

Babes Got S.H.A.D.E.S.

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Purpose

The purpose of this quality improvement (QI) project was to create a standardized process through the use of a standard work including evidenced based nursing interventions when caring for a patient undergoing Retinopathy of Prematurity (ROP) exam to decrease clinical events related to mydriasis.



Objectives

- State the disorder diagnosed through a screening exam of the eyes performed on premature patients in the neonatal intensive care units (NICU).
- List at least three adverse effects associated with mydriasis eye drops post retinopathy of prematurity (ROP) examination.
- Identify evidenced based practice interventions that decrease rate of clinical events following ROP examination in the NICU.

Description

Retinopathy of prematurity (ROP) is a disorder that affects the retinal vascular development of low-birth-weight preterm infants. It is a significant cause of blindness affecting at least 50,000 infants worldwide (Szigiato et al., 2019). Research has found that if ROP is detected early, long-term visual acuity can be improved, and our institution has a well-established program for ROP screening within the Neonatal Intensive Care Unit (NICU). Due to the specialized population and level of acuity, many patients are at risk for ROP and require frequent ROP screening eye exams. Mydriasis eye drops are required to be administered prior to the start of the exam. The drops are associated with adverse effects of apnea, acute gastric distention, feeding difficulties, & necrotizing enterocolitis (NEC). Given these possible side effects, a multidisciplinary team approach convened to initiate an evidence-based practice (EBP) project.

Implementation

- A multidisciplinary team convened to initiate an evidence-based practice (EBP) project to implement best practices in decreasing light stimulation during mydriasis through the use of eye shields in conjunction with other non-pharmacological interventions. Nurses were further educated on the following nursing interventions: Tetracaine application, oral sucrose use, swaddling, systemic absorption of eye drops/side effects, pacifier use, dimming the lights and use of eye-shields after eye drops are instilled for 4 – 6 hours after mydriasis for photo sensitivity.
- The acronym S.H.A.D.E.S. was developed to provide a visual cue for the nurses to facilitate recall of the expected nursing interventions. S, Swaddle; H, Have a Pacifier; A, Apply Drops; D, Dim Lights; E, Eye Shields
- An icon was created by the clinical nurses and uploaded to our E-signage system which is utilized when a patient is wearing protective eye shields for either bili-light usage or protection of the eyes related to photophobia.
- Finally, a Standard Work: "Care of a Patient undergoing Retinopathy of Prematurity Exam" was created and educated on for nurses to have an evidenced based standardized approach when caring for a patient having an ROP exam.

Audit Tool

Process Step	Observations	Completed/Documented	Not Completed	N/A/Not	Comments/Action/Outcome
1. Confirm patient pre-exam	2. Dim lights and eye shields	0.0%	0.0%	0.0%	
2. Administer eye drops	3. Swaddle and have a pacifier	0.0%	0.0%	0.0%	
3. Administer eye drops	4. Dim lights and eye shields	0.0%	0.0%	0.0%	
4. Administer eye drops	5. Administer eye drops	0.0%	0.0%	0.0%	

Standard Work

Standard Work Title: Care of a Patient Undergoing Retinopathy of Prematurity (ROP) Exam

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Approved: [Signature]

High Level Process Map:

Process Step	Rule	Details	Time	Yes/No
1. Screen patient in examination room	1. Administer eye drops	All patients in NICU units with scheduled eye exams - 20 weeks gestational age or less. All patients that the healthcare provider has scheduled for an ROP exam. All patients that the healthcare provider has scheduled for an ROP exam. All patients that the healthcare provider has scheduled for an ROP exam.	15-20 min	Yes/No
2. Administer eye drops	2. Administer eye drops	Administer eye drops as ordered. Administer eye drops as ordered. Administer eye drops as ordered.	5-10 min	Yes/No
3. Administer eye drops	3. Administer eye drops	Administer eye drops as ordered. Administer eye drops as ordered. Administer eye drops as ordered.	5-10 min	Yes/No
4. Administer eye drops	4. Administer eye drops	Administer eye drops as ordered. Administer eye drops as ordered. Administer eye drops as ordered.	5-10 min	Yes/No

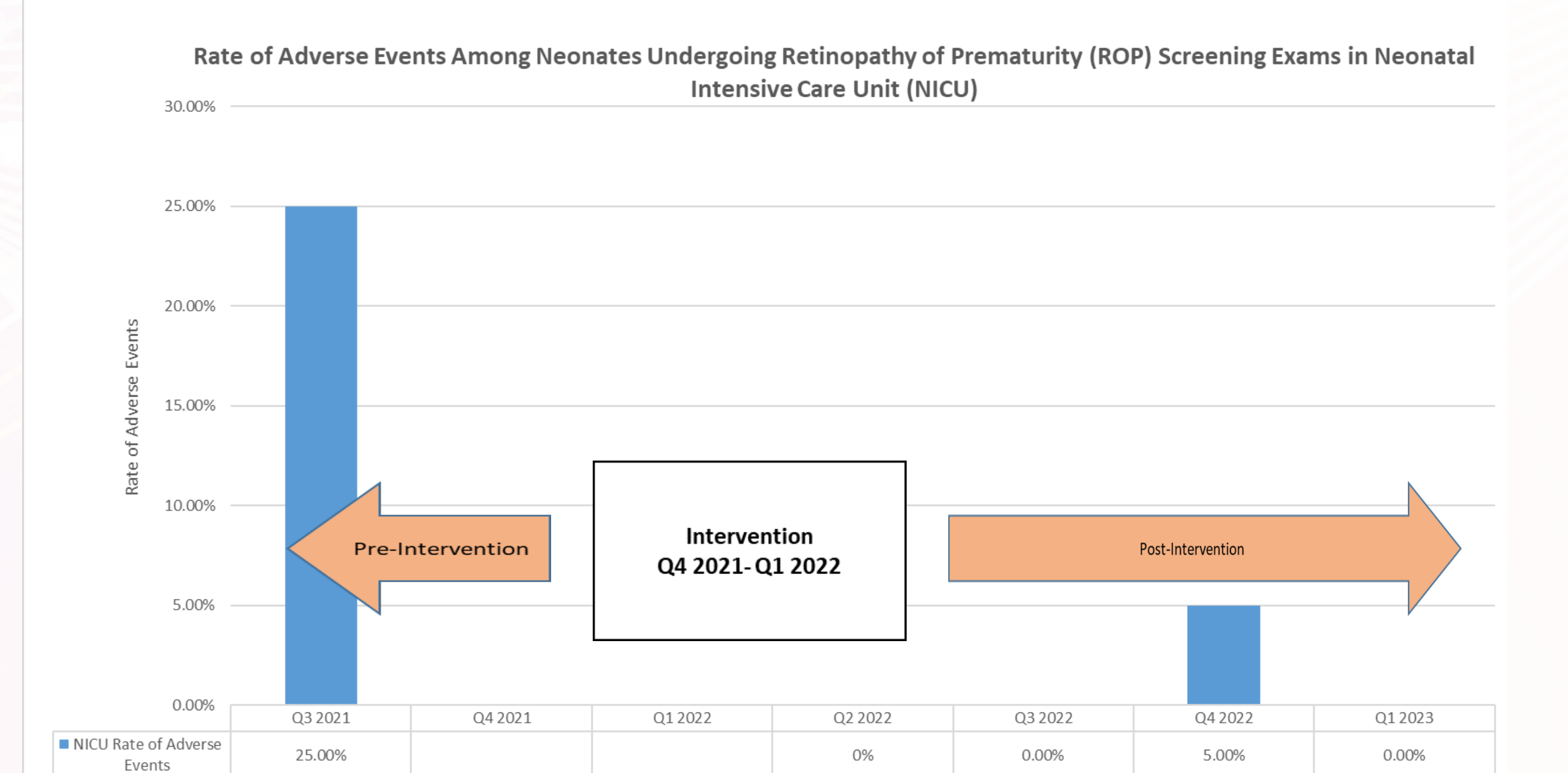
S
Swaddle
H
Have a paci?
A
Apply Drops
D
Dim Lights
E
Eye Shields
S
Sweet Ease



Results / Outcomes

Based on the evidence, a standard work "Care of a patient undergoing Retinopathy of Prematurity exam" was developed and an in-service was conducted, educating all NICU and Float Pool clinical nurses. Education on adverse effects that can occur after administering mydriasis drops and on the evidence-based nursing interventions that should be implemented post ROP exam was completed. A survey was conducted before and after our interventions to evaluate if there was a decrease in clinical events when applying nursing interventions for comfort. A pre-survey was completed by 18 nurses, the questions included patient demographics, if any comfort a patient experienced any clinical events 4-6 hours post mydriasis. A post survey

was conducted to assess if the interventions implemented resulted in a decrease of clinical events for the patients undergoing ROP examinations. This practice change has demonstrated a significant reduction in the rate of patients with reported clinical events.



Conclusion / Implications

As the team reviewed all evidence, gaps and opportunities in practice, the need for an evidence-based practice change was identified. Through this process, we learned that nursing education would play a vital role in decreasing adverse effects in patients receiving mydriasis drops for ROP eye exams. The new interventions for care before, during, and after ROP exams in preterm infants were positively correlated with fewer clinical events, fewer bradycardic and apneic episodes as evidenced by clinical events reported and documented by the staff nurses.

References

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Kremer LJ, Broadbent R, Medlicott N, et al. Randomised controlled pilot trial comparing low dose and very low-dose microdrop administration of phenylephrine and cyclopentolate for retinopathy of prematurity eye examinations in neonates. *Archives of Disease in Childhood* 2021; 106:603-608

Tan, J.B.C., Dunbar, J., Hopper, A. et al. Differential effects of the retinopathy of prematurity exam on the physiology of premature infants. *J Perinatol* 39, 708-716 (2019). <https://doi.org/10.1038/s41372-019-0331-z>

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