Association between initial propranolol dose and blood pressure control in 48 to 72 hours among preterm infants with hypertension

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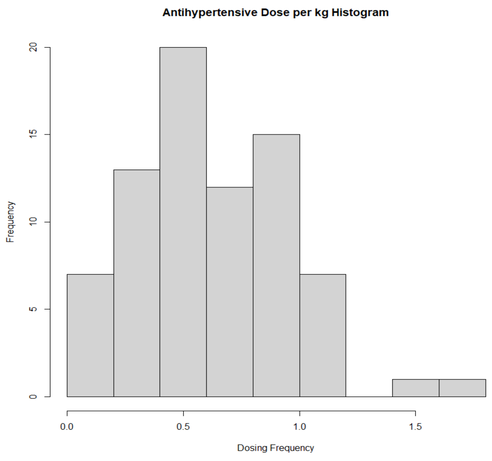
BACKGROUND

Propranolol is one drug used to treat neonatal hypertension, but the optimal initial dose is unclear. We assessed differences in mean arterial pressure 48-72 hours after initiation of propranolol among different initial doses.

METHODS

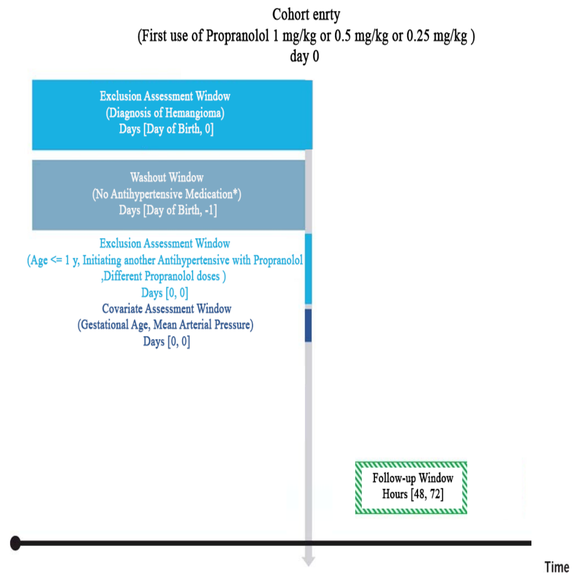
- New user retrospective cohort study on inpatient preterm infants receiving propranolol.
- Exclusion criteria: recipients of other antihypertensive drugs, infants with pre-existing hemangioma
- Data source: electronic medical records at the University of Alabama at Birmingham.
- Outcome: Mean arterial pressure 48-72 hours after propranolol initiation
- Doses compared: scheduled oral propranolol doses of 0.25, 0.5, and 1 mg/kg.
- Statistical model: Bayesian linear regression model, adjusting for baseline mean arterial pressure and gestational age.



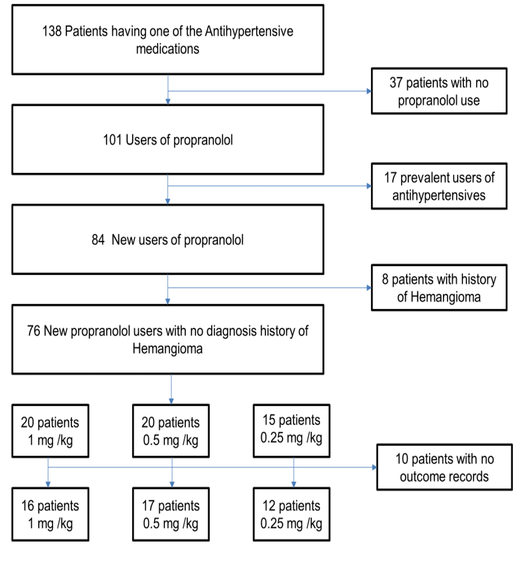
Propranolol doses distribution

Research reported in this Poster was supported by the National Center for Advancing Translational Sciences of the National Institutes of Health under award number UL1TR003096. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

RESULT



Study design

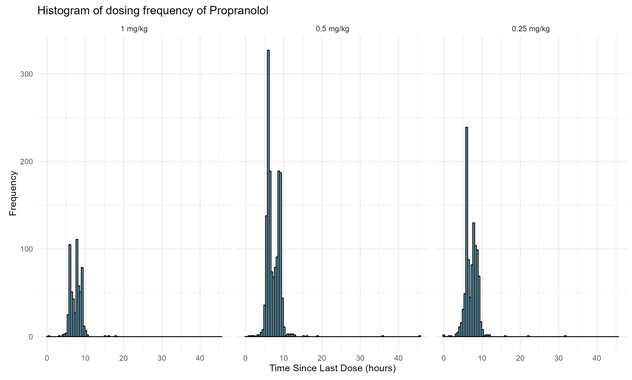


Flow Diagram

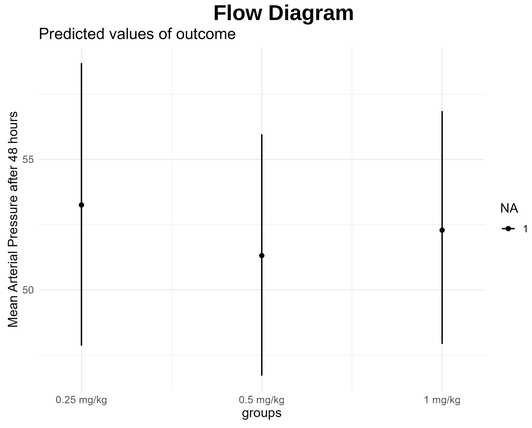
Characteristics of included Patients

Characteristic	0.25 mg/kg, N = 12[1]	0.5 mg/kg, N = 17[1]	1 mg/kg, N = 16[1]
Age (Days)	33 (129)	19 (11)	7 (12)
Gender			
Female	5 (42%)	5 (29%)	4 (25%)
Male	7 (58%)	12 (71%)	12 (75%)
Race			
Asian	0 (0%)	0 (0%)	0 (0%)
Black or African American	6 (50%)	9 (53%)	4 (27%)
Hispanic or Latino	0 (0%)	0 (0%)	1 (6.7%)
Other	0 (0%)	0 (0%)	0 (0%)
White	6 (50%)	8 (47%)	10 (67%)
Gestational Age	30.4 (6.0)	31.8 (4.0)	34.3 (5.2)
Birthweight (g)	1,600 (703)	1,480 (1,141)	2,990 (1,095)

[1] Median (IQR); n (%)



Propranolol dosing frequency



Predicted mean arterial blood pressure

SUMMARY OF FINDINGS

- Cohort comprised 45 patients: 16 initiated 1 mg/kg, 17 initiated 0.5 mg/kg, and 12 initiated 0.25 mg/kg.

Comparison	Adjusted Mean Difference (mmHg)	90% Credible Intervals	Probability of Clinically Meaningful Benefit
1 mg/kg vs. 0.5 mg/kg	-1.1	(-3.7, 1.5)	3.8%
1 mg/kg vs. 0.25 mg/kg	1.2	(-1.6, 4.0)	0.3%

CONCLUSIONS

- Our results suggest that for preterm infants being treated for hypertension, a higher propranolol dose of 1 mg/kg versus a lower dose of 0.5mg/kg or 0.25 mg/kg is unlikely to be associated with meaningfully better mean arterial pressure control within 48 to 72.