with diabetes experiencing post-meal hyperglycaemia are significantly more likely to be diagnosed with diabetes related medical complications[5].

Impact on work

Missed work time and reduced productivity is reported among working people with diabetes experiencing post-meal hyperglycaemia[11]:

7 out of 10 reported reduced productivity at work[11]

5 out of 10 found it difficult to focus at work[11]

8

Targeting post-meal hyperglycaemia

Improved PPG control is important to achieve HbA_{1c} targets[12], and reduce risk of long-term complications[1,13].

Strategies for preventing and managing post-meal hyperglycaemia should be considered to reduce impacts on daily life for people with diabetes and economic implications[4,5,8,11].

Treatment should be tailored to an individual's needs, although a therapeutic regime including a bolus insulin seeks to manage PPG[7,8].

1. World Health Organization (WHO). About diabetes. 2013. Available at: http://www.who.int/diabetes/action_online/basics/en/index.html 2. The DECODE Study Group on behalf of the European Diabetes Epidemiology Group. Is the current definition for diabetes relevant to mortality risk from all causes and cardiovascular and noncardiovascular diseases? *Diabetes Care* 2003;26:688-696 3. Shaw JE, *et al*. Isolated post-challenge hyperglycaemia confirmed as a risk factor for mortality. *Diabetologia* 1999;42:1050-1054 4. Heller S, *et al*. Towards a better understanding of acute post-prandial hyperglycaemic episodes: a patient perspective. Study conducted by ICON Patient Reported Outcomes under a consulting agreement with Novo Nordisk A/S. Presented at the World Diabetes Congress (Poster #0956-P) 30 November – 4 December 2015 5. Brod M, *et al*. Post-prandial hyperglycaemic episodes and healthcare resource use among people with diabetes in the US, UK, and Germany. Research supported by Novo Nordisk. Presented at the World Diabetes Congress (Poster #0720-P) 30 November – 4 December 2015 6. Ceriello A and Colagiuri S. International Diabetes Federation guideline for management of postmeal glucose: a review of recommendations. *Diabetic Medicine* 2008;25:1151–1156 7. DeWitt DE and Hirsch IB. Outpatient insulin therapy in type 1 and type 2 diabetes mellitus: Scientific review. *JAMA* 2003;289(17):2254-2264 8. American Association of Clinical Endocrinologists (AACE). Diabetes resource centre. Treatment of type 1 diabetes. Available at: http://outpatient.aace.com/type1-diabetes/treatment 9. Pfeiffer KM, *et al.* The impact of post prandial hyperglycaemia (PPH) on diabetes management. Research supported by Novo Nordisk. Presented at the World Diabetes Congress (Poster #1074-P) 30 November – 4 December 2015 10. Monnier L, *et al.* Is postprandial glucose a neglected cardiovascular risk factor in type 2 diabetes? *European Journal of Clinical Investigation* 2000;30(suppl 2):3-11 11. Brod M, *et al.* Post-prandial hyperglycaemia (PPH): Missed work time and reduced productivity among people with diabetes. Research supported by Novo Nordisk. Presented at the World Diabetes Congress (Poster #0721-P) 30 November – 4 December 2015 12. Monnier, *et al.* Postprandial and basal glucose in type 2 diabetes: Assessment and respective impacts. *Diabetes Technology & Therapeutics* 2011;13(S1):25–32 13. Ceriello A, *et al.* Guideline for management of postmeal glucose. *Nutrition, Metabolism & Cardiovascular Diseases* 2008;18:S17-33

HQMMA/FA/0714/0001a(1) Date of Preparation: November 2015

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