



E-NEWS

August 2015

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Neonatal Hypoglycemia New Protocols for an Old Problem

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A 38 week infant born 1 hour ago is lying on your examination table in no acute distress. He has just feed at mother's breast and you screen for hypoglycemia because he is LGA. At birth he was placed skin to skin with mother, he achieved a latch at the breast and has feed for over 30 minutes total. At 1 hour of age his blood glucose is found to be 32. What should be done next? The infant is completely asymptomatic. You remember however, an infant who seized last week in the newborn nursery and was found to have a blood glucose level of 4. What is a normal blood glucose level for an infant at 1 hour of life? It may be lower than you think.

At birth an infant's glucose level is about 70% of mother's glucose level at the time of delivery. This level will fall over the next 1 hour reaching the nadir at about 1 hour of life. Though it is a relatively easy study to measure this number in a certain number of newborns and come up with the lowest 10th percentile, it is a whole different study to determine the cut off for morbidity. Maybe the question I should ask is how low can the glucose drop before brain damage occurs? To add further confusion to the issue, maybe it is not how low the glucose goes that matters but the amount of time the infant remains in the hypoglycemic state. After the nadir, the hormone glucagon surges and will mobilize glycogen from the liver, raising the blood glucose level over the next 24 hours to establish glucose homeostasis. In an attempt to define neonatal hypoglycemia as the level of blood glucose where there is an increase risk of morbidity for the infant, some studies have shown that glucose levels less than 47 are associated with an increased risk for morbidity in SGA infants (infants less than 1200 g), while other studies show that infants with levels frequently less than 47 were no different when compared to controls in terms of developmental measures at age 2. Despite uncertainty, 47 mg/dL has been suggested as the cut off; above which no infant has been shown to suffer from hypoglycemia induced brain damage. If we consider blood glucose levels less than 47mg/dL to be hypoglycemia the risk of a breast feed AGA term infant having one glucose level that is hypoglycemic is about 10%. However the risk of hypoglycemia in an LGA or SGA or an infant of a diabetic mother is almost 50%.

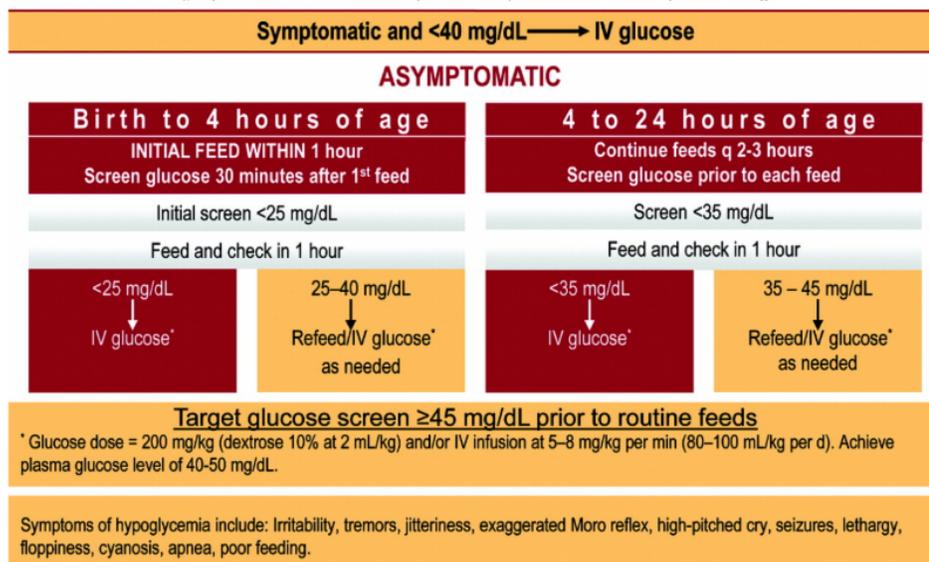
Therefore, at the Medical Center, Navicent Health we are enacting protocols that

call for screening of asymptomatic infants at risk for hypoglycemia. Asymptomatic infants will be screened if they are less than 36 weeks, SGA, LGA, or IDM. Infants born to mothers known to have abused drugs or received magnesium during delivery will also be screened. The 1st screening stick will take place at about 1 hour of life or about 30 minutes after the initial feed, which should happen as soon after birth as possible. The screening will continue pre-meal for 12-24 hours depending on the reason for the screening. (LGA and IDM infants will only be screened for 12 hours.) For all asymptomatic infants screened, if the initial level is less than 25, and the repeat number is less than 25 again, the infant is to receive IV glucose. If the initial number is greater than 25 but less than 40 the infant is allowed to re-feed if she will, and is then rechecked 1 hour after this 2nd feed. If she will not feed then she will be started on IV glucose. If the infant's blood glucose level is greater than 40 this is considered normal and screening continues before the next meal. Note that the level of 40 is only normal for the 1st 4 hours, after which time the cut off for normal is 45.

At any point if the infant has symptoms of hypoglycemia the screening no longer applies and blood sugar is verified and therapy started. It is also important to note that the summary below and the guidelines described by the AAP are meant for the first 48 hours of life, after which the infant should have reached full adult set points and should not have any glucose levels less than 60.

Screening and Management of Postnatal Glucose Homeostasis in Late Preterm and Term SGA, IDM/LGA Infants

[(LPT) Infants 34 – 36^{6/7} weeks and SGA (screen 0-24 hrs); IDM and LGA ≥34 weeks (screen 0-12 hrs)]



Georgia Maternal Mortality Review Committee's Findings and Request from the 2012 Case Reviews

The Georgia Maternal Mortality Review Committee (GA MMRC) has completed one full year of case reviews and has published its first review report for maternal mortality cases from 2012. Already, the committee's review is shedding light on areas where simple actions can improve maternal outcomes.

In 2013, the multidisciplinary statewide Committee began its first full year of

case reviews. All 2012 cases identified as meeting GA MMRC's maternal death criteria were reviewed.

2012 Case Findings

Out of 122 records originally identified as "maternal deaths," 25 (20%) were determined to be pregnancy related deaths (those caused by a complication of pregnancy). Sixty (49%) were pregnancy associated (occurred within a year of her pregnancy but not directly cause by pregnancy). And in 37 (30%) of the reviewed cases, the subjects were verified to not have been pregnant at all within a year of their death. These cases usually had errors on the death certificate's "pregnancy check box" that listed the woman as having been pregnant within a year of death, when in fact she had not been pregnant.

The most frequent causes of pregnancy related deaths were hemorrhage (7), hypertension (4), cardiac events (4) and embolism (4). The most frequent causes of pregnancy associated deaths were motor vehicle accidents (9), homicides (9), and suicides (9).

Focused Recommendations from Case Reviews

As the GA MMRC reviews cases from multiple years, trends and recommendations may become more evident. But already the committee has seen some areas where a few simple steps may improve maternal outcomes.

The committee noticed obesity was a contributing factor in many cases. There seems to be a greater need for monitoring blood pressures and referring patients to a maternal fetal medicine (MFM) or cardiologist in high-risk cases. In addition, in quite a few cases, the patient's height, weight and body mass index (BMI) were not included in their medical records, either at the doctor's office or the hospital. From these findings, the GA MMRC recommends the following actions:

- With blood pressure readings greater than 130/90, rescreen blood pressure. If hypertension continues, refer to maternal fetal medicine, internal medicine, or cardiologist. The internal medicine physician and the cardiologist will not be primary, but excellent consultants for the obstetrician and the patient.
- Measure height and weight. Obtain a pre-pregnancy baseline weight. Use height and pre-pregnant weight to calculate BMI. The National Heart, Lung and Blood Institute (NIH) has a calculator at http://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmicalc.htm. Obesity is defined as BMI greater than 30 and was found as a major comorbidity in the 2012 cases. If the BMI is greater than 30, consult MFM or a cardiologist.

In Summary

The GA MMRC, which was formed in 2011 in partnership with the Georgia Department of Public Health, the Georgia OBGyn Society and the Centers for Disease Control (CDC), will continue to review annual maternal deaths in Georgia. The committee will identify trends and make recommendations based on these findings. Even with just one year of reviews completed, the MMRC has identified areas where maternal mortality may be improved. Physicians and hospitals are asked to: measure height, obtain weight,

calculate BMI, and refer for high risk consults as needed.

Access to full report can be found by clicking [HERE](#).

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