Neonatal Intensive Care Unit – ROTATION SPECIFIC OBJECTIVES
Pediatric Emergency Medicine Subspecialty Residency - University of Calgary

The overall structure of the four-week rotation will be as such:

- First half at Rockyview General Hospital (RGH) Level 2 Nursery
- Second half at ACH NICU

ROTATION SPECIFIC OBJECTIVES – this is a combined list for your experience at both sites; some will be met inthe RGH level 2 nursery setting, others in the subspecialized ACH NICU setting.

At the completion of training, the resident will have acquired the following competencies and will function effectively as:

Medical Expert

Knowledge:

- Ability to obtain a meaningful perinatal history.
- Knowledge of how the physiology, biochemistry, pharmacology, anatomy and pathology in the preterm and term neonate differs.
- Knowledge of the effects of labour/delivery on the fetus and neonate.
- Understanding of the processes of postnatal physiological adaptation.
- Knowledge of care of the normal newborn, and ability to provide "well infant" care to "normal" neonates including discussion with parents and referring physicians.
- Understanding of the relationship between fetal and neonatal events which may affect the long term outcome for the child.
- Knowledge of the general principles and practices of critical care and clinical skills:
  - neonatal resuscitation
  - cardiorespiratory support
  - nutritional support (including orogastric feeding)
  - maintenance and preservation of neurologic function
- Knowledge of the following neonatal conditions/complications:
  - Prematurity related issues including: Intra-ventricular hemorrhage, Retinopathy of prematurity, Respiratory distress syndrome, Apnea of prematurity
  - Hypoxic-ischemic encephalopathy
  - Neonatal seizures
  - Causes of: cyanosis, respiratory distress, apnea, tachypnea in the newborn
  - Patent ductus arteriosus
  - Neonatal hypoglycemia
  - Hyperbilirubinemia
  - Necrotizing enterocolitis
  - Neonatal sepsis
  - Birth trauma
  - Sedation/pain management in the neonate

Skills

- Neonatal resuscitation (according to NRP) and post resuscitative care
- Umbilical venous catheterization
- Endotracheal intubation
- Needle thoracentesis
- Lumbar puncture
- Bladder aspiration (if opportunity allows)

Communicator:

- Effective and appropriately documented patient care.
- Effective communication with parents to obtain necessary information, provide factual information concerning their infant, offer support and counselling where required.
- Communicate effectively with nursing staff and other medical personnel about both infant care and parent education.

Collaborator:

- Good teamwork and humanistic qualities in a multidisciplinary setting and patient-family centered care setting.
- Provide patient care in conjunction with allied health care workers and various pediatric subspecialties including identification of an appropriate need for consultation.

Leader:

- Develop awareness of local resources for babies/parents
- Understand the principles of triage and effective resource utilization
- Be aware and observant of policies/procedures

Health Advocate:

- Counsel parents with respect to supported new born practices such as breast feeding and immunizations (as appropriate, e.g. Palivizumab for RSV).

Scholar:

- Demonstrate improve knowledge through ongoing learning and be able to critically appraise a topic and prepare a presentation on a topic pertaining to neonatology.
- Practice medicine based upon evidence available in medical literature.
- Facilitate the learning of other trainees, health professionals and families.
- Demonstration of acquisition of knowledge required for patient care through appropriate consultation, reference to textbooks, literature searches.

Professional:

- Consistently demonstrate punctuality, commitment to their patients and active participation in the NICU.
- Demonstrate dependability with respect to completion of assigned tasks.
- Demonstrate sensitivity to the concerns and questions raised by the family and staff members.
- Continue to develop professional, ethical experience by participating in discussions and counseling regarding difficult and controversial cases

PROGRAM STRUCTURE WEEKS 1/2: RGH

Prior to/at the beginning of the rotation:

- As educational opportunities will include delivery room experience with resuscitation, ***all residents should complete NRP*** prior to the start of their rotation.
- The resident should receive an orientation that will include a tour of the physical facilities, and discussion of usual practices in the NICU.
- The resident should meet with the neonatologist to review specific goals and objectives for the rotation (it is important that these be communicated to other attending neonatologists).

During the rotation:

- Responsibilities will include patient evaluation, establishment of an investigation and treatment plan, communication with parents and the health care team, delivery room care, and ensuring appropriate documentation and arrangements for long term care. Patients will be under the care of the attending neonatologist with additional supervision provided by the resident (fellow) in Neonatal-Perinatal Medicine, senior clinical associate (pediatrician) or fourth year pediatric resident or senior nurse practitioner.
- Graded responsibility will be provided through assignment of patients. The attending neonatologist or delegate will assign patients based upon the perceived ability of the resident, level of training, and patient load.

Call

- RGH will be trialing a 12-hour call shift system. The current expectation for PEM fellows will be to cover call from 8am-8pm on a 1:4 basis over 2 weeks, including 1 weekend (total of about 4 shifts). Since the shifts are during daytime hours, they will not be given "post-call" days.
- During call shifts, PEM residents will be paired with a senior learner but will be considered first call. They will be responsible for admitting and establishing initial care plans for babies. Residents will attend deliveries that require the presence of the neonatal resuscitation team (Code Green and Blue). The resident will inform the on-call neonatologist of all admissions to discuss management plans.

Formal teaching will occur as follows:

	0800-0900	1600-1700
Tuesday		Neonatal Grand Rounds
Friday (1st & 3rd)	Neonatal Clinical Rounds (Telehealth)	
Friday (2nd & 4th)	Neonatal Seminars	

- Residents are expected to arrive early (745) on Fridays so that they can get handover from the night team and start their teaching on time
- Residents will be excused from service to attend academic teaching provided by their home program on Thursdays.
- Residents are **expected to arrive early (7.45 AM) on Tuesdays and Fridays,** so that they can get handing over from the night duty team and start their teaching on time.

Evaluations

- During the rotation, the attending neonatologist(s) should provide formative evaluations and feedback to each resident. ***It is the resident's responsibility to seek performance feedback from the neonatologist s/he is working with on a weekly basis.*** The final summative performance will be collated by one of the attending neonatologists the resident worked with. Completed resident evaluation forms will be submitted via One45 ***within two weeks of completion of the rotation.***
- The resident should complete the Rotation evaluation forms, which should be discussed with the attending neonatologist during and at the end of their rotation. The preceptor evaluation forms should be completed by the resident on the departmental website. These evaluations will go directly to the Department Head.
- The in-training evaluation form should be reviewed with the resident at the end of his or her rotation by the attending neonatologist/s and be supplemented by verbal feedback. Residents should have completed the resident Rotation evaluation form for future discussion with the neonatologist. The rotation evaluation form should be sent to Dr. Prashanth Murthy (Room 6N90 RGH) as needed.
- Except for the neonatal resuscitation program (which has its own assessment procedure), the mandatory procedural logbook should be utilized for procedures. It is the resident's responsibility to ensure documentation (from the attending neonatologist or delegate) of competence in procedures. These should be documented during each rotation with copies made at the end of each rotation - one copy to the resident and one to accompany the resident evaluation form sent to the Director of the Pediatric Emergency Residency Program.

PROGRAM STRUCTURE WEEKS 3/4: ACH

The ACH NICU specializes in the care of neonates requiring subspecialty/surgical evaluation or neurocritical care. The following is a list of types of presentations seen here:

- Surgical:
  - Bowel: gastroschisis, omphalocele, duodenal atresia, necrotizing enterocolitis
  - Congenital diaphragmatic hernia
  - Tracheo-esophageal fistula
- Neurocritical care: hypoxic-ischemic encephalopathy HIE), seizures, hydrocephalus
- Cardiac: congenital heart defects pre/post-surgery, arrhythmias
- Other complex medical:
  - Genetic abnormalities
  - Chronic premature infants (e.g. with chronic lung disease)
- Occasionally consults from ED for infants <7days of age

At the beginning of the rotation:

- The resident should receive an orientation that will include a tour of the physical facilities, and discussion of usual practices in the NICU. Arrive at 9am on the first day of the rotation. Every other day following, arrive at 745am to receive overnight handover.
- The resident should meet with the neonatologist to review specific goals and objectives for the rotation (it is important that these be communicated to other attending neonatologists).

During the rotation:

- The resident should have a 4-6 patient assignment. Responsibilities will include patient evaluation, establishment of an investigation and treatment plan, communication with parents and the health care team, and ensuring appropriate documentation and arrangements for long term care. Patients will be under the care of the attending neonatologist/s with additional supervision provided by the resident (fellow) in Neonatal-Perinatal Medicine.
- PEM residents will not be expected to do any evening/overnight call in favor of maximizing learning opportunities during weekdays/ weekend days on the unit.
- Formal teaching will be somewhat similar to as RGH:

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Friday (2nd & 4th)	Neonatal Seminars	

- Residents are expected to arrive early (745) on Fridays so that they can get handover from the night team and start their teaching on time
- Residents will be excused from service to attend academic teaching provided by their home program on Thursdays.

Evaluations

- See above RGH section for details – for ACH portion, the rotation evaluation form should be sent to Dr. Alixe Howlett.

APPENDIX II

EVALUATION OF NEONATAL PROCEDURAL AND ASSESSMENT SKILLS - Mandatory Log Sheet to be completed by all Residents

Name: _____ **Date:** _____ _____

Block **Date**

	1 Date/Initial of Supervisor		2 Date/Initial of Supervisor		3 Date/Initial of Supervisor		4 Date/Initial of Supervisor		5 Date/Initial of Supervisor		6 Date/Initial of Supervisor	
CASE ROOM RESUSCITATION - Demonstration of ability to provide adequate resuscitation to a newborn with successful performance of:												
i. Drying, suctioning, stimulation												
ii. Bag/mask ventilation												
iii. Other												
RESPONSE TO EMERGENCY AND URGENT SITUATIONS - Demonstration of ability to appropriately assess a sick newborn in LDR/NICU/Newborn Nursery with following problems:												
i. Seizures												
ii. Respiratory distress												
iii. Cyanosis/dusky spells/ apneas												
iv. Shock												
v. Suspected sepsis (jaundice, poor feeding, lethargy)												

	1 Date/Initial of Supervisor		2 Date/Initial of Supervisor		3 Date/Initial of Supervisor		4 Date/Initial of Supervisor		5 Date/Initial of Supervisor		6 Date/Initial of Supervisor	
Procedural Skills in NICU (With appropriate attention to paid to aseptic technique):												
i. Placement of peripheral IV's												
ii. "Elective" endotracheal intubation												
iii. Placement of UVC												
iv. Lumbar puncture												

Recommended Reading

1. Nelson Textbook of Pediatrics, 19th Edition (2010):
   - Chapter 6: Fetal Growth and Development
   - Chapter 7: The Newborn
   - Chapter 41: Nutritional needs
   - Chapter 42: Feeding of Infant & children (Breast Feeding/Formula feeding)
   - Part XI: The Fetus and Neonatal Infant
2. Care of the High-Risk Neonate, 5th Edition (2001) Klaus and Fanaroff

Reference Textbooks

1. Neonatology at a glance, 3rd Edition (2016), Tom Lissauer

2. Canadian Pediatric Society Position Statements and Practice Points : http://www.cps.ca/en/documents/authors-auteurs/fetus-and-newborn-committee