



Manual of Brigham Infant Brain Studies (BIBS)

September 29th, 2023



**HARVARD MEDICAL SCHOOL
TEACHING HOSPITAL**

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Meet the Team

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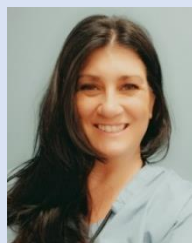


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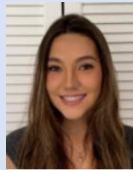
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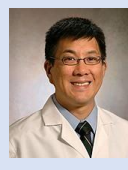
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Overview of Studies

Preterm Serial Imaging Study

- PI: Carmina Erdei
- Study Contact: Danielle Sharon
- Aim: To identify and characterize any brain injury that occurs in the very preterm infant throughout their NICU course, as well as regular patterns of brain growth in this population.

STAR Study

- BWH PI: Mohamed El-Dib
- Study Contact: Yvonne Sheldon, Hanine Chami
- Aim: To evaluate the safety and tolerability of RLS-0071 in the treatment of newborns with moderate or severe HIE.

High-Risk Multimodal Monitor Study

- PI: Mohamed El-Dib
- Study Contact: Katie Hannon, Seh-Hyun Kim
- Aim: To evaluate if the physiological data collected clinically and continuously during the first week of life is predictive of brain injury in infants born < 29 weeks gestation.

CRICO Registry

- PI: Mohamed El-Dib, Terrie Inder
- Study Contact: Hoda El-Shibiny
- Aim: The CRICO NE Registry collected data (detailed demographic and clinical) on neonates either evaluated for therapeutic hypothermia (TH) or those who received TH in 14 participating centers starting April 15, 2018. Upon data analysis, we have noted several areas of improvement in both implementation of therapy, safety of related care and avoidance of risks from TH.

BWH NE Retrospective Cohort

- PI: Mohamed El-Dib
- Study Contact: Hoda El-Shibiny
- Aim: To identify the outcomes of infants with mild encephalopathy who received hypothermia therapy and compare these to the outcomes of infants with moderate/severe encephalopathy who underwent the same therapy. To analyze outcomes of therapeutic hypothermia based upon gestational age. To analyze the outcomes of therapeutic hypothermia based upon cooling time and cooling method.

BWH ELGA Retrospective Cohort

- PI: Mohamed El-Dib
- Study Contact: Hoda El-Shibiny
- Aim: This study aims at defining prenatal, perinatal and clinical factors associated with brain injury on HUS and abnormality in brain development as well as injury on TE MRI in preterm infants born at < 32 weeks GA and/or less than 1500 grams BW and admitted to BWH NICU. Identifying these factors could provide more information on neuroprotective interventions which can be utilized in this population.

Preterm Serial Imaging Study

Principle Investigator: Carmina Erdei, MD

Co-Investigators: Mohamed El-Dib, MD

Research Nurse: Voalte Research RN covering for day

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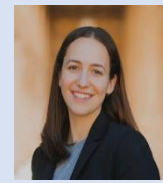
Study Aim: The goal of this study is to identify and characterize any brain injury that occurs in the very preterm infant throughout their NICU course, as well as regular patterns of brain growth in this population. In addition, we aim to utilize early MRI to risk-stratify preterm infants and tailor rehabilitative interventions according to risk in order to explore associations between risk stratified NICU rehabilitative intervention and short- and long-term outcomes.



Dr. Erdei



Dr. El-Dib



Danielle Sharon

Specific Aims:

1. Use serial MRI to define the timing and factors associated with the key forms of brain injury in the preterm infant during the NICU stay, including intraventricular hemorrhage, white matter abnormality, and cerebellar hemorrhage.
2. Define the pattern of brain growth during the NICU stay and the factors influencing the trajectory of total and regional brain growth.
3. Utilize early MRI to risk-stratify preterm infants into low-risk or high-risk groups, and tailor rehabilitative intervention for preterm infants according to their risk.
4. Explore preliminary associations between risk stratified NICU rehabilitative intervention and short- and long-term outcomes of preterm infants.

Inclusion Criteria:

1. Infants currently admitted to the BWH NICU
2. Infants born <33 weeks gestational age
3. Infants weighing 0.5-4.5 kg
4. Infants considered in stable condition per their clinical physician

Exclusion Criteria:

1. Infants with confirmed or suspected congenital anomaly or genetic syndrome
2. Infants with congenital infection

Study Design:

- Control Groups
 - a. BWH standard of care developmental therapy – very preterms discharged from BWH NICU
- Low Risk Intervention Group (no neurological injury)
 - a. Receiving developmental therapy throughout BWH NICU stay using SENSE framework
 - i. Weekly intervention plan per the SENSE program, family education utilizing SENSE materials
- High Risk Intervention Group (neurological injury identified on serial imaging)
 - a. Receiving more intensive developmental therapy in BWH NICU using SENSE-plus framework
 - i. Enhanced rehabilitative support and targeted motor therapy at increased frequency
 - ii. Enhanced reading with infant several times a week and video family education

Enrollment Procedure:

1. Plan to enroll up to 75 infants over 2 years: 50 “risk group” infants (25 “low-risk”, 25 “high-risk” groups) and 25 control infants.
2. Parents or guardians of eligible infants will be approached and asked if they would be willing to participate and receive SENSE intervention and MRI in the BWH Aspect Embrace scanner a total of

three times: 1st scan within first weeks of enrollment, 2nd scan at 34-36 wks. & 3rd/final scan at term equivalent age of 38-41 wks.

3. Babies who are approached to enroll, but do not consent, will be recruited as controls if receiving a clinically indicated term MRI. Alternatively, if babies are receiving a BTM term equivalent scan as part of another research study they may also be approached to be in control group. Babies not enrolled in the study will continue to receive our NICU developmental therapies as part of our standard of care.
4. Babies enrolled will be categorized into risk groups in which they receive weekly age-appropriate therapeutic exposures delivered by parents and the therapy team per SENSE or SENSE-plus protocols.

MRI procedure:

1. Early MRI or HUS risk stratifies babies into low risk” or “high risk”
2. All infants will be accompanied by an appropriately trained research nurse skilled in neonatal resuscitation and a respiratory therapist will accompany research team if infant is intubated or on CPAP.
3. The research nurse may need assistance from the bedside nurse in positioning the baby into the MRI bed and transporting to the Aspect suite.
4. Infants will be fed 30-60 minutes prior to the start of the scan unless NPO for clinical reasons.
5. The infants will be prepared for the MRI according to DPNM MRI guidelines.
6. Cardio-respiratory monitoring as well as continuous video monitoring will occur throughout the MRI scan.
7. Infants enrolled in this study will have their clinically indicated, term equivalent MRI at the BTM scanner and be accompanied by the research nurse.

SENSE Program: The Supporting and Enhancing NICU Sensory Experiences (SENSE) program was developed to engage and empower parents in consistently providing positive, developmentally appropriate sensory exposures to their infants in the NICU every day of hospitalization. The SENSE program scaffolds the amount of sensory intervention each baby should receive per week including specific doses and targeted timing (based on postmenstrual age) of evidence-based interventions of auditory, tactile, vestibular, kinesthetic, olfactory, and visual exposures to be conducted daily through hospitalization for preterm infants (see sample week plan below). The SENSE plus intervention is an enhanced version of the SENSE intervention in which feedback from the neurological examinations and/or MRIs will enhance the motor therapy provided for the infant. NICU therapy team will be providing education and support for parents and bedside logs will be used for families and staff to record sensory exposures. Parents will also have access to an App to record sensory inputs and access educational materials.

Risks: MRI is considered minimal risk. Infants will not be sedated but “Fed and Wrapped” for MRI, and the study will be stopped immediately if the infant shows any sign of stress or discomfort. Scans are read by a pediatric neuroradiologist and will go into the patient’s medical record. Any incidental findings are discussed with the family and follow-up arranged.

Benefits: Because we are performing multiple MRIs, there is the possibility of discovering abnormal findings on one or more of the research studies. In the case that we do, the finding(s) may be caught earlier than if the infant had not received these research scans, leading to faster and possibly more effective interventions that can be tailored to help the child reach the best outcome. The overall potential benefit of this research is that the findings of this study have the potential to improve the detection and understanding of brain injury and brain growth so that we can better devise strategies to prevent injury and/or treat these preterm infants in the future.

Sensory Support: 32 Weeks*

*Denotes change from previous week

Here are some things you can do with your baby each day this week
(as long as he/she tolerates it)

<p>TOUCH</p> <p>Give at least 2 hours of positive touch each day by doing one or more of these things:</p> <ul style="list-style-type: none"> • Do kangaroo care (skin-to-skin) for at least 1 hour. • Provide comforting touch. • Hold your baby in a blanket for 15 minutes at a time, or longer if his/her temperature remains stable. • Do up to 15 minutes of massage, 1 time per day. 	<p>HEARING</p> <p>Give at least 1 ½ hours of positive sound each day by doing one or more of these things:</p> <ul style="list-style-type: none"> • Read, sing, and/or speak to your baby. (can be broken up into 30 minute periods several times per day) • Play soft music or recorded voice. <p><small>*At 45 decibels (the sound of a whisper or quiet conversation)</small></p>	<p>SMELL</p> <p>Place a scent cloth under your baby's head.</p>	<p>SEEING</p> <p>Start introducing light to your baby with 12 hours of dim light (during the day, 25-100 Lux) and 12 hours of darkness (at night, <10 Lux). Avoid direct and bright lights.</p>	<p>MOVEMENT & BODY AWARENESS</p> <ul style="list-style-type: none"> • Unswaddle your baby and allow stretching and free movement for 2 minutes prior to a diaper change at least 3 times per day. • Rock during holding for 2-3 minutes
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A PHASE 2, TWO-STAGE, RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED, MULTIPLE-ASCENDING DOSE STUDY TO EVALUATE THE SAFETY, TOLERABILITY, PHARMACOKINETICS, AND PRELIMINARY EFFICACY OF RLS-0071 IN NEWBORNS WITH MODERATE OR SEVERE HYPOXIC-ISCHEMIC ENCEPHALOPATHY UNDERGOING THERAPEUTIC HYPOTHERMIA WITH LONG-TERM FOLLOW-UP (**STAR Study**)



Dr. El-Dib

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Primary Aim: To evaluate the safety and tolerability of RLS-0071 in the treatment of newborns with moderate or severe HIE. In Stage 1, participants will receive either ascending doses of RLS-0071 or placebo in addition to standard of care treatment, including hypothermia for 72 hours. During and after the dosing period, participants will be monitored and assessed for safety and exploratory evaluations through Day 14. After completion of Stage 1, participants will transition to Stage 2 of the study for long-term observation out to 24 months of age.

Secondary Aims: To assess the effect of RLS-0071 on the following:

1. Long-term safety and neurocognitive developmental effects of RLS-0071 administered to moderate-severe HIE patients.
2. Evaluate the PK of RLS-0071.
3. The effect of RLS-0071 on the development of epilepsy.
4. Evaluate PD markers and PK/PD correlation, including blood and imaging biomarkers, following RLS-0071 admin.
5. Imaging biomarkers will be performed in neonates with moderate or severe HIE and will include the assessment of RLS-0071 to reduce brain injury as measured by MRI at Day 4 and/or Day 12 MRI.
6. MRI will also be performed at Day of Life (DOL) 42 MRI to assess injury and brain growth.
7. The short-term effect(s) of RLS-0071 for improving survival and decreasing morbidity from HIE.
8. The long-term patient- and family-centered outcomes of RLS-0071 administration during the neonatal period.

Inclusion Criteria:

1. Infant \geq 36 weeks gestation *and* a **singleton**
2. Sentinel event prior to delivery such as abruption, tight nuchal cord, uterine rupture, profound bradycardia, shoulder dystocia, or cord prolapse or other acute event likely attributable for newborn depression at delivery or an acute change in the fetal status with a clinical presentation consistent with an acute sentinel event with no clearly defined etiology;
3. Moderate or severe encephalopathy based on at least one of the following prior to initiation of hypothermia;
 - a. Risk of Encephalopathy (one of these)
 - i. Arterial blood gas (ABG) (cord or infant drawn within 1 hour of birth) with pH \leq 7.0 OR base deficit \geq 16 mmol/L OR
 - ii. ABG (cord or infant drawn within 1 hour of birth) with pH 7.01 to 7.15, a base deficit between 10 and 15.9 mmol/L, or a blood gas was not available, additional criteria are required:
 - iii. Infant born after an acute perinatal event (eg, late or variable decelerations, cord prolapse, cord rupture, uterine rupture, maternal trauma, hemorrhage or cardiorespiratory arrest) and the APGAR score \leq 5 at 10 minutes OR the infant required assisted ventilation \geq 10 minutes after birth
 - b. Clinical signs of encephalopathy (either/both)
 - i. Moderate/Severe encephalopathy on NICHD assessment (Appendix 3)
 - ii. Evidence of seizures (clinical and/or EEG)
4. Eligible to receive therapeutic hypothermia and active whole-body cooling to be started prior to \leq 6 hours old

Exclusion Criteria:

1. Inability to enroll in the study and initiate the first dose of RLS-0071 within **9 hours of life**
2. Known major congenital and/or chromosomal abnormality(ies) or brain abnormality (ex. Hydrocephalus)
3. Severe growth restriction (birth weight \leq 1800 g) OR head circumference is $<$ 30 cm
4. Infants suspected of overwhelming sepsis or congenital infection based on the Investigator's clinical consideration at the time of enrollment
5. Persistent severe hypotension unresponsive to inotropic support (requiring $>$ 2 inotropes)
6. Persistent severe hypoxia in the setting of 100% FiO₂ and unresponsive to nitric oxide or requiring ECMO
7. Severe disseminated intravascular coagulation (DIC) *with* clinical bleeding
8. Neonatal encephalopathy believed to be due to a cause other than perinatal hypoxia (ie, other than HIE)
9. Moribund infants for whom withdrawal of care being considered
10. Suspected or confirmed fetal alcohol syndrome or suspected substance withdraw seizures
11. Any other condition that the investigator may consider making the patient ineligible for the study or place the patient at an unacceptable risk. Note: This exclusion criterion would include a clinically significant (eg, Grade 3 or 4 intracranial hemorrhage)

Benefits: This investigational medication is intended to improve long-term outcomes for babies born with HIE; however, benefit cannot be guaranteed. Information gathered from participation in this study may help other patients with HIE in the future.

Risks: Possible side effects from investigational product, infusion reaction, theoretical risk of future development autoimmune disease after RLS-0071 treatment. Possible skin irritation from EKG or EEG leads (although clinically required).

Study Procedures: *Screening and consent done by research team, study product prepared by IDS pharmacy, Study Product administration along with VS, 12-lead (research only) EKG, Labs for Pharmacokinetics (PK) and Biomarkers will be done by Bedside NICU RN*

- Infants are thoroughly screened by research staff prior to enrolling
- Informed consent with parents by Study Physician(s)
- Randomization to RLS-0071 or placebo
- Screening after enrolling
 - Demographics; Medical hx
 - Inclusion/exclusion eval (to be sure nothing has changed)
 - Concomitant meds
 - Physical exam by PI
 - Baseline blood collection- hematology, chemistry, blood gas (from birth date clinical labs)
- Before RLS-0071/placebo administration #1
 - Baseline 12-lead EKG (a nursing communication order will be placed- not to be charged)
 - Vital signs 15 minutes prior to dose (Temp., HR, RR, BP and mean are required VS)
 - cEEG or aEEG (if cEEG not started yet)
 - Weight, Length, Head circumference (if not done at birth)
 - PK and Biomarker Labs within 30 minutes prior to 1st dose (see slides/checklist @ bedside)
- After RLS-0071 administration #1 (as soon as flush finishes)
 - PK and Biomarker Labs within 3 minutes of flush finishing (see slides/checklist @ bedside)
 - Vital signs post dose within 15 mins
 - Biomarker sample 1-hour post infusion #1 (±3 minutes)
- Before RLS-0071/placebo administration #2
 - PK sample drawn pre-dose (within 3 minutes before dose)
- RLS-0071 Dose #2 (IP is given every 8 hrs)
 - Vital signs 15 minutes prior to dose
 - Administer RLS -0071 over 10 minutes (including flush time)
 - Notify team of any potential adverse events/concerns
 - Vital signs post dose within 15 minutes
- RLS-0071 Dose #3-4
 - Vital signs 15 minutes prior to dose
 - Vital signs post dose within 15 mins
- RLS-0071 Dose #5 or #6
 - PK and Biomarker Labs within 30 minutes prior to dose #5 or #6 (see slides/checklist @ bedside)
 - Repeat Vital signs with each dose both 15 minutes before and within 15 minutes after
- RLS-0071 Dose #7-9
 - Repeat Vital signs with each dose both 15 minutes before and within 15 minutes after
- RLS-0071 Dose #10
 - PK and Biomarker Labs within 30 minutes prior to dose #10 (see slides/checklist @ bedside)
 - Vital signs 15 minutes prior to dose and post dose within 15 mins
 - PK and Biomarker Labs post dose within 3 minutes of flush finishing (see slides/checklist)
 - PK Labs 1 hour, 8 hours, and 16 hrs. post dose within 3 minutes of this time
 - PK and Biomarker Labs 24 hrs post dose within 3 minutes of this time (see slides/checklist)
- EKG on DOL 6 and DOL 14 (or discharge whichever comes first)
- DOL 12 MRI (+/- 2 days)
- Outpatient Follow-up- MRI @ 42 days
- Outpatient follow-up calls or Center for Child Development visits @ 3 mo., 6 mo., 12 mo., 18 mo. with developmental testing @ 24 months
- Monitoring for Adverse Events or Serious Adverse Events will continue daily throughout the infant's hospitalization- expect frequent check-ins from study staff

High-Risk Multimodal Monitor Study

PI: Mohamed El-Dib, MD,

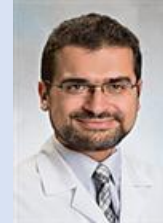
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Dr. El-Dib



Dr. Seh-Hyun Kim



Katie Hannon

Background: High-risk infants in the NICU receive close monitoring of their physiologic measures (i.e. heart rate, blood pressure, oxygen saturations, etc.) to help clinicians determine their clinical status. By collecting and storing this data, we hope to capture trends in the data that can be correlated to brain injury and neurological outcomes.

Study Aim: To evaluate if the physiological data collected clinically and continuously during the first week of life is predictive of brain injury in infants undergoing therapeutic hypothermia treatment **or** born < 29 weeks gestation. Goal is to enroll 200 infants over 2 years.

Inclusion Criteria: Infants undergoing therapeutic hypothermia treatment **or** infants born < 29 weeks and are <7 days old, inpatient in the BWH NICU.

Exclusion Criteria: Infants in extremis who have high likelihood not to survive.

Risks: This study is considered minimal risk as the data is already being obtained clinically. The only risk is to privacy which is minimized by each infant receiving a unique subject ID and all identifiable data collection being kept in a password protected database. There is no direct contact with the infant during data collection.

Benefits: There are no direct benefits expected to the infant, but the results of this study may help optimize neurodevelopmental outcomes of very preterm infants in the future.

Study Procedures:

- High-risk infants will have their bedside monitoring equipment connected to the Moberg Monitor (ideally within the 1st DOL) by the study team or a member of the NNCCN team.
 - This may include GE monitor, TCOM, NIRS, aEEG, and mechanical ventilator.
 - This study has **IRB approval to collect this PRIOR to consent**
- The monitor will remain at the bedside for 7 days (+/- 2 days) to collect this data- study team will remove at the end of this period.
- This data is stored on a secure BWH database until the family can be approached for consent
- Families will be approached at a later time during infant's admission to obtain consent
 - If a family declines the data will be permanently destroyed/deleted
 - If a family is approached by Research Nurses for a general research approach and declines ALL research the recording will be stopped and deleted prior to approaching
- When families consent to the study the physiologic monitoring data will be stored and basic demographic, and NICU outcome data will be collected from EPIC.



CRICO Registry



Dr. El-Dib

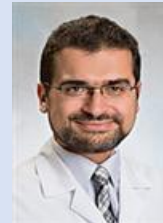


Hoda El-Shibiny

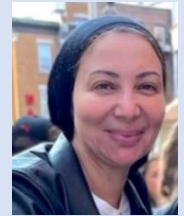
1. **Title:** Optimization and Standardization of Care during Therapeutic Hypothermia in the Term Born Infant with Encephalopathy
2. **PI:** Mohamed El-Dib mel-dib@bwh.harvard.edu and Terrie Inder
3. **Data manager/contact:** Hoda El-Shibiny helshibiny@bwh.harvard.edu
4. **Centers Involved:** 14 medical centers include: Brigham and Women Hospital, Boston Children's Hospital, Massachusetts General Hospital, Beth Israel Deaconess Medical Center, Newton -Wellesley Hospital, South Shore Hospital, North Shore Medical Center, Beverly Hospital, Cambridge Health Alliance, Good Samaritans Medical Center, Holy Family Hospital, Saint Elizabeth's Medical Center, Mount Auburn Hospital, and MedFlight Boston.
5. **Short description of the Aims of the project:**
 - The CRICO NE Registry collected data on neonates either evaluated for therapeutic hypothermia (TH) or those who received TH in participating centers starting April 15, 2018.
 - Upon data analysis, we have noted several areas of improvement in both implementation of therapy, safety of related care and avoidance of risks from
 - The aim of the study is the implementation of quality improvement projects aimed at decreasing variation in practices and improved safety of current practice and establishing an analytic plan with statistical support for reporting.
6. **Short description of the data collected:**
 - Demographic- GA, BW, Delivery and Transport data.
 - Maternal History
 - Delivery History
 - Infant Delivery: Resection event, Cord and Blood gases, The scores of the four NE exam scores during 6 hours of evaluation
 - Neurology Exam BWH and BCH Score and Sarnat grade
 - Therapeutic Hypothermia details (Start and end of passive and active cooling, rewarming phase, and complete or early exit)
 - Neuromonitoring aEEG and cEEG details, score based on the 1st report.
 - Short Term Outcome – Discharge details, Feeding details, and MRI.
 - Side Effects of TH. Hematological data- Blood products received- SC fat necrosis- Pulmonary Hypertension and any other concern.
7. **Dates and Numbers of patients already collected:**
 - Start date: 4/18/2018- to-date
 - **Total Numbers of cooled and evaluated babies enrolled to Date : 1243**



BWH NE Retrospective Cohort- Cooling Database



Dr. El-Dib



Hoda El-Shibiny

1. **Title:** Quality Evaluation of Expanded Hypothermia Therapy Guidelines for At-Risk Neonates
2. **PI:** Mohamed El-Dib mel-dib@bwh.harvard.edu
3. **Data manager/contact:** Hoda El-Shibiny helshibiny@bwh.harvard.edu
4. **Center Involved:** BWH
5. **Short description of the Aims of the project:**
6. **Main aims of this study are:**

- To identify the outcomes of infants with mild encephalopathy who received hypothermia therapy and compare these to the outcomes of infants with moderate/severe encephalopathy who underwent the same therapy.
- To analyze outcomes of therapeutic hypothermia based upon gestational age.
- To analyze the outcomes of therapeutic hypothermia based upon cooling time and cooling method.

7. **Short description of the data collected:** The database integrates different databases. The total number of the collected data points is 680 variables- The main variables are:

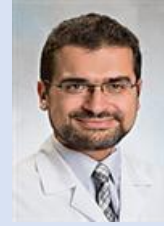
8. **The CRICO database:** Demographic- GA, BW, Delivery and Transport data.

- Maternal History
- Delivery History
- Infant Delivery: Resection event, Cord and Blood gases, The scores of the four NE exam scores during 6 hours of evaluation.
- Neurology Exam BWH and BCH Score and Sarnat grade.
- Therapeutic Hypothermia details (Start and end of passive and active cooling, rewarming phase, and complete or early exit)
- Neuromonitoring aEEG and cEEG details, score based on the 1st report.
- Short Term Outcome – Discharge details, Feeding details, and MRI.
- Side Effects of TH. Hematological data- Blood products received- SC fat necrosis- Pulmonary Hypertension and any other concern.
- **BWH MRI Scoring database:** Injury location, pattern of injury, Barkovich Scoring system, Deep Grey Matter, White Matter/Cortex, Cerebellum, abnormality, injury location and sequences of injury, overall score, and Severity of Injury.

9. **Dates and Numbers of patients already collected:**

- Data collected -Start date: 01/ 20/ 2014, and updated to December 31, 2021
- Population: Babies enrolled on Therapeutic Hypothermia Protocol
- **Total numbers of enrolled babies: 381**

**BWH NE Retrospective Cohort-
Evaluated Non-Cooled Database**



Dr. El-Dib



Hoda El-Shibiny

1. **Title:** Quality Evaluation of Expanded Hypothermia Therapy Guidelines for At-Risk Neonates
2. **PI:** Mohamed El-Dib mel-dib@bwh.harvard.edu
3. **Data manager/contact:** Hoda El-Shibiny helshibiny@bwh.harvard.edu
4. **Center Involved:** BWH
5. **Main aims of this study are:**
 - To identify the outcomes of infants who evaluated for hypothermia therapy and did not receive treatment.
 - To analyze outcomes of evaluated not cooled based upon gestational age.
6. **Short description of the data collected:** The database is structured based on the CRICO database. The total number of the collected data points is 425 variables- please find the below summary:
7. **The CRICO database:** Demographic- GA, BW, Delivery and Transport data.
 - Maternal History
 - Delivery History
 - Infant Delivery: Resection event, Cord and Blood gases, The scores of the four NE exam scores during 6 hours of evaluation.
 - Neurology Exam BWH and BCH Score and Sarnat grade.
 - Therapeutic Hypothermia details (Start and end of passive and active cooling, rewarming phase, and complete or early exit)
 - Neuromonitoring aEEG and cEEG details, score based on the 1st report.
 - Short Term Outcome – Discharge details, Feeding details, Anesthesia details and MRI.
8. **Dates and Numbers of patients already collected:**
 - Data collected -Start date: 04/ 20/ 2018, and updated to December 31, 2021
 - Population: Babies evaluated for therapeutic hypothermia and not treated.
 - Total numbers of enrolled babies:381



BWH ELGA Retrospective Cohort



Dr. El-Dib



Hoda El-Shibiny

1. **Title:** Assessment of Risk Factors Associated with Adverse Outcome in Preterm Infants
2. **PI:** Mohamed El-Dib mel-dib@bwh.harvard.edu
3. **Data manger/contact:** Hoda El-Shibiny helshibiny@bwh.harvard.edu
4. **Center Involved:** BWH
5. **Short description of the Aims of the project:**
This study aims at defining prenatal, perinatal and clinical factors associated with brain injury on HUS and abnormality in brain development as well as injury on TE MRI in preterm infants born at < 32 weeks GA and/or less than 1500 grams BW and admitted to BWH NICU. Identifying these factors could provide more information on neuroprotective interventions which can be utilized in this population.
6. **Short description of the data collected :**
 - All VON variables
 - Kidokoro Scores from TE MRIs
 - NIRS data
 - Ultrasound data
 - Discharge summaries
 - Lab data (blood gases, mode of ventilation, hematocrit)
7. **Dates and Numbers of patients already collected:**
 - 760 babies in database, all with VON data
 - Currently have babies with DOB between January 2015 to December 2020
 - We are approved to have access to babies born from January 2010 to August 2025
 - Inclusion criteria:
 - Preterm infants born at or less than 32 weeks gestational age (GA) or with birth eight less than 1500 grams admitted to Brigham and Women's Hospital NICU.