

## Introduction

- Preterm infants who remain chronically ventilated are at high-risk for developing bronchopulmonary dysplasia (BPD) – a form of chronic lung disease of prematurity.
- Postnatal steroids (PNS) have been shown to improve lung function and facilitate extubation; however, some infants fail to extubate despite treatment.
- A **repeat or rescue** course of PNS has been described but the effectiveness of such practice is not well studied.



## Objectives

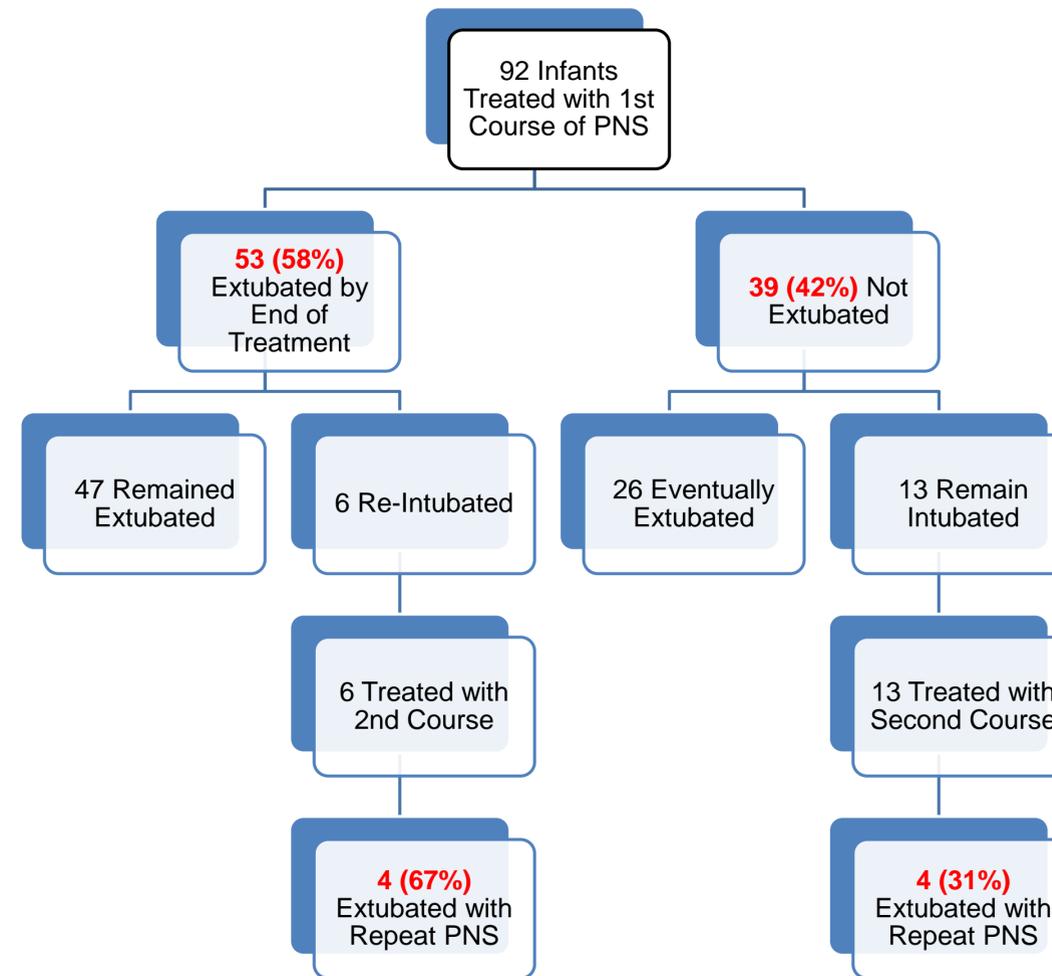
- To compare the rate of successful extubation after treatment with first and second courses of PNS for BPD.
- To identify potentially modifiable clinical factors associated with successful extubation following PNS.

## Methods

- Retrospective cohort study of infants treated at CMH between Jan. 2010 and Dec. 2017, with IRB approval.
- Chronically intubated infants <30 weeks gestational age and treated with dexamethasone were identified.
- Differences between groups were analyzed by  $\chi^2$  test, T-test, or Mann-Whitney U test.
- Multiple logistic regression analysis was used to describe the relationship between successful PNS treatment and clinical factors.
- All statistical tests were two-sided, with a P-value of <0.05 as significant.

## Results

- We identified 92 chronically ventilator-dependent preterm infants treated with at least a single course of dexamethasone for BPD.
  - Mean gestational age  $25.2 \pm 1.5$  weeks
  - Mean birth weight  $747 \pm 189$  grams



- 58% (53/92) of intubated infants successfully extubated after one course of dexamethasone.
- 42% (8/19) extubated with second course.

- Infants who successfully extubate **after first PNS course** were more likely to have less severe lung disease than infants who failed to extubate.

Variables	Successfully Extubated (N=53)	Not Successfully Extubated (N=39)	P-Value
Respiratory Support			<0.001
HFOV	22 (42)	31 (80)	
CV	31 (58)	8 (20)	
Mean Airway Pressure	$11.7 \pm 2.4$	$13.1 \pm 2.3$	0.007
F <sub>i</sub> O <sub>2</sub>	$60.4 \pm 19.2$	$71.7 \pm 19.2$	0.007
RSS	$7.2 \pm 3.0$	$9.6 \pm 3.3$	0.001

- Older age at time of treatment was associated with a reduction in likelihood of extubating successfully **after first PNS course**
  - OR 0.75, 95% CI 0.60-0.93, P=0.008
- **For repeat PNS**, positive response to the initial PNS course was associated with higher extubation success (67% vs 31%).
- No adverse effects were associated with either the first or second course of steroid treatment.

## Discussion

- Our study adds to the literature by providing important information about successful extubation rates in chronically ventilated preterm infants who received repeat or rescue courses of PNS.
- Our study also explores clinical factors associated with increased effectiveness of PNS treatment.
- Additional studies are needed to evaluate whether earlier intervention at a time when lung disease is not yet so severe would indeed increase the rate of successful extubation with PNS therapy.