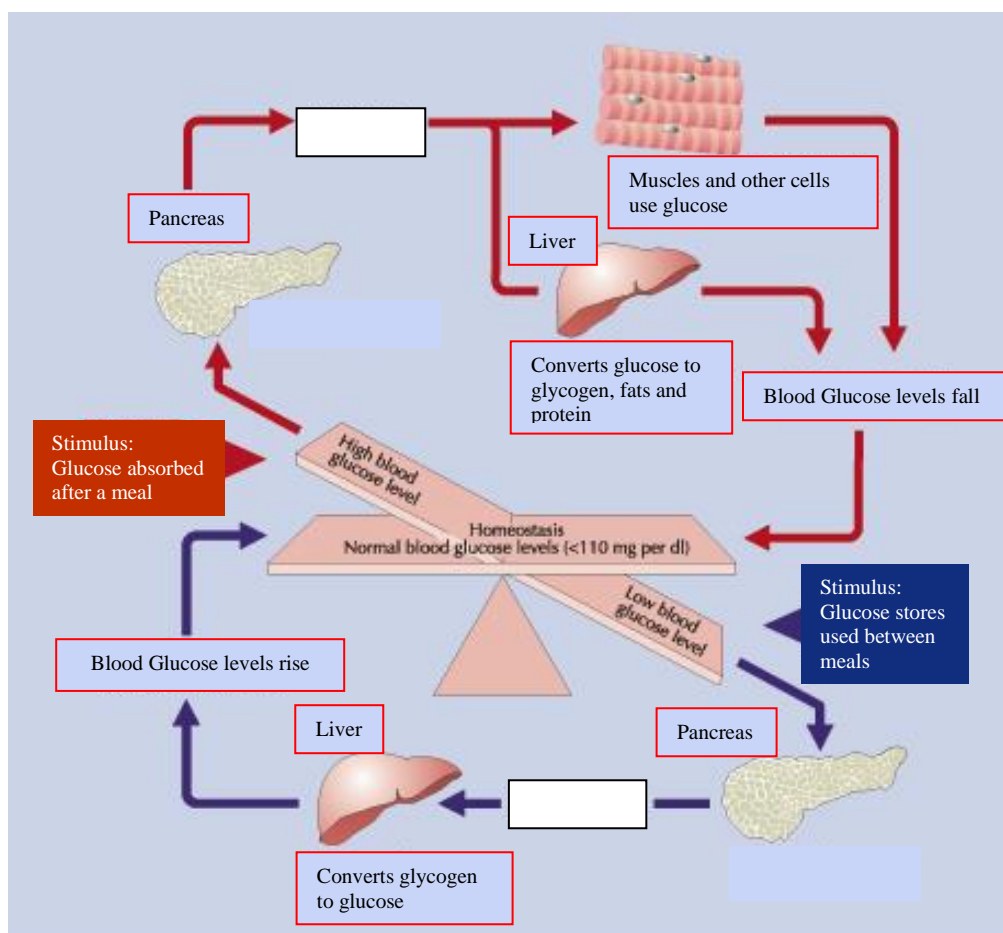


North Tees and Hartlepool NHS Foundation Trust	Specialist Portfolio – Discipline Specific Knowledge 7.7 Diabetes
Directorate of Clinical Pathology	Working Copy- version 2
Biochemistry	Printed:

7.7 Diabetes Mellitus and Hypoglycaemia

Short notes:

1. What is hyperglycaemia and hypoglycaemia? List the common causes for each.
2. Briefly discuss the cause and pathophysiology of types 1 and type 2 diabetes.
3. What is meant by the term 'secondary diabetes' – list 3 medical conditions that can cause this?
4. The image below shows a simplistic view of how the body controls and regulates Glucose - fill in the white blank boxes (and briefly discuss the effects and actions of these two hormones):



5. Describe the following pathways
 1. Gluconeogenesis
 2. Glycogen synthesis
 3. Glycogen breakdown
6. Before 2010, UK guidelines recommended the measurement of blood glucose for diagnosing diabetes. Due to improved standardisation and wider range of assay what test should now be used (as recommended in 2011 by the World Health Organisation) for identifying and monitoring Diabetes. What is the cut off point for this test in determining the diagnosis of diabetes?
7. Describe the procedure for the oral glucose tolerance tests – how should the results be interpreted and what does an impaired test mean?
8. What differences can be found when using different samples types (whole blood, plasma and capillary) for glucose measurement.
9. What is the reference range and sample type required for the following tests?
 - Glucose – also describe the local method for this assay.
 - HbA1c – also describe the local method for this assay.
 - Insulin.
 - C-Peptide – what is this and how can it be used to investigate hypoglycaemia.
 - Lipids.
10. What is factitious hypoglycaemia and what investigations could be carried out to diagnose this?
11. NICE guidelines (clinical guidance 238, December 2023) recommend the monitoring of lipids as part of diabetes patient management. Why is this and what tests should be included in the lipid profile?
12. When measuring HbA1c what effect do Hb variants have on the assay?
13. What is Fructosamine and how could it be measured - what role can it play in the investigation of diabetes.
14. Describe the ALCR test and its clinical significance in both kidney disease and diabetes.
15. What patient methods are available for the management of diabetes? (e.g. diet, self-monitoring, drugs).

16. List two medical situations that may require closer monitoring (of blood glucose) than usual – give a reason why.
17. List 2 metabolic deficiencies can cause hypoglycaemia in neonates / infants. What laboratory investigations can be used to identify them?
18. Briefly discuss the urinary sugar chromatography method and its role in neonates.
19. What POCT Glucometers are used at UHNT and what role does the laboratory have in monitoring and maintaining their performance.
20. Briefly describe how you communicate and abnormal glucose result to the ward and GP.
21. List the other healthcare services that are available for the management of diabetics (e.g. podiatry, retinal screening, and dieticians) and briefly state their role in the management of this disease.
22. What is Hyperosmolar hyperglycaemic syndrome (HHS) and what tests would be performed to monitor a patient with this syndrome?