Standardization of post-natal dexamethasone use for invasively ventilated infants at high risk of BPD

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Aim

- To decrease the incidence and severity of BPD by optimizing the use of postnatal dexamethasone in eligible high-risk population

Importance

- BPD remains the most common complication of extreme preterm birth
- Postnatal dexamethasone can facilitate extubation and reduce incidence of BPD; however concerns for adverse neurodevelopmental outcomes warrants caution around its use
- A standardized approach to postnatal dexamethasone use is needed to correctly select infants likely to have a favorable risk benefit ratio

Plan: Guideline Development

Patient Selection
- Infants born at < 29 weeks gestation who remain on invasive ventilation after first week of life
- High Risk of moderate to severe BPD (> 60%) based on 2011 NICHD BPD Calculator
- Standardize consent and parent information process

Timing
- Assess daily for eligibility starting at DOL 7 for potential early course starting at DOL 8
- Early parent information and consent
- Infants on Premiloc assessed at DOL 14
- Repeat BPD risk assessments at DOL 14, 21, 28 for infants on invasive ventilation

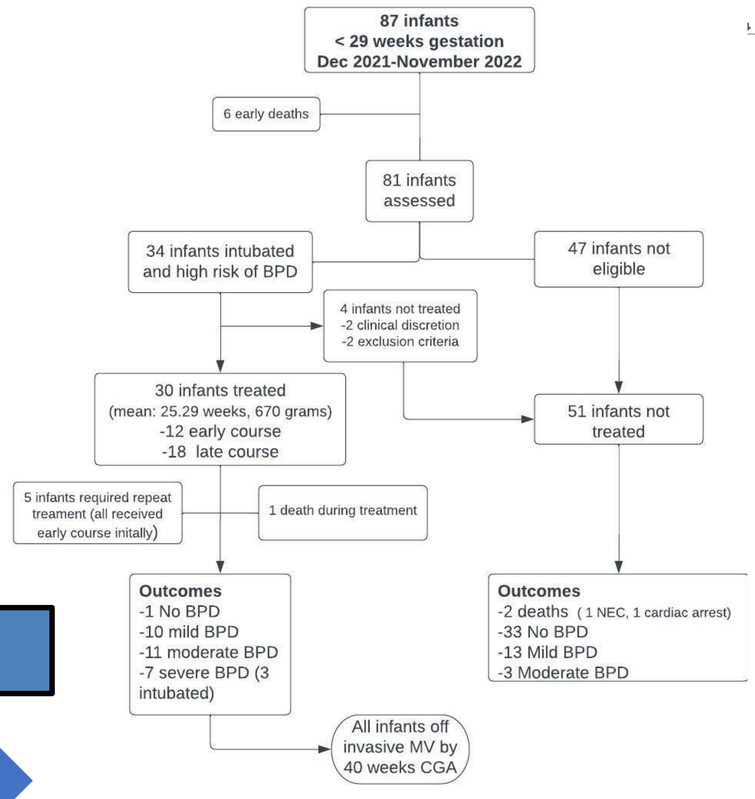
Optimize Dosing
- Previous dosing for dexamethasone was low and not standardized (0.375mg-0.75mg cumulative dose)
- Established a dosing schedule for early course (8-14 days of life) and late course (after 14 days of life)

PDSA Cycle: Do

Create Order Sets
Early (DOL 8-14 days): Dose 1.05 mg/kg over 10 days
Late (DOL>14 days): Dose 1.95 mg/kg over 10 days

→ Parent info sheet → Use of BPD Outcome Estimator

Data/Results



	Pre Cohort Aug 2019 -July 2020	Post Cohort Dec 2021- Nov 2022	CNN Cohort 2021
Number of Infants Proportion < 26 wks	72 34 (47%)	**87** **43 (50%)**	1677 596 (35%)
Infants Treated with Dexamethasone	18 (25%)	**30 (34%)**	340 (20.3%) **
Day of life initiation mean (range)	22.5 days (8-35)*	**18.5 days (7-45)***	N/A
Death	11 (15%)	**9 (10%)**	245 (14.6%)
No BPD	20 (28%)	**34 (39%)**	640 (38%)
Mild BPD	14 (19%)	**23 (26%)**	131 (7.8%)
Moderate BPD	16 (22%)	**14 (16%)**	512 (30.5%)
Severe BPD	11 (15%)	**7 (8%)**	149 (8.9%)
Death, moderate or severe BPD	38 (53%)	**30 (34%)**	906 (54%)

** one outlier removed from each group both treated at DOL 74 & 75*

*** CNN data included all systemic steroids for BPD*

Lessons Learned/Next Steps

- Standardization of post-natal dexamethasone use increased the number of infants at high risk of BPD treated with dexamethasone and may have facilitated earlier initiation of treatment
- Following the implementation of the guideline, there was a trend towards a lower rate of the combined outcome of moderate/severe BPD and death (53% versus 34%)
- Next Steps: Transition to use of the 2022 NICHD BPD Calculator
- Follow up on long term neurodevelopmental outcomes