Neonatal Hypoglycemia in Response to Perinatal Stress

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Purpose

This quality improvement project addressed a gap in clinical practice by implementing an evidence-based neonatal hypoglycemia protocol (NHP) that includes infants affected by perinatal stress. The goal was to reduce transfers from the newborn nursery to the neonatal intensive care nursery (NICN) for hypoglycemia by 10%.

PICO Question:

In newborns >35 weeks gestation admitted to the newborn nursery with a 1-minute Apgar score <6, does early blood glucose monitoring combined with evidence-based interventions reduce transfers to the NICN for management of neonatal hypoglycemia?

Background

- Neonatal hypoglycemia (NH) is a common neonatal complication
- Associated with serious outcomes: lethargy, apnea, seizures, and potential brain injury
- Perinatal stress is a leading cause of NH
- Infants with perinatal stress are at increased risk for NH
- Up to 50% of newborns with NH have a 1-minute Apgar score <6
- Early identification and proactive management can prevent severe NH and reduce NICN admissions

Methods

Design & Setting:

IRB-approved prospective, quasi-experimental quality improvement project conducted at a 50-bed Level IV NICN.

Sample:

Non-probability convenience sample of newborns >35 weeks gestation admitted to the newborn nursery with a 1-minute Apgar score <6.

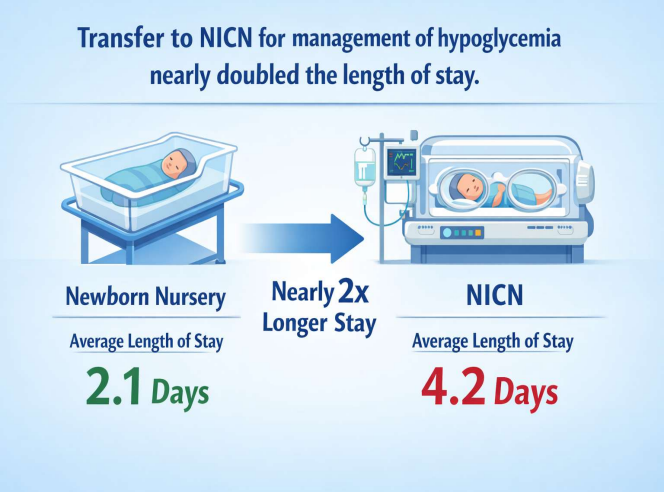
Intervention:

An evidence-based protocol integrated into the electronic health record included:

- Immediate skin-to-skin care
- Early feeding initiation
- Blood glucose assessment by 90 minutes of age

Results:

Chart review demonstrated a reduction in transfer rates from 13% to 2%. Early skin-to-skin contact was associated with decreased transfers and shorter length of stay.

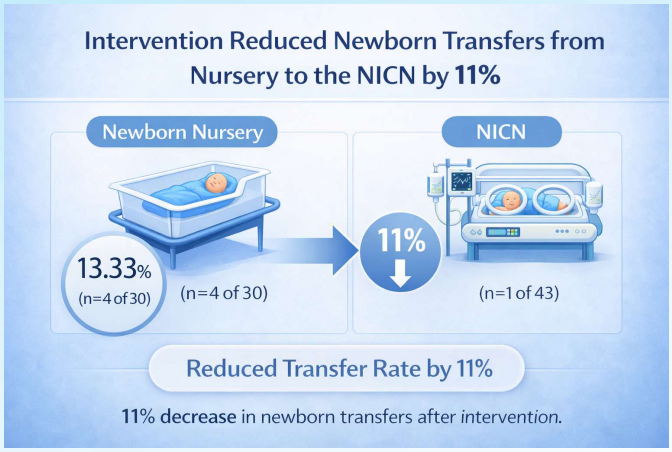


Results

A convenience sample of 43 newborns (Apgar <6) was analyzed.

NICN transfer rates decreased from 13.3% pre-intervention (4/30) to 2.3% post-intervention (1/43), reflecting an 11% reduction (Fisher's exact test).

Skin-to-skin care was associated with a 10-hour reduction in length of stay (b = -9.93, p = .11). Infants requiring NICN transfer for neonatal hypoglycemia had nearly double the length of stay.



Discussion

Findings suggest that perinatal stress increases the risk of neonatal hypoglycemia (NH) and highlight the need for early screening and preventive interventions. Implementation of a neonatal hypoglycemia protocol (NHP), inclusive of infants affected by perinatal stress, was associated with reduced transfers from the newborn nursery to the neonatal intensive care nursery (NICN). Early initiation of skin-to-skin care was also associated with decreased length of stay. Integrating the NHP into standard newborn order sets may reduce NICN transfers for hypoglycemia with minimal cost and workflow disruption.

Project Impact:

Developed and implemented an NHP for newborns affected by perinatal stress
Provided education to clinicians and staff on NH screening and prevention
Achieved an 11% reduction in transfers from the newborn nursery to NICN

Implications:

Incorporating NHPs that include newborns affected by perinatal stress may reduce NICN transfer rates. Further evaluation of barriers to protocol adherence may improve compliance and outcomes. Larger studies are recommended to strengthen generalizability.

References

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