

Neonatal Glucose Balancing Act

Objectives

- Discuss the physiology and pathophysiology leading to states of neonatal hypoglycemia and hyperglycemia and include the known risk factors associated with alterations in glucose homeostasis
- Describe the monitoring and treatment interventions recommended for symptomatic hypoglycemia
- Define the range in which a neonate is considered euglycemic and outline the extrinsic and intrinsic factors that modulate glucose control in newborns
- Summarize the approaches identified for monitoring and treatment of asymptomatic neonatal hypoglycemia (ANH) including the use of glucose gel as a first line treatment in conjunction with breastfeeding
- List the clinical outcomes identified as a result of the ANH project developed, completed and presented by Gibson and colleagues

Content Outline

1. Glucose Homeostasis in the Neonate
 - 1.1 Overview of glucose regulation and homeostasis
 - 1.2 Barriers to defining and establishing thresholds for neonatal hypoglycemia
 - 1.3 Physiology of neonatal hypoglycemia and hyperglycemia
 - 1.3.1 Characteristics of newborns at risk
 - 1.3.2 Adverse effects
 - 1.4 Methods of measuring glucose
 - 1.5 Emerging recommendations for recognizing and treating hypoglycemia
 - 1.5.1 Use of feedings, IV glucose, dextrose gel, pharmacologic agents
 - 1.6 Recognition and management of hyperglycemia
2. A Practice Improvement Using 40% Glucose Gel for Treating Asymptomatic Neonatal Hypoglycemia (ANH)
 - 2.1 Issues created by current approaches and interventions in ANH
 - 2.2 Outline of project to evaluate effectiveness of 40% glucose gel as a first-line treatment of ANH
 - 2.3 Description of QI project components and patient demographics
 - 2.4 Clinical outcomes and summary of recommendations

Reading Material Resources

Module WB2463 Neonatal Glucose Balancing Act is based on the resources listed below. A copy of each resource is included with the module.

Neonatal Glucose Homeostasis, Blanco CL and Kim J, *Clinics in Perinatology*, 49 (2022), 393-404

40% Glucose Gel for the Treatment of Asymptomatic Neonatal Hypoglycemia, Gibson BL et al., *Advances in Neonatal Care*, 21(5), (2020), 371-378