I Can See Clearly Now: Survey Results From Neonatal Staff on Mydriatic Use In Retinopathy of Prematurity Screening

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Introduction

- Very preterm infants require mydriatic eye drops in preparation for retinopathy of prematurity (ROP) eye examination.
- In Australia and New Zealand, ~1/3 premature infants/year are screened for ROP. ~70% of screened infants do not have ROP. ~25% of screened infants have stage 1 or 2 ROP. ~5% of screened infants have stage 3 or 4 ROP.

Aims

- To establish the variation in mydriatic regimens in Australia and New Zealand.
- To estimate the frequency of adverse drug events after mydriatic administration.

Methods

- A Survey Monkey questionnaire was emailed to selected nursing staff at Neonatal Intensive Care Units (NICU) listed in the Directory of NICU within Australia and New Zealand, 2017.
- Nursing staff were asked to forward the survey to the target survey population (snowballing method).
- The target survey population was staff who administer the mydriatic eye drops for ROP eye examination.

Results

- 46 neonatal nurses from all major regions in Australia and New Zealand participated in the survey.
- ~75% of participants prepared and/or administered mydriatic eye drops.
- There was a wide range of reported adverse effects (Figure 1.).
- Nursing staff also reported seeing bradycardia, abdominal distension, death and seizure after mydriatic eye drop administration.
- There were eight different combinations of phenylephrine and cyclopentolate used in Australia and New Zealand NICU's (n=33).
- 90% of those that use Cyclomydril administer it undiluted (phenylephrine 2.5%/cyclopentolate 0.5%).
- Those that prepared phenylephrine/cyclopentolate use a variety of concentrations (Figure's 2 and 3.).
- The two commonest medication regimens were: phenylephrine 2.5%/cyclopentolate 0.5% x 1 (n=12) OR 2 (n=6) standard drops.
- There were four different combinations of phenylephrine and tropicamide used in Australia and New Zealand NICU's (n = 9).
- Those that used phenylephrine/tropicamide used either 0.5% or 1% tropicamide and always used 2.5% phenylephrine.
- The majority of nursing staff administer one (n=22) or two (n=16) standard drops for ROP eye examination.
- Those that administered a microdrop used a needleless IV cannula or microdrop needle.

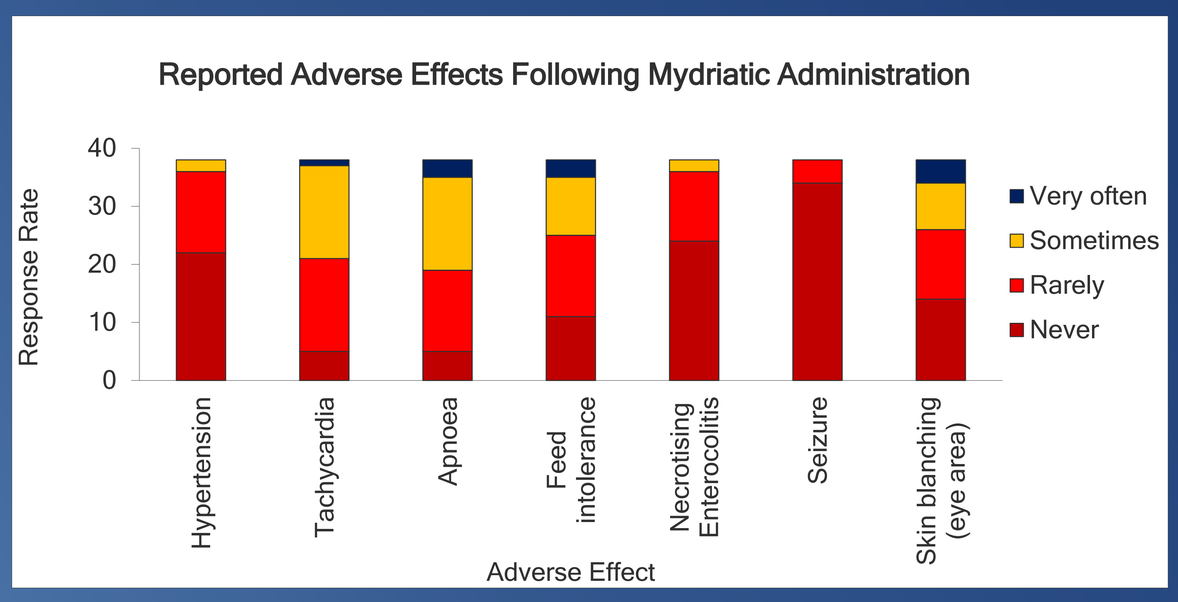

Figure 1. Reported adverse effects, by nursing staff, following mydriatic eye drop administration

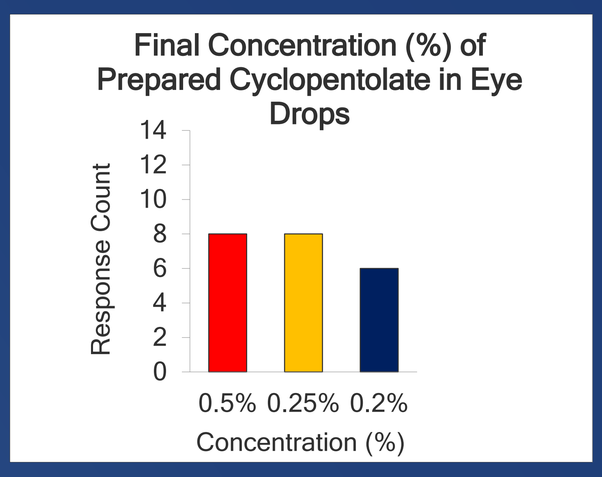

Figure 2. Variation of cyclopentolate concentration in nurse prepared eye drops

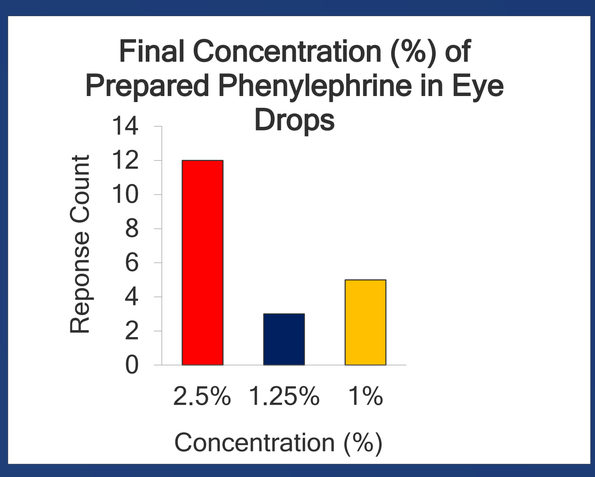

Figure 3. Variation of phenylephrine concentration in nurse prepared eye drops

Discussion

- An appropriately powered multicentre study is required to establish an effective low dose for mydriasis.
- An appropriately powered randomised controlled trial is required to determine the incidence of adverse drug effects with the variation in mydriatic regimens, especially with the growing number of extremely low birth weight infants. This study may also be able to identify if there is a subset of premature infants who are more susceptible to mydriatic induced adverse drug effects.

Conclusions

- Participants associate eye checks with significant harm, including NEC.
- There is a wide variety of mydriatic regimens in Australia and New Zealand NICU's with a 37.5 fold unintentional difference in phenylephrine dosing.
- It is likely that unnecessarily high doses are being used and that may increase the risk for adverse effects.
- Over half of the nursing staff dilute eye drops into a lower concentration, suggesting that a new proprietary eye drop is needed.

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Further information

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