

# Supporting Both Breastfeeding and the Baby at Risk for Neonatal Hypoglycemia

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# Learning Objectives

- Summarize the existing guidelines for the management of newborns at-risk for hypoglycemia.
- Discuss interventions for these babies that promote breastfeeding.
- Discuss future clinical practices.

# Definition neonatal hypoglycemia

- “a persistently low blood glucose level, measured with an accurate device, in an infant at risk of impaired metabolic adaptation but with no abnormal clinical signs; or
- a single low blood glucose level in an infant presenting with abnormal clinical signs .... that abate after normoglycemia is restored.”

Hawdon, NeoReviews, 2014;5(3);e91-e95

# Guidelines

- 2016: Canadian Pediatric Society (CPS)
- 2015: Pediatric Endocrine Society (PES)
- 2014: Academy of Breastfeeding Medicine (ABM)
- 2014: All India Institute of Medical Sciences (AIIMS)
- 2013: UNICEF Baby Friendly Initiative
- 2013: Queensland Gov't, Australia
- 2011: American Academy of Pediatrics (AAP)
- 2005 (2011): ACoRN textbook

**Testing:**  
**Who?**  
**When?**  
**Why?**

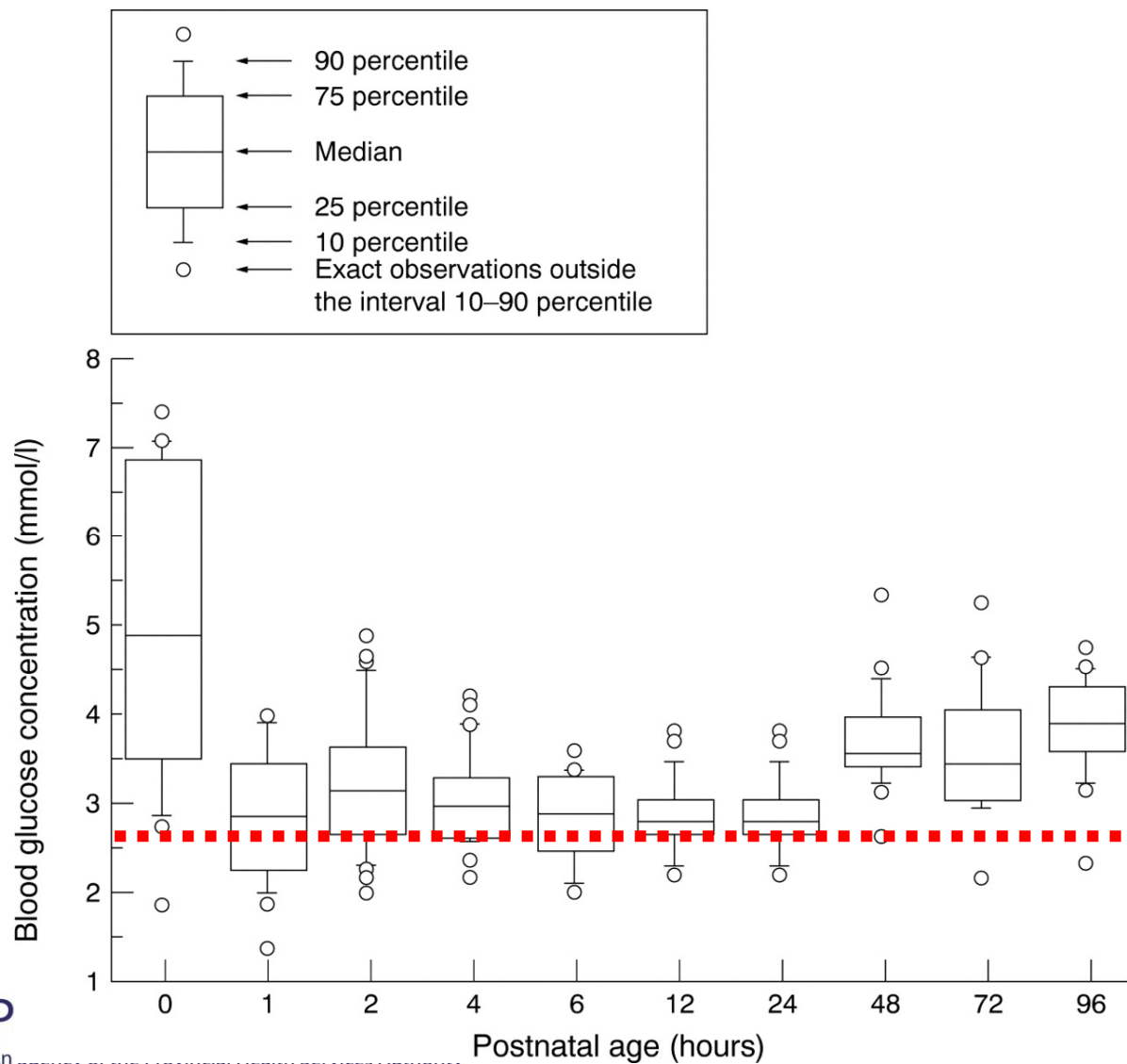
# Glucose screening

- Babies who are term, healthy, able to stay with mother and receive early feeds, do not need to be screened for hypoglycemia<sup>1,2,etc</sup>

<sup>1</sup> Canadian Paediatric Society, Fetus and Newborn Committee, 2016

<sup>2</sup> ABM Clinical Protocol#1: Guidelines for Blood Glucose Monitoring and Treatment Hypoglycemia in Term and Late-Preterm Neonates, 2014

# AGA, term, breastfed babies



P

Agency for the Promotion of Breastfeeding

# Babies at risk for hypoglycemia

- Maternal factors
  - Diabetes
  - Intrapartum administration of IV glucose
  - Maternal drug therapy
  - Family history of metabolic disorders
- Neonatal factors:
  - Decreased glycogen stores
  - Increased glucose utilization
  - Hyperinsulinemia
  - Decreased gluconeogenesis



# When to obtain a blood glucose and why

- Babies with risk factors at 2 hours of age
- Any time abnormal clinical signs are presented
  - Urgent need to investigate cause and institute treatment
- Admitted for observation or management
  - Conditions that increase metabolic demand, or interfere with adequacy of feeding or perfusion of liver

**Intervening:**  
**When?**  
**How?**  
**Why?**

# Management principles

Basic principles of newborn hypoglycemia management are:

1. Prevent babies from becoming hypoglycemic.
2. Detect those babies who are hypoglycemic.
3. Treat those babies who are hypoglycemic.
4. Find a cause if the hypoglycemia is severe, persistent or recurrent.

# Prevention

- Manage maternal factors such as blood sugars
- Keep baby warm
- Initiate early skin to skin contact
- Initiate feeds within 30 to 60 minutes of birth
- Frequent feedings in the first few days of life

# Detection

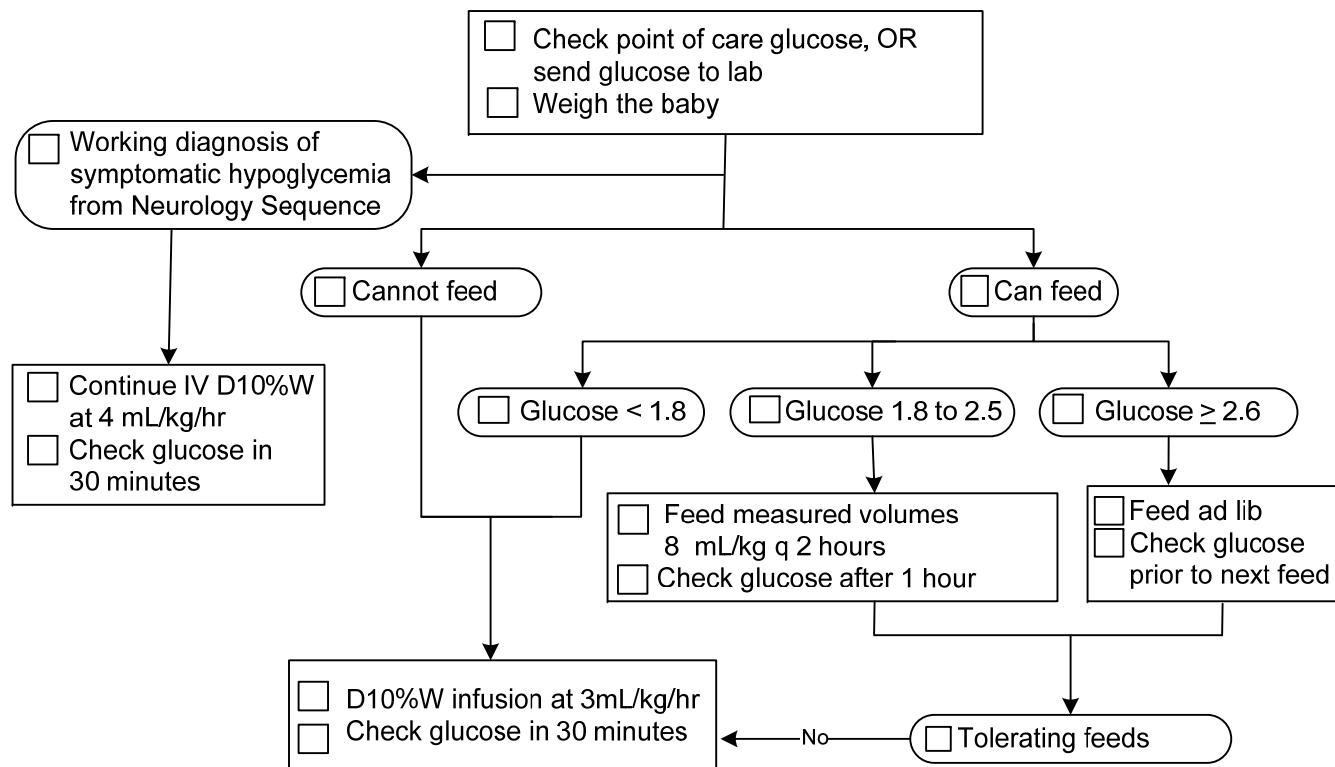
- Observe
- Clinical signs are neither sensitive nor specific
- Blood glucose level

# Treatment

Dependent on:

- Asymptomatic or symptomatic
- Blood glucose level less than 2.6 or 1.8





# Treatment

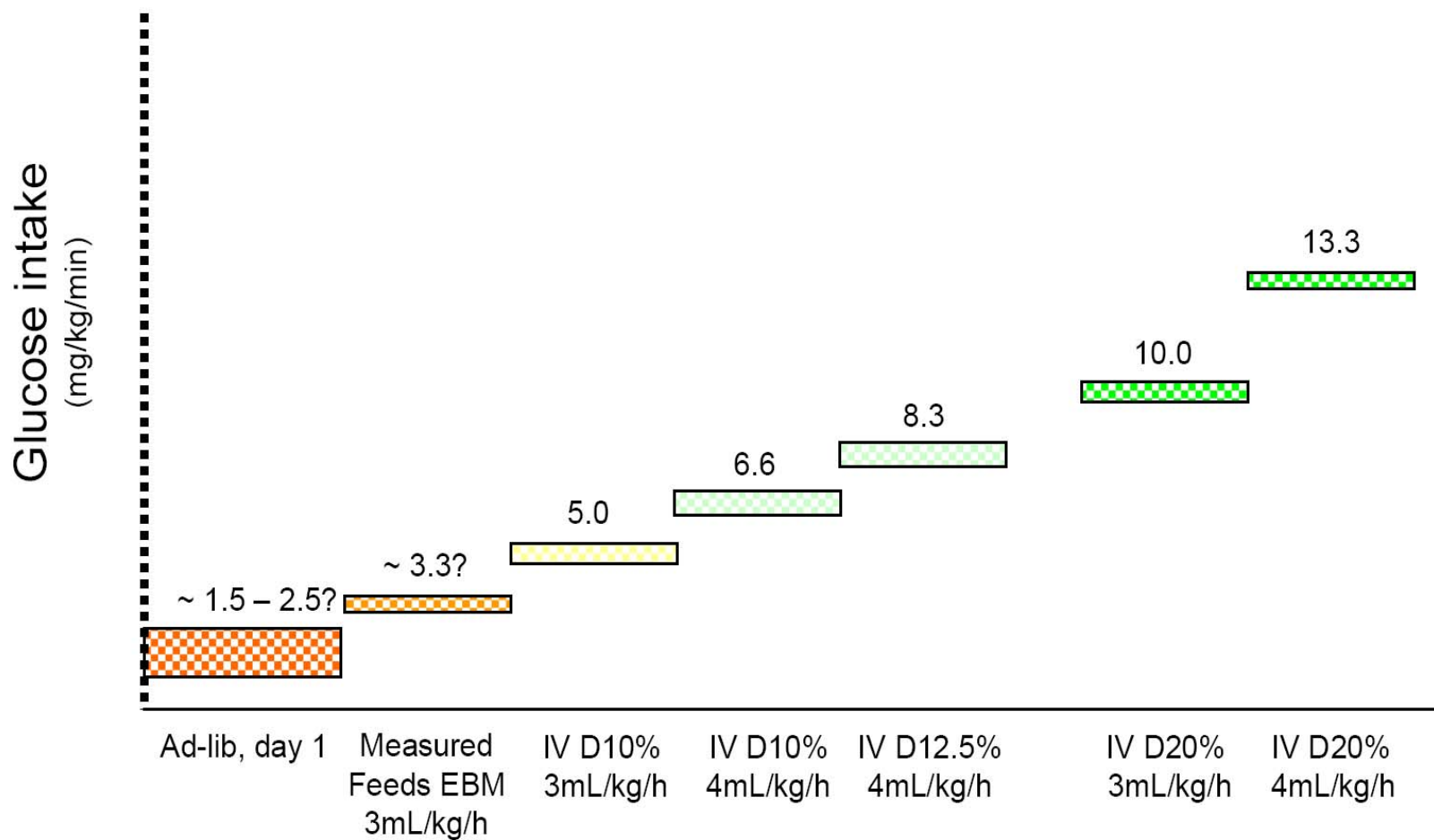
- All guidelines promote breast milk as a primary source
- All guidelines give formula as an alternative to EBM or donated milk
- ABM: Glucose water is not suitable because of insufficient energy and lack of protein
- Some suggest a minimum volume



# Breast milk substitutes

- Acceptable medical reasons for use of breast milk substitutes (formula)
  - **Neo-BFHI (2015)**: medical reason or mother's choice
  - **Breastfeeding Committee for Canada (2014)**: medical reason for supplementing.
  - **WHO and UNICEF (2009)**: Newborn infants who are at risk of hypoglycaemia.
  - **ABM (2009, 2014)**: Asymptomatic hypoglycemia ... unresponsive to appropriate frequent breastfeeding.

# Increasing glucose delivery



# Promoting/supporting breastfeeding How?



# Promoting/supporting breast feeding

It appears that all the guidelines promote and support breast feeding to some extent – so why does it not always happen?

- Variation in critical and refeeding thresholds
- Variations in volume and frequency of supplementation (once only or repeated)
- Variations in having mother continue breast feeding and expressing once IV dextrose started
- IV initiation skill
- Separation of mother and baby for IV therapy



# Promoting/supporting breast feeding

- Facilitate skin to skin
- Continue breastfeeding
- Access to measured amounts of breast milk
  - Donor milk
  - Harvested milk



# The future



# Availability of donor milk

- Donor milk vs milk sharing
- Access to pasteurized donor milk
  - Availability of a freezer in the unit

# Research

## Milk harvesting or antenatal milk expression

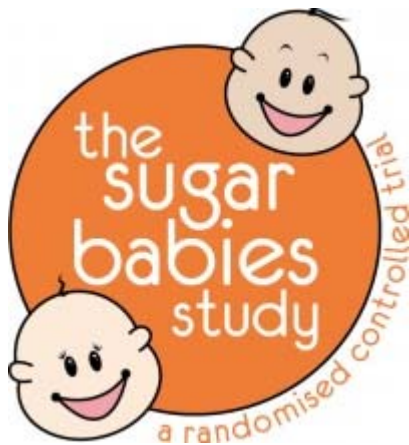
- refers to extracting colostrum from the breast prior to birth, usually by hand expressing
- usually begins at 34 to 36 weeks of gestation



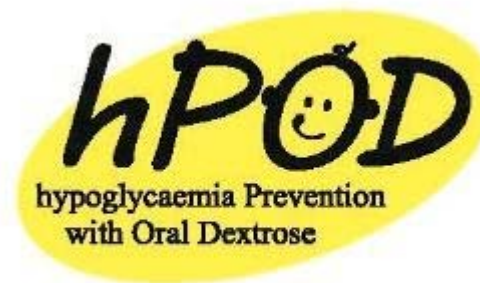


# Research

- Glucose gel: has been shown to reduce admission to NICU for hypoglycemia



Waikato Hospital's Neonatal Intensive Care Unit,  
Hamilton, NZ from 2008-2010



Multisite f/u to Sugar Babies study, NZ

# Research

- Call for studies to address the knowledge gap  
“how low, how long”
- Develop non-invasive continuous glucose monitoring systems
- .....

# Questions?

