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## Effectiveness and safety of repeat dexamethasone for bronchopulmonary dysplasia

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## Effectiveness and safety of repeat dexamethasone for bronchopulmonary dysplasia

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**IRB Number:** 11120563

**Describe role of Submitting/Presenting Trainee in this project (limit 150 words):**

My primarily role in the research study was to aid in the collection of the data, perform preliminary analysis on the data, and review and revise the manuscript for submission and publication.

**Background, Objectives/Goal, Methods/Design, Results, Conclusions limited to 500 words**

**Background:**

Although a short course of steroids maybe beneficial in infants at high risk for bronchopulmonary dysplasia, response to treatment is variable. In infants with persistent lung disease despite initial treatment, repeat courses of steroids have been described but not well-studied. This 10-year observational study from a single tertiary referral center evaluates the effectiveness and safety of repeat steroid treatment for bronchopulmonary dysplasia.

**Objectives/Goal:**

To describe effectiveness of repeat dexamethasone treatment for bronchopulmonary dysplasia (BPD) and to evaluate potential detrimental effects on growth and neurodevelopment.

**Methods/Design:**

This was a 10-year single-center observational study of infants <30 weeks' gestational age at birth treated with 1 or 2 courses of systemic dexamethasone for BPD. Effectiveness was defined as step-down in mode of respiratory support from baseline by end of treatment. Adverse effects on growth z-scores and *Bayley-III* neurodevelopment scores were analyzed and compared to a cohort of untreated controls.

### **Results:**

We identified 132 infants treated with dexamethasone for BPD, 52 of whom received repeat dexamethasone treatment. Sixty-nine of 132 infants (52%) treated with an initial course of dexamethasone were successfully extubated to non-invasive ventilatory support, while 20 of 52 infants (38%) treated with repeat dexamethasone achieved step-down in mode of respiratory support. Growth trajectory over time did not differ among infants treated with 1 or 2 courses of dexamethasone compared with untreated controls (weight:  $P = 0.23$ , length:  $P = 0.68$ , and head circumference:  $P = 0.77$ ). Repeat dexamethasone treatment was associated with lower Bayley cognitive scores ( $76.7 \pm 12.6$  vs  $86.4 \pm 13.3$ ,  $P=0.02$ ) and motor scores ( $71.7 \pm 21.6$  vs  $84.6 \pm 13.1$ ,  $P = 0.01$ ) compared to untreated controls, but this association was no longer significant after adjusting for confounders.

### **Conclusions:**

A second course of dexamethasone for BPD was less effective in weaning respiratory support compared to the initial course but was not associated with detrimental effects on growth or neurodevelopment.