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## Background/Aims

tal Encephalopathy (NE) is a clinical syndrome
ıg between 2-5 per 1000 live births. Therapeutic
ermia (TH) is a neuroprotective treatment for NE

ıe, the majority of infants who meet eligibility
for TH are born in community hospitals
rn) and must be transferred to a tertiary care
for treatment

Characterize time to TH initiation for infants born
ary care centers (inborn) versus outborn infants
termine if delayed initiation is associated with
e short-term outcomes

## Methods

spective study of infants treated with TH between
and 2018 in two NICUs excluding infants older
hours at TH initiation (14), less than 35 weeks
ional age (5), early termination of TH (1),
ce of encephalopathy (2), and no MRI (11)

scored by blinded neuroradiologist using the
e* scoring system with severe injury defined as
natter score >9.5 * Weeke et al (2018), doi:10.1016/j.jpeds.2017.09.043

ry outcome: Time to initiation of TH compared
en inborn and outborn infants

ıdary outcome: In-hospital mortality, severe MRI
and/or severe seizure on EEG defined as use of
barbital, fosphenytoin and midazolam drip

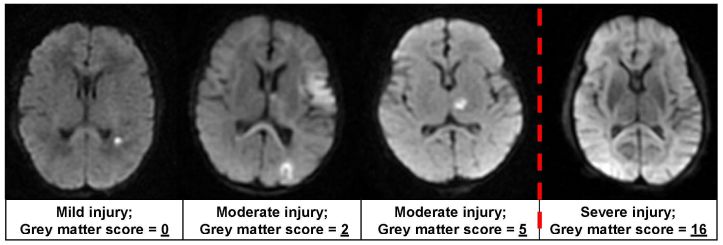
ical analysis: Baseline differences between
and outborn infants were compared using chi
e or Fisher's exact tests for categorical variables
tests or their non-parametric equivalents for
uous variables. Logistic regression was used to
l for confounding

## Table 1. Clinical/Demographic Characteristics*

| | Inborn n= 69 | Outborn n= 153 | p-value |
|---|---|---|---|
| ***Maternal Characteristics*** | | | |
| Gestational Diabetes (n, %) | 14 (20%) | 15 (10%) | 0.05 |
| Mean Maternal Age (SD) | 30.4 (5.9) | 27.6 (5.9) | 0.001 |
| ***Delivery Characteristics*** | | | |
| Cesarean section (n, %) | 41 (59%) | 79 (52%) | 0.35 |
| Chest compressions performed (n, %) | 10 (15%) | 56 (37%) | 0.001 |
| ***Infant Characteristics*** | | | |
| Female Sex (n, %) | 31 (45%) | 70 (46%) | 0.99 |
| Mean birth weight in kg (SD) | 3.3 (0.7) | 3.4 (0.6) | 0.19 |
| Mean Gestational Age in Weeks (SD) | 38.5 (2.0) | 39.6 (1.7) | <0.001 |
| Median Apgar Score 1 min (# obtained, IQR) | 1 [69, 1, 2] | 2 [151, 1, 3] | 0.06 |
| Median Apgar Score 5 min (# obtained, IQR) | 4 [69, 3, 6] | 4 [150, 3, 5] | 0.70 |
| Median Apgar Score 10 min (# obtained, IQR) | 6 [55, 4, 7] | 6 [135, 4, 7] | 0.53 |
| ***Cord Gases*** | | | |
| Number of arterial gases obtained (n, %) | 55 (80%) | 88 (58%) | 0.002 |
| Mean arterial pH (SD) | 7.04 (0.16) | 7.06 (0.18) | 0.48 |
| Number of venous gases obtained (n, %) | 52 (75%) | 82 (54%) | 0.003 |
| Mean venous pH (SD) | 7.10 (0.17) | 7.13 (0.20) | 0.47 |

*Statistically insignificant differences in characteristics not shown here include maternal fever, GBS positive, pre-eclampsia/eclampsia, vacuum assistance, shoulder dystocia, nuchal cord, cord prolapse, placental abruption, uterine rupture, late decelerations on fetal heart monitoring, chorioamnionitis, and prolonged rupture of membranes

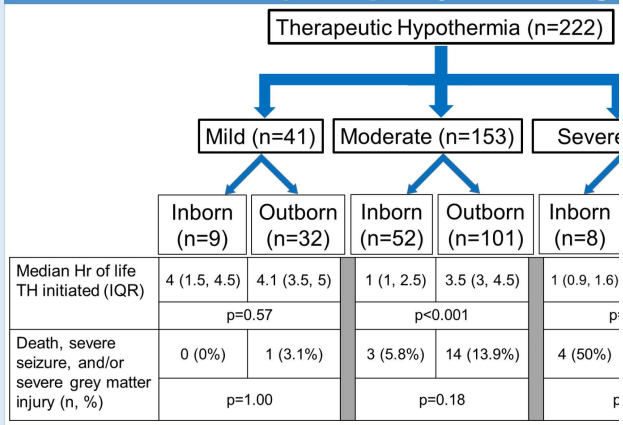
## Grey Matter Injury on MRI




## Table 2. Outcomes

| *All infants* | Inborn n= 69 | Outborn n= 153 | p-value |
|---|---|---|---|
| Median Hour of Life TH Initiated (IQR) | 1 (1,3) | 4 (3,5) | <0.001 |
| Mortality (n, %) | 3 (4.3) | 21 (13.7) | 0.038 |
| Any seizure (n, %) | 16 (23.2) | 57 (37.5) | 0.045 |
| Severe seizure (n, %) | 3 (4.3%) | 14 (9.2%) | 0.28 |
| Severe grey matter injury (n, %) | 2 (3) | 8 (5.7) | 0.62 |
| Mortality, severe seizure, and/or severe grey matter injury (n, %) | 7 (10.1) | 34 (22.2) | 0.039 |

## Results: Encephalopathy Tree Diagr




## Table 3. Logistic Regression Analys

*Assessing Effect of Confounding on Combined Outc Mortality, Severe Seizure, or Severe Grey Matter Injur*

| | Predictor Variable | Odds Ratio |
|---|---|---|
| Parent Model | Outborn infant | 2.53 |
| Extended Model* | Outborn infant | 4.95 |

*Extended model is controlling for confounding from encephalopathy gestational age, gestational diabetes and sex

## Conclusions

- There is significant delay in TH initiation for outborn and an associated increase in the odds of death, s neonatal seizures and/or severe grey matter injury.
- The relationship between delayed TH initiation and adverse outcomes is strongest for those with symp severe encephalopathy.
- Investigation into factors contributing to severe encephalopathy prior to and immediately following urgently needed.

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