

## Steroid Options for BPD in Neonates

**Background:** Steroids may be a helpful tool to prevent evolution of and treat Bronchopulmonary Dysplasia (BPD) in neonates. There are many variations in regimens.

| STEROID  | DOSING  | CUMULATIVE STEROID DOSE (mg/kg) | WHEN TO USE  | REFERENCE  | CAUTIONS/ RECOMMENDATIONS   |
|--|---|---------------------------------|--|--|---|
| Prophylaxis ("Early"; < 7 days)                      |   |                                 |  |  |   |
| Hydrocortisone                                       | 10 day course: 1 mg/kg/day div BID x 7 days, 0.5 mg/kg/day QD x 3 days  | 8.50                            | Consider for infants 24-27 6/7 weeks who are at high risk for BPD                                  | PREMILOC   | Do not use with NSAIDs  |
| Early evolving BPD (7-28 days)                       |   |                                 |  |  |   |
| Dexamethasone (low cumulative dose, medium course)   | 10 day course: 0.15 mg/kg/day x 3 days, 0.10 mg/kg/day x 3 days, 0.05 mg/kg/day x 2 days, 0.02 mg/kg/day x 2 days   | 0.89                            | To facilitate extubation in infants < 28 weeks GA  | DART   | DART protocol facilitated extubation but did not improve survival or oxygen dependence at 36 weeks; sample was not large enough to assess ND outcomes |
| Dexamethasone (medium cumulative dose, short course) | 7 day course: 0.5 mg/kg/day x 3 days, 0.25 mg/kg/day x 3 days, 0.10 mg/kg/day x 1 day   | 2.35                            | Infants 24-32 weeks GA who are still intubated DOL 7-14 (for prevention of BPD)                    | Durand, M. et al. 1995. <i>Pediatrics</i> 95 (4): 584–90.  |   |
| Dexamethasone (high cumulative dose, medium course)  | 14 day course: 0.5 mg/kg/day x 6 days, 0.25 mg/kg/day x 6 days, 0.125 mg/kg/day x 2 days  | 4.75                            | Preterm infants who are at high risk for BPD and still intubated on DOL 10 (for prevention of BPD) | Romagnoli, C, et al. 1997. <i>Rivista italiana di pediatria (The Italian journal of pediatrics)</i> , no. 24: 283–88; Romagnoli, C, et al. 2002. <i>Archives of Disease in Childhood. Fetal and Neonatal Edition</i> 87 (1): F55–58. | Original paper is in Italian  |
| Dexamethasone (high cumulative dose, long course)    | 42 day course: 0.5 mg/kg/day x 3 days, 0.3 mg/kg/day x 3 days, reduce dose by 10% every 3 days until day 34 (0.1 mg/kg/day), 0.1 mg/kg/day x 3 days, 0.1 mg/kg on alternate days for 1 week | 7.98                            | Infants < 30 weeks GA who are still intubated DOL 12-21 (for prevention of BPD)                    | Kothadia, JM, et al. 1999. <i>Pediatrics</i> 104 (1 Pt 1): 22–27; Marr, BL, et al. 2019. <i>The Journal of Pediatrics</i> 211 (August): 20–26.e1.  |   |

| STEROID                                       | DOSING   | CUMULATIVE STEROID DOSE (mg/kg) | WHEN TO USE   | REFERENCE  | CAUTIONS/ RECOMMENDATIONS                 |
|---|--|---------------------------------|---|--|---|
| Late evolving BPD (> 28 days to 36 weeks PMA) |  |                                 |   |  |   |
| Dexamethasone                                 | 9 day course: 0.2 mg/kg/day div q12h x 3 days, 0.1 mg/kg/day div q12h x 3 days, 0.05 mg/kg/day div q12h x 3 days   | 1.05                            | To facilitate extubation in infants < 28 weeks GA   | Alan Jobe; Nath, S, et al. 2020. <i>American Journal of Perinatology</i> 37 (14): 1425–31. | Limited data for dosing in this age group |
| Established BPD (> 36 weeks PMA)              |  |                                 |   |  |   |
| Prednisolone (medium course)                  | 14 day course: 2 mg/kg/day div BID x 5 days, 1 mg/kg/day QD x 3 days, 1 mg/kg/day QoD x 3 doses  | 16                              | NICU babies still requiring HFNC or greater   | Bhandari, A, et al. 2008. <i>Pediatrics</i> 121 (2): e344–49.                              |   |
| Prednisolone (long course)                    | 28+ day course: 2 mg/kg/day x 7 days, 1 mg/kg/day QD x 7 days, 0.5 mg/kg/day QD x 7 days, 0.5 mg/kg/day 3x/week x 7 days (can go back to previous dose ONCE, then continue wean) | Variable                        | NICU babies still requiring HFNC or greater and require escalation of respiratory support | Linafelter, A, et al. 2019. <i>Early Human Development</i> 136 (September): 1–6.           |   |

Table adapted from:

Htun, ZT, et al. 2021. "Postnatal Steroid Management in Preterm Infants with Evolving Bronchopulmonary Dysplasia." *Journal of Perinatology* 41 (8): 1783–96.

Other references:

Onland, W, et al. 2023. "Systemic Corticosteroid Regimens for Prevention of Bronchopulmonary Dysplasia in Preterm Infants." *Cochrane Database of Systematic Reviews* 3 (3): CD010941.

Doyle, LW, et al. 2021. "Early (< 7 Days) Systemic Postnatal Corticosteroids for Prevention of Bronchopulmonary Dysplasia in Preterm Infants." *Cochrane Database of Systematic Reviews* 10 (10): CD001146.

Doyle, LW, et al. 2021. "Late (≥ 7 Days) Systemic Postnatal Corticosteroids for Prevention of Bronchopulmonary Dysplasia in Preterm Infants." *Cochrane Database of Systematic Reviews* 11 (11): CD001145.

Ramaswamy, VV, et al. 2021. "Assessment of Postnatal Corticosteroids for the Prevention of Bronchopulmonary Dysplasia in Preterm Neonates: A Systematic Review and Network Meta-Analysis." *JAMA Pediatrics* 175 (6): e206826.

Doyle, LW, et al. 2005. "Impact of Postnatal Systemic Corticosteroids on Mortality and Cerebral Palsy in Preterm Infants: Effect Modification by Risk for Chronic Lung Disease." *Pediatrics* 115 (3): 655–61.

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