The Fellowship Program in Neonatal-Perinatal Medicine
Children’s Mercy Hospitals and Clinics
University of Missouri Kansas City School of Medicine
Kansas City, Missouri

The Program Handbook
# Table of Contents

Program Administrators and Faculty 2  
Mission Statement and Introduction to curriculum 3  
Overview – scope of training; training institutions; resources 4  
Mentoring Program 6  
Orientation Program 6  
Educational Program 7  
Conduct of Research 11  
NPM Research Programs 15  
Clinical Rotation - CHMC 17  
Clinical Rotation - TMC 19  
Delineation of clinical responsibilities by level of training 21  
High Risk Follow-up Clinic 23  
Maternal-Fetal Medicine Rotation 23  
Critical Care Transport 24  
Home Ventilator Program 24  
Summary of program activities 25  
Conferences and Meetings 26  
Management of Fatigue 28  
Vacation and Leave Policy 30
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Mission Statement

The Neonatal-Perinatal Medicine Fellowship Training Program will provide a nuturing environment in which trainees receive the highest possible quality of education in Neonatal-Perinatal Medicine. Physicians will acquire skills required for the care of the neonate, conduct of scientific exploration, life-long learning, and effective teaching of families, members of the health care team, and general and medical communities.

Introduction

The faculty and staff warmly welcome you to the Neonatal-Perinatal Medicine Fellowship Training program at Children’s Mercy Hospitals and Clinics. This fellowship program is accredited by the Accreditation Council for Graduate Medical Education (ACGME), most recently in 2011, and is due for its next evaluation in 2021. The program was started in 1973 by Dr. Robert Hall, with one fellow, and has grown over the years to the current compliment of seven (7) fellows. Likewise, the faculty has significantly expanded and continues to expand, to meet the needs of a growing fellowship training program and demand for level IV neonatology services in the Kansas City metropolis and its environs. Among its strengths, the program’s faculty reflects educational, research, and cultural diversity that enhance the educational experiences available to our equally diverse group of fellows.

The goal of the NPM training program is to make you a competent neonatologist in a rapidly changing national health care delivery system. The program will achieve this goal by your timely attainment of six competency-based objectives and professional developmental milestones. This manual describes the content of the training program in Neonatal-Perinatal Medicine at CMHC based on, and using extensively borrowed material from the training programs handbook of, the Accreditation Committee for Graduate Medical Education (ACGME).

Briefly, during the training period, you will:

i. Receive clinical and didactic education regarding the care of critically ill neonates
ii. Receive instruction in the psychosocial implications of disorders of the fetus, neonate, and young infant, as well as in the family dynamics surrounding the birth and care of a sick neonate
iii. Identify the high-risk pregnancy, and will become familiar with the methods used to evaluate fetal well-being and maturation
iv. Develop skills to be effective consultants in Neonatal-Perinatal Medicine
v. Acquire the requisite knowledge and skills to attain competence in the evaluation, diagnosis and pre/post operative management of surgical patients
vi. Learn to use the neonatal database of all patient admissions, diagnoses, and outcomes as a tool in your education
vii. Become skilled in the diagnosis and management of critically ill neonates who have diverse medical and surgical conditions in the ICN at CMHC and TMC and the CMH Fetal Health Center (FHC)

The NPM Fellowship Committee (NPMFC) provides oversight to the program’s curriculum. It is chaired by the Program Director (PD) and consists of the Associate Program Director (APD), all Fellows, Scholarship Oversight Committee (SOC) Chair-Persons, and Directors (if not already represented) of the Special Care Clinic (SCC), ICN (CMH and Truman Medical Center), Clinical Research Program, and Neonatal Research Laboratory.

Finally, you are encouraged to approach the Fellowship Program’s Coordinator, APD, or PD with questions or concerns relating to NPM training. The NPM program and the Division of Neonatal-Perinatal Medicine significantly invest in its fellows and is proud of its graduates, as each one has gone on to successful careers in academic and private neonatology practice.
Scope of Fellowship Training

The Neonatal-Perinatal Medicine Fellowship training program at Children’s Mercy Hospitals and Clinics provides training in Neonatal-Perinatal Medicine and integrates the ACGME competencies and professional developmental milestones for physicians-in-training in its curriculum (see Goals and Objectives for PGY 4, PGY5, and PGY6). The program provides fellows with the education required to understand the physiology and altered structure and function of the fetus and the neonate, and to diagnose and manage problems of the neonate. It emphasizes the fundamentals of clinical diagnosis and management of problems seen in the continuum of development from the prenatal through the intrapartum and neonatal periods, including assessment of outcomes. Additional educational opportunities include the Masters of Science in Clinical Research or Bioinformatics and Certificate Programs in Bioethics, Clinical Research, and Informatics.

Institutions

The Neonatal-Perinatal Medicine Fellowship training program at CMHC offers its educational programs at one Level IV ICN (CMHC), one level III ICN (TMC), one Fetal Health Center (CMHC), and the High Risk Follow-up Clinic (CMHC Special Care Clinic). This program is affiliated with the University of Missouri-Kansas City School of Medicine, an ACGME-accredited residency program in Obstetrics and Gynecology and fellowship program in Maternal-Fetal Medicine (MFM) at TMC. The Obstetrics and Gynecology program is located across the street from CHMC and has four board-certified Maternal-Fetal Medicine (MFM) specialists.

Program Personnel and Resources

Faculty

The Neonatal-Perinatal Medicine program has a faculty of 22 full-time Neonatologists, two General Pediatricians, three Nurses, one Bioethicist, and one Psychologist who actively contribute sufficient time and effort to the educational program to fulfill its supervisory, teaching, and mentoring requirements.

The program has the full range of pediatric subspecialists necessary for teaching and consultation. In addition, appropriate consultants are available in related disciplines, including: Pediatric Neurology, Genetics, Child Development, and Pediatric Radiology.

The fellowship program has access to a full range of surgical subspecialists with experience in pediatrics necessary for teaching and consultation, including consultant faculty in: Pediatric Surgery, Neurosurgery, Ophthalmology, Orthopedic Surgery, Otolaryngology, Urology, and Cardiothoracic Surgery.

The faculty receives training on teaching, evaluating, and mentoring to effectively deliver the necessary education in the ACGME-mandated competencies and professional developmental milestones, a process that facilitates equitable training and evaluation of the fellow.

Other Program Personnel

The following professional staff, skilled in the care of critically ill and/or premature neonates, are an integral part of our program: nurses, respiratory therapists, pharmacists, nutritionists skilled in the management of both enteral and parenteral nutrition, therapists skilled in evaluating feeding difficulties initially and in follow up, medical social workers skilled in management of families in crisis and end-of-life care, specialists in physical and occupational therapy applied in a developmentally appropriate way, and specialists in the assessment of hearing.
Resources

The primary clinical unit is an 80-bed level IV ICN located at the main campus of Children’s Mercy Hospitals and Clinics in Kansas City, Missouri. Facilities and equipment in that unit exceed the generally accepted standards of a modern intensive care unit, and appropriate laboratory services are available 24 hours a day. The facilities and resources on the unit include: portable x-ray, ultrasound imaging, electrocardiogram (ECG), neonatal echocardiography, and electroencephalogram (EEG) services on a 24-hour-a-day basis with 24-hour-a-day interpretation services.

The Perinatal Service at Truman Medical Center provides up-to-date facilities and equipment which meet the generally-accepted standards for the care of women with high risk pregnancies and the care and resuscitation of the high-risk newborn.

The ICN (CMH and TMC), FHC (CMH), and MFM unit (TMC) meet the generally-accepted standards for modern laboratories and services needed for management of high-risk pregnancies and critically ill neonates. The services provided by these hospitals include, and are not limited to the following:

- microchemistry laboratories;
- hematology laboratories;
- blood gas analysis;
- perinatal diagnostic laboratory;
- pathology services, including those for evaluation of placental pathology;
- diagnostic bacteriology and virology laboratories;
- blood bank; and
- CT and MRI facilities.

The teaching sites also have access to the following within a reasonable period of time:

- screening laboratory for inborn errors of metabolism;
- clinical toxicology laboratory;
- nuclear medicine facilities;
- cytogenetics laboratory; and
- audiology services.

The program provides the patient care experiences necessary for the fellows to acquire skill in delivery room stabilization and resuscitation of critically ill neonates. To accomplish this, fellows receive didactics on Perinatal care and are exposed to a sufficient number and variety of high-risk obstetrical patients to ensure that they become knowledgeable in identifying high-risk pregnancies and evaluating fetal well-being and maturation.

In 2011, there were about 1,430 medical and 138 surgical admissions, contributing to 22,517 patient days. Some of these patients are followed at the SCC (the ICN Follow-up Clinic), thereby assuring appropriate outpatient experience for each fellow. The clinic is staffed with expertise in performing developmental assessments, as well as skilled pediatric faculty as teachers. These experiences enable fellows to understand the relationship between neonatal illnesses and later health and development, and to become aware of the socioeconomic impact and psychosocial stress that such infants may place on a family.
NPM Fellowship Mentoring Program

Shortly after arriving at CMH, fellows will meet with their program-assigned mentor or faculty advisor. The advisor will not assume the role of SOC chair or research mentor. The nature of the mentorship relationship will be broad, semi-formal, and should evolve over time. In time, the fellow should be able to identify their advisor as a trusted member of the faculty and comfortably discuss a range of issues related to their evolving career in NPM. As with most mentoring relationship, the fellow should be tapping into the advisor’s experience as they

- Explore career options within the specialty of Neonatal-Perinatal Medicine;
- Deal with performance issues – clinical, scholastic, and research;
- Address issues/challenges regarding relationships within the program and training sites (unavoidable during training in a critical care environment)

The ACGME expects the faculty, as a group, to discuss the “clinical competence” of each fellow. These discussions will address strengths, weaknesses, and success/failure in attaining specific competencies and professional developmental milestones during training. The faculty advisor serves as the fellow’s advocate to the Faculty when such discussions are held and, without violating confidentiality, provides the fellow with appropriate feedback thereafter. Should the fellow seek guidance, the faculty advisor is expected to assist with the process of exploring solutions to issues as they arise. The mentor-mentee relationship defies the limitations that are sometimes imposed by attempts at providing precise definitions of goals and objectives for such a relationship. In this program, the mentor-mentee relationship is viewed as one in which the mentee gets the benefit of the mentor’s life experiences as together they chart the trainee’s future. The fellow can learn equally as much from the mentor’s successes as their professional and personal failures.

ICN Orientation:

The NPM program provides a detailed orientation during the first week of July to include the following topics:

1. NPM Fellowship Program Orientation—Program Administrators: a review of the fellowship handbook and overview of the expectations for completion of training
2. Introduction to the ICN—Clinical Nurse Specialist: Basic ICN functions, procedures, and protocols
3. Communication and Rounds— Charge Nurse/Senior Fellow: Color-Coded Teams; designated phone holder, function of Charge Nurses, chain of command, admission orders, night call, and role of fellow. Scheduling and required meetings for physicians, education opportunities, and management structure
4. Social and Lactation Support – Social Worker/Lactation Consultant: Describe the roles and services of the social worker and lactation consultants
5. Nutrition in the ICN—Nutritionist: Use of Neofax and TPN orders in the ICN
6. Electronic Health Record (EHR) – ICN EHR-Liaison Physicians: Learn to access and use EHR
7. Neonatal Transport –Neonatal Transport Director – Fellow’s role in medical control of transport
8. Respiratory Technologies Orientation— ICN Respiratory Therapist: Interactive hands-on review of CMH ventilator brands and variety of ventilator modes.
9. Discharge Planning– Discharge Planner: Description of the ICN discharge process, including the physician role and expectations
10. Basic Science Laboratory Orientation: Laboratory Faculty - Neonatal Research Laboratory
11. Quality Improvement – Trained CPQI Instructors: Description of Quality Improvement activities in the ICN; implementation of evidence-based practice
12. NRP Instructor Training— Regional Coordinator: train fellows for roles as NRP instructors
13. Ward Round Orientation: Second week in July - 3 days observing the ICN Rounds at TMC and CMHC
14. Skills Lab: Fellows will participate in a 1/2 day skills lab to cover topics such as intubation, chest tube placement, administration of surfactant, as well as mock codes.
Educational Program

The educational program is designed to address six ACGME competencies and professional developmental milestones that have been identified as crucial to the training of the physician. The training requirements for these competencies and professional developmental milestones are met through didactic and interactive (clinical and non-clinical) programs. The following is a description, only slightly modified from the parent ACGME document, of the components of the competencies and professional developmental milestones, followed by a summary of how the program provides, evaluates, and documents them (see Goals and Objectives for PGY 4, PGY 5, and PGY 6). Out of concern for patient and physician safety, fellows must comply with the ACGME work hour rules, by weekly documentation of duty hours in New Innovations (medical residency/fellowship data management software). As much as possible, the scheduling of consecutive clinical service months is avoided (see also Appendix B - Management of Subspeciality Resident Fatigue and Appendix D - Vacation and Sick Leave Policy).

Patient Care (see Goals and Objectives for PGY 4, PGY 5, and PGY 6)

Fellows in Neonatal-Perinatal Medicine will be directly involved in the care of critically ill surgical patients in order to acquire the requisite knowledge, behaviors and skills to attain competence in the evaluation, diagnosis and pre/post operative management of such patients. To meet these goals, the program provides an environment that facilitates coordination of care and collegial relationships between pediatric surgeons and neonatologists concerning the management of medical problems in these complex critically ill patients.

Fellows will be provided with clinical experience and instruction necessary for them to manage critically ill neonates. In addition to the general principles of critical care, this will include, but will not be limited to, techniques of neonatal resuscitation, venous and arterial access, the evacuation of air leaks, tracheal intubation, neonatal transport, ventilator support, continuous monitoring, temperature control, and nutritional support.

Fellows will receive instruction in the psychosocial implications of disorders of the fetus, neonate, and young infant, as well as in the family dynamics surrounding the birth and care of a sick neonate. The fellows will participate in patient consultation, communication with referring physicians, and in organizing transport of neonates within the framework of the integrated regional system with different levels of perinatal care. Fellows will also receive instruction about and participate in the education of physicians and other healthcare professionals regarding emerging issues and factors impacting regional perinatal morbidity and mortality.

Fellows will learn to identify the high-risk pregnancy, and will become familiar with the methods used to evaluate fetal well-being and maturation. Fellows will also become familiar with factors that may compromise the fetus during the intrapartum period, and recognize the signs of fetal distress. In addition, fellows will participate in the follow-up of high-risk neonates in the Special Care Clinic.

The program will teach fellows to be effective consultants in Neonatal-Perinatal Medicine. All fellows will receive instruction that prepares them to conduct and interpret relevant scholarly works in Neonatal-Perinatal Medicine, to teach Neonatal-Perinatal Medicine effectively, and to be effective administrators and leaders in the field.

To become skilled in diagnosis and management, fellows will be exposed to critically ill neonates with diverse medical and surgical conditions in the ICN at CMH and TMC. Fellows will actively participate in the long-term ICN care of at least four neonates each year who require prolonged ventilator assistance in order to become skilled in their management; fellows will also participate in the care of neonates requiring major
surgery. In addition, fellows will acquire knowledge of, and participate in, the care of neonates requiring cardiac surgical procedures (and their post-operative complications).

A neonatal database of all patient admissions, diagnoses, and outcomes is used as a tool in the fellow’s education, through quality improvement projects. The program will provide fellows with knowledge about the tabulation and evaluation of the institutional database. Involvement with the regional and State of Missouri fetal and neonatal morbidity and mortality database is actively encouraged. There will be instruction and experience in techniques of collation and critical interpretation of data pertaining to immediate outcome and sequelae of various diseases. This experience will be closely related to the evaluations of various modalities of therapy used in disorders of the newborn.

**Medical Knowledge (see Goals and Objectives for PGY 4, PGY5, and PGY6)**

The program will provide fellows with instruction in related basic sciences. Seminars, conferences, and courses must be offered in the basic disciplines related to pregnancy, the fetus, and the neonate. This will include maternal physiological, biochemical, and pharmacological influences on the fetus; fetal physiology; fetal development; placental function (placental circulation, gas exchange, growth); physiological and biochemical adaptation to birth; cellular, molecular, and developmental biology and pathology relevant to diseases of the neonate; psychology of pregnancy and maternal-infant interaction; breast feeding and lactation; growth and nutrition; and genetics.

Fellows will also participate in regularly scheduled multidisciplinary conferences, such as case conferences and those that review perinatal mortality and morbidity. The program provides quarterly board-preparation exercises.

In-Service Examination: The Sub-specialty in-training examination (SITE) in Neonatal-Perinatal Medicine is administered by the American Board of Pediatrics in March. Participation in this examination is mandatory and supplements other academic activities within the program by providing fellows with some insight into areas of weakness and strength.

**Practice-based Learning and Improvement (see Goals and Objectives for PGY 4, PGY5, and PGY6)**

In order for fellows to adopt this competency as a life-long habit of practice, they will be guided in the process of reflection with the intent of identifying strengths, needed areas for improvement, and plans to implement strategies that will lead to practice improvement. Fellows will be paired with a faculty mentor with whom they can develop a meaningful relationship to guide them in this process (See also NPM Fellowship Mentoring Program). Faculty development is an essential part of our attempt to provide mentors that have the necessary skills to address the full scope of their responsibilities and function as a valuable resource to fellows. The fellow should schedule meetings with their mentor(s), a minimum of twice per year, while maintaining ongoing interaction via email, phone conversations, etc., in the intervening period.

The process of self-assessment is most valuable when discussed with a mentor. In addition to the Program Director and assigned mentor, fellows are encouraged to identify additional mentors that will guide the fellow in reviewing evaluations from health care team members and patients to understand: 1) how one’s performance /behavior can impact others, and 2) how to incorporate this feedback into future practice improvement. The fellow should build on this self-assessment and reflective process by developing a modified version of an individualized learning plan (ILP) (e.g., documenting a minimum of three measurable personal learning objectives to address identified areas of needed improvement and strategies to achieve the objectives). This plan will be updated at least annually with the final plan focusing on transition to the next phase of one’s career and a plan for life-long learning. PediaLink’s “Fellow Center” (www.pedialink.org) provides a mechanism to guide fellows through a self-assessment and reflective process that culminates in documentation of their learning plan.
In addition to knowledge content, it is critical that fellows demonstrate their ability to use technology to access scientific evidence, interpret the evidence they uncover, and then apply it to the care of their patients. The program will document that a fellow is able to perform these skills and that the faculty will employ a structured way of teaching and evaluating such skill. Examples of ways of teaching and assessing these skills include having the fellows present at Journal Club or complete a critically-appraised topic. The program will provide appropriate faculty guidance, criteria for demonstrating competence that are transparent to both fellows and faculty, and documentation of achievement of competence using the established criteria.

The program will ensure and document that fellows acquire the skills needed to analyze and improve the quality of their practice. Each fellow will engage in a quality improvement project/activity under the guidance of the faculty. The Plan-Do-Study-Act (PDSA) cycle, as described by Berwick, which can be completed in a minimum of two week cycles, provides a practical method for engaging fellows in this process.

The fellowship program will provide skilled teachers as role models who demonstrate the value of teaching students, residents, patients and families. Structured learning activities that address teaching skills are incorporated into the CMH Fellow Core Curriculum. Fellows will have opportunities to practice these skills and in turn will be evaluated. Evaluations of the fellows’ teaching skill are completed by residents attending the lecture series in the ICN and by faculty and peers during case presentations.

**Interpersonal and Communication Skills (see Goals and Objectives for PGY 4, PGY5, and PGY6)**

Effective written and verbal communication is critical to practicing the science of medicine; style and content of communication is critical to practicing the art of medicine. This program provides fellows with a structured curriculum to address these needed skills. Fellows are engaged in interactive methods of learning, such as role modeling, role playing, direct observation and feedback, etc., necessary to enable them to master this competency. The neonatology fellow will engage in the delivery of critical/complex and sometimes devastating information regarding diagnosis, process and treatment. With that in mind, particular attention will be given to teaching and assessing competence in conducting family meetings for these purposes. According to the ACGME, “on-the-job” training is deemed not sufficient. Therefore, fellows are offered and will participate in structured teaching and feedback sessions.

Effective communication is a requisite skill for optimal functioning of the health care team. The ability to function both as a member and leader of a team are critical skills for the neonatologist, who works with referring physicians, agencies, patients and families, as well as other members of the health care system.

One effective way of evaluating communication is through review of the fellow’s correspondence with other health care professionals. A structured process for review of written communication, particularly written consultations and letters to referring physicians, is required. Faculty ad hoc review of written communication does not meet this requirement. Timeliness of completion as well as quality of information provided will be assessed and the fellow will be provided appropriate feedback. Documentation of competence will be included as part of the written evaluation process.

**Professionalism (see Goals and Objectives for PGY 4, PGY5, and PGY6)**

Medical ethics and professionalism are emphasized in the didactic curriculum and modeled by the faculty in all aspects of their practice. A structured curriculum with venues for teaching that extend beyond the traditional lecture to include interactive learning (e.g., small group discussions of vignettes or case studies, computer-based modules, role plays, etc.) will be provided.
The program considers multi-source feedback that includes patients/families and allied health professionals to be critical to the fellow’s professional development. Since the fellow will relate to each individual in a unique way, it is important to have team members (including the patient and family as part of the team) contribute to the assessment of a fellow’s professionalism. The program provides a mechanism to ensure that patients/families and representatives of the health care team assess appropriate aspects of the fellow’s professionalism and this feedback is given to the fellow as aggregate data that preserves the anonymity of the evaluators. These evaluations supplement the evaluations by faculty and peers. The program provides a structured mechanism for dissemination and collection of evaluations as well as delivery of feedback to the fellows. Timeliness of feedback is also important, particularly when there has been a breach of professionalism. Therefore, a structured mechanism for timely documentation, such as the use of critical incidents or instant evaluations, is in place. In cases where remediation is needed, the steps include immediate feedback, the development of an action plan with the fellow that specifically addresses the infraction, ongoing monitoring of behavior, and an identified consequence if improvement is not demonstrated.

**Duty Hours (See also Moonlighting Policy):** One essential act of professionalism as a trainee is maintenance of accurate duty hour logs. The standing rules of the NPM fellowship program reflect a strict interpretation of the ACGME duty hour rules, one that reflects the institution’s respect for a work-life balance. Specific expectations are as follows:

- **ICN rotation** – report to work promptly at 8:00AM and depart by 5:00PM (no later than 6:00PM except under extraordinary circumstances)
- **Research months** – report to work on or after 8:00AM and depart on or before 5:00PM
- **Calls** – report for calls at 4:00PM and, on the post-call day, depart no later than 2:00PM during a week-day or 9:00AM during a weekend-day following an overnight call. Fellows who are not on a clinical rotation may report to the training sites at such a time that facilitates participation in a required educational activity, without violating duty-hour regulations. If, as a result of extraordinary circumstances, you exceed these limits, please notify the program director as soon as possible.

The ACGME rules governing resident work hours are some of the safeguards for ensuring the safe delivery of quality health care. In addition to compromising the safety and work-life balance of the fellow, violations of the rules compromise the safety of our patients and the integrity of the training program. The faculty of the NPM training program has consistent expectations for trainees’ compliance with the duty hour rules, without exception. Duty hour logs are maintained by the trainee in New Innovations and must be completed by 4:00PM of the Tuesday of the succeeding week.

**Systems-Based Practice (see Goals and Objectives for PGY4, PGY5, and PGY6)**

In order to best serve a patient population, the fellow must develop a familiarity with the natural history and epidemiology of major health problems in the community. A background understanding of the health literacy of the community, along with knowledge of the cultural norms and health beliefs, will improve care delivery. This information becomes helpful in improving patient/family compliance as well. The program provides a structured curriculum to address all of the elements of this competency as well as opportunities to apply this learning. Particularly relevant to neonatology fellows is their ability to apply the elements of this competency (e.g., preventive care, resource allocation, cost-effective care, etc.) to help patients navigate the complexities of the health care delivery system. A clinical setting that particularly lends itself to experiential learning and demonstration of the requisite skills is the Special Care Clinic, where the fellow develops an ongoing therapeutic relationship with patients.

In addition, the neonatology fellows will be exposed to the administrative aspects of the delivery of neonatal care by active roles as the “Administrative Fellow” for 6-month blocks in TMC and CMH during the second
The program strives to provide a safe environment that encourages all practitioners, fellows and faculty, to identify systematic weaknesses, deficiencies, and errors. The program ensures that each fellow is actively engaged in activities, under the guidance of experienced faculty, to identify system problems/errors, and to develop and implement system solutions. Morbidity and mortality conference provides an ideal venue for a structured approach to the examination of system errors and the development of system solutions. To this end, the fellow must be an active participant in identifying and addressing the problems/errors.

Quality Insurance Education

The Fellowship Program works closely with the NPM Division and ICN staff to maintain the quality of our trainees’ clinical services to the community. This collaboration strives to have in place all the activities necessary to continually design, develop, and implement effective and efficient care of the newborn within a hospital-wide culture that puts patient care and safety first. The assurance of our service quality is protected by continual emphasis on professional conduct, active scholarship, and compliance with the ACGME rules and regulation. The program deems these features necessary to provide confidence that our fellows and clinical services meet the expectations of first-class training and health care institutions, respectively. Therefore, consistent with ACGME recommendations and with the institution’s emphasis on quality, all fellows are expected to participate in quality improvement projects.

The program will ensure and document that fellows acquire the skills needed to analyze and improve the quality of their practice. Each fellow will participate in CMHC GME’s Continuous Quality and Practice Improvement (CQPI) program and engage in a quality improvement project/activity under the guidance of a CPQI and neonatologist-faculty. The Plan-Do-Study-Act (PDSA) cycle, as described by Berwick, which can be completed in a minimum of two week cycles, provides a practical method for engaging fellows in this process. In addition, fellows will serve on an ICN QI Committee and show evidence of active participation in the planning, implementation and analysis of an intervention on a practice outcome. As a rule, the introduction of changes to the clinical care processes at Children’s Mercy Hospitals and Clinics occurs through structured quality improvement initiatives are currently led by Betsi Anderson, RN, and Jodi Jackson, MD, members of the CMH-CQPI faculty. Other active participants in the quality improvement initiatives include advanced practice nurses, bedside nurses, respiratory therapists, occupational/physical therapists, social workers, lactation consultants, and neonatologists.

Research/Scholarship: see [https://www.aap.org](https://www.aap.org)

Each fellow must have a Scholarship Oversight Committee, established during the first six-months of their first year. The CMH NPM-Scholarship Oversight Committees shall be constituted as follows:

Members

Three members in all - two members must be on the faculty of the Division of Neonatal-Perinatal Medicine and the School of Medicine and actively involved in teaching residents and fellows. The third member must be external to the Division of Neonatal-Perinatal Medicine and have expertise in the fellow’s area of research endeavor. This member may be a research mentor and does not have to be on the faculty of the School of Medicine. Members may not simultaneously serve on more than 2 scholarship oversight committees. The PD/APD may serve
as a trainee’s mentor and participate in the activities of the oversight committee, but will not be a standing member

Chair of the committee

Will be assigned by the program director and shall be a faculty member in the NPM Division (MD or PhD)
Will not simultaneously chair more than one committee
Is encouraged to send the minutes of the committee meetings to the program coordinator within 7 days of the SOC meeting

The scholarship oversight committee will:

**In conjunction with the fellow, mentor, and the program director, determines whether a specific activity is appropriate to meet the ABP guidelines for scholarly activity**

Determine a course of preparation beyond the core fellowship curriculum to ensure successful completion of the project
Evaluate the fellow’s progress as related to scholarly activity
Meet with the fellow early in the training period and 3 to 4 times yearly; the frequency may be more depending, on the stage of attainment of scholarship activity goals
Require the fellow to present/defend the project related to his/her scholarly activity at CMH Research Day and regional/national conferences
Advise the program director on the fellow’s progress and assess whether the fellow has satisfactorily met the guidelines associated with the requirement for active participation in scholarly activities

**All fellows will be expected to engage in projects in which they develop hypotheses or in projects of substantive scholarly exploration and analysis that require critical thinking.** Areas in which scholarly activity may be pursued include, but are not limited to: basic, clinical, or translational biomedicine; health services; quality improvement; bioethics; education; and public policy. In addition to biomedical research, other examples of acceptable activities include a critical meta-analysis of the literature, a systematic review of clinical practice with the scope and rigor of a Cochrane review, a critical analysis of public policy relevant to neonatology, or a curriculum development project with an assessment component.

These activities require active participation by the fellow and must be mentored. The mentor(s) will be responsible for providing the ongoing feedback essential to the trainee’s development. Fellows must gather and analyze data, derive and defend conclusions, place conclusions in the context of what is known or not known about a specific area of inquiry, and present their work in oral and written form to their Scholarship Oversight Committee and elsewhere.

**Involvement in scholarly activities must result in the generation of a specific written “work product,” which may include:**

- A peer-reviewed publication in which a fellow played a substantial role
- An in-depth manuscript describing a completed project
- A thesis or dissertation written in connection with the pursuit of an advanced degree
- An extramural grant application that has either been accepted or favorably reviewed
- A progress report for projects of exceptional complexity, such as a multi-year clinical trial

A mechanism for fellows to document their research progress is available through the American Academy of Pediatrics (AAP) “Fellow Center” of PediaLink (www.PediaLink.org).
**Scholarship Activity by Year of Training**

*(FELLOWSHIP-Curriculum-SOC Documents.pdf)*

**Goal:** Develop the skills necessary for the independent conduct of research.

**PGY 4** - Describe the process for successful conduct of research
- Enumerate ethical principles that guide the conduct of research
- Identify the range of research activities in the field of Neonatal-Perinatal Medicine
  - Receive didactic instruction in Statistics, Epidemiology, and Grant-Writing
  - Complete the online course on research ethics education at [http://www.citiprogram.org](http://www.citiprogram.org)
  - Meet with individual members of the faculty to discuss ongoing research activities
  - Collaborate with Scholarship Oversight Committee Chair to identify research mentor for the SOC
  - Demonstrate an understanding of the state of knowledge on the subject of research interest
  - Attend a regional research conference e.g., the Midwest Society for Pediatric Research (MWSPR)

**PGY 4–5** - Initiate a research project by developing and testing a hypothesis
- Work with a research mentor to develop a hypothesis
- Design a study, including plans for data analyses, to test the hypothesis
- Obtain approval of the scholarship committee and program director to proceed with the study
- Present the study to the section during a research conference
- Submit an application for approval with the CMH Institutional Review Board

**PGY 5**
- Conduct a research project
- Gain insight into research activities and make presentations at local/regional/national venues
  - Collect and analyze data
  - Write up the study for presentation at local, regional or national meeting
  - Attend a national research conference e.g., the Annual Meeting of the Pediatric Academic Societies (PAS)
- Early stages in developing a finished product

**PGY 6**
- Completion of a research project
- Development of long-term career plans for scholarship activity
  - Write and submit a manuscript for publication in a peer-review journal
  - Present research at CMHC Research Day and at local/regional/national research meetings

**Summary of Scholarship Activity**

**GOAL:** Conduct research and communicate the findings of the research to the scientific community

**Objectives:** The objectives will not necessarily be acquired in the following order as some will be achieved concurrently. The fellow is expected to work closely with a mentor at every stage of the process namely,
- Identify a mentor to assist in developing the scholarly work/research project
- Identify and study the literature pertinent to the proposed research subject
- Develop a testable hypothesis
- Develop a research plan – study design, sample size calculations, and tools for statistical analyses - to test the hypothesis
- Acquire the skills necessary to collect data toward testing the research hypothesis
- Collect and analyze data
- Write up a report for presentation at local, regional, or national conferences
- Submit a manuscript for peer-review
Evaluation

An important consideration in the evaluation of competence is that multiple methods of assessment provide a more comprehensive and valid assessment of the fellow. Global evaluations are used in conjunction with other methods and the type of assessment methods/tools is paired in a meaningful way to the tasks of real world practice to be evaluated. For example, the neonatology fellow will need to demonstrate competence as evidence-based practitioners; therefore, they need to demonstrate competence in systematically accessing, analyzing and applying evidence which can be accomplished in activities like journal club and care delivery in the clinical setting. The former task will be assessed using direct observation of performance in delivering an evidence-based journal club while the latter will be assessed using a global assessment of the learner by a faculty member directly interacting with the fellow over various period of time such as a block rotation or, in some cases, several months of a longitudinal experience. The fellow and faculty will be provided clear criteria by which the judgment of competence will be based. The faculty understands that formative feedback will be critical in helping the fellow meet the bar that has been set to define competence. Faculty development will be actively pursued for faculty members who will serve as evaluators, ensuring that they understand how to use the assessment tools. Also, self-assessment is critical in the evaluation of competence. Multi source feedback from various stakeholders such as peers, patients, families and other health care professionals provides valuable feedback to the fellow and will be used to inform the process of self-assessment. Regular evaluation of how well the fellow has attained the objectives in the competencies and professional developmental milestones is critical to the on-going development and design of the program. It is expected that fellows and Faculty members will exercise utmost professional judgment in the execution of this responsibility.
Research Programs

The fellowship program provides a series of didactic sessions meant to address the basics in the conduct of research. Fellows participate in a Grant-Writing Workshop and in year-round Biostatistics seminars. In addition, there is an opportunity for didactic education in the Clinical Research Graduate Certificate Program at the University of Missouri at Kansas City– School of Medicine (http://www.med.umkc.edu/MSB/). In order to facilitate the transition into a research mind-set, attendance at a regional and national research conference is encouraged during the first two years of the fellowship; first-year fellows may attend the annual meeting of the Midwest Society for Pediatric Research and/or American Academy of Pediatrics. Second-year fellows will attend the annual meeting of the Pediatric Academic Societies. It is expected that all fellows, especially those in the second- and third-year of training, present their research at these meetings.

The neonatology faculty is actively involved in a broad range of research activities including Clinical, Basic Science, and Translational research.

Clinical Research Program

Perinatal Epidemiology - Vermont-Oxford Database (VON)

Michael Sheehan, MD, Jodi Jackson, MD, and Steven Olsen, MD are the local directors for the VON database at TMC, Shawnee Mission Medical Center (SMMC), and CMH, respectively. VON maintains a database of on all infants who weigh less than or equal to 1500g and an expanded database on infants greater than 1500g. Approximately 557 neonatal intensive care units, including Children’s Mercy Hospital and Truman Medical Center, submit patients’ information to the network about demographics, maternal obstetric care, delivery room management, diagnoses, ICN treatments, and morbidity and mortality. A non-training site, SMMC, the location for our level III-A ICN, provides information to the expanded database. These databases provide epidemiological research opportunities on prevalence, trends, and variations in care practices and outcomes. Fellows and faculty may access the main database at a Website called Nightingale, through either director, and the expanded database through any of the local directors.

Perinatal Epidemiology - CMHC Neonatology Database

CMHC is a participating ICN in the Children’s Hospitals Network Database, CHND, which links ICN inpatient information with Follow-up Clinic patient outcome data and is managed by a data management specialist. These databases provide the faculty and fellows with meaningful information for the development of testable hypotheses by exploring associations between demographic factors, treatment exposures, and neonatal/infant outcomes. Additional opportunities currently exist at the ICN follow-up Clinic for collaborative investigation of developmental outcomes of patients who have undergone Hypothermia/ECMO and outpatient ventilator treatments. Active members of the faculty in this area research endeavor include Linda Gratny, MD, Ayman Khmour, MD, Charisse Lachica, MD, Oluola Okunola, MD, Adebayo Oshodi, MD, Eugenia Pallotto, MD, MSCE, and Winston Manimtim, MD.

Perinatal Epidemiology - Public Health Database

The electronic birth certificate records of the State of Missouri and the greater Kansas City metropolis provide data for secondary analyses. These analyses are performed in collaboration with other investigators from the Kansas Health Department and University of Missouri Kansas City School of Pharmacy as part of a group called the Kansas City Maternal and Child Health Assessment Team. The KCMCHAT meets at least quarterly and employs a variety of epidemiological research tools in analyzing various public health measures and outcomes. Felix Okah, MD, MS, also a Consultant Epidemiologist for Neonatal-Perinatal Health at the Kansas
City Health Department, Adebayo Oshodi, MD, and Ayman Khmour, MD, are active in this area of research.

**Pediatric Epidemiology – Developmental Outcomes Research**

This investigative group manages several databases involving cohorts of infants with birth weights less than 800 g. The largest database includes all infants born in the UMKC system, cared for between 1983 and 1990, including more than 200 surviving infants. Howard Kilbride, MD, investigates outcomes in retrospective and prospective observational studies of these high-risk infants.

**Basic Science Research Program**

The Donald W. Thibeault Neonatal Research Laboratory at Children’s Mercy Hospitals and Clinics/University of Missouri-Kansas City School of Medicine is headed by Ikechukwu Ekekezie, MD, and is the basic science program for the Division of Neonatal-Perinatal Medicine. Additional faculty includes Maria Navarro-Olmo, PhD, and Michael Nyp, DO. The research laboratory is located in the CMH Research Building and focuses its endeavor on lung biology and disease research. The research laboratory uses lung cell culture and animal models to understand how oxygen supplementation and oxidative stress cause pulmonary cell death, neonatal lung injury, and bronchopulmonary dysplasia (BPD). The investigators apply a variety of research techniques such as proteomics, molecular biology, and DNA microarray in their research.

**Multi-Center Research**

CMHC is part of the Neonatal Research Network, NRN, consisting of tertiary ICN that conducts clinical research under the auspices of the NICHD. The NRN maintains extensive databases that can be used in the conduct of epidemiologic research. The NRN is also involved in prospective multicenter clinical research studies. Lead investigators at CMHC NRN include William Truog, MD, Howard Kilbride, MD, Eugenia Pallotto, MD, MSCE, and Steven Olsen, MD.

**Opportunities for outside collaboration**

The research experience of the neonatology fellow is not limited to activities within the section. In the past, fellows have collaborated with researchers in CMH Divisions of Infectious Disease and the Departments of Pathology and Pharmacology, the Stowers Institute for Medical Research, and the Kansas City, Missouri, Health Department.
Intensive Care Clinical Rotation at Children’s Mercy Hospital

The intensive care nursery at Children’s Mercy Hospitals and Clinics is one of three clinical learning laboratories and the major intensive care unit for the neonatology fellowship training program. In 2011, there were 1,420 medical and 138 surgical admissions contributing to 22,517 patient days. Fellows will be provided with clinical experience and instruction adequate to manage critically ill neonates. In addition to the general principles of critical care, the instruction will include, but is not be limited to, techniques of neonatal resuscitation, venous and arterial access, evacuation of air leaks, tracheal intubation, directing neonatal transport, ventilator support, continuous monitoring, temperature control, and nutritional support.

Fellows, being adult learners, will best learn by taking ownership of the patients on their service team. The fellows will participate in patient consultation, communication with referring physicians, and in organizing transport of neonates within the framework of an integrated regional system with different levels of perinatal care. Fellows will also receive instruction about and participate in the education of resident physicians and other healthcare professionals regarding emerging issues and factors impacting regional perinatal morbidity and mortality. See ‘Delineation of Clinical Responsibilities by Level of Training’ for additional information.

The daily activities on the neonatal intensive care unit can be delineated into activities that occur prior to 9AM (pre-round) and a variety of separate and related activities when the rounds begin. The daily activities include;

**Pre-Round Activities**

The fellow shall be expected to attend the following unit-specific and center-wide pre-round events:

- **Morning Hand-off:** Every morning at 8:30am, the on-call team meets with the on-service neonatologists and fellows to review significant overnight events and cases. The meeting takes place in the workroom and will occasionally involve bedside discussions
- **Fellowship Core Curriculum Lecture:** Monthly, Tuesday at 8:00AM. This is a center-wide activity for all first-year fellows; the attending will be expected to facilitate the fellow’s participation
- **Radiology Conference:** Weekly, Tuesday at 8:30AM at the Radiology Department Conference Room
- **Cardiology Conference:** Odd-number months, 2nd Wednesday, at 7:30AM; collaboration of the NPM and Cardiology services with the goal to review interesting cases with specific learning objectives
- **Neonatology-Surgery Conference:** The 5th Friday, at 8:00AM; collaboration of the NPM and Surgery services with the goal to review interesting cases with specific learning objectives

**Daily Morning Ward Rounds**

The morning rounds starts at 9:00AM and is a team endeavor. PGY 5/6 fellows lead the rounds on their patients and guide the following processes;

- **Presentation:** Elicit concise and focused presentation of the problems from residents or nurse practitioners
- **Discussions:** Facilitate participation of team members with expertise on the problem, especially the patient’s direct-care nurse. Involve parents if they are at the bedside. The fellow should use available evidence and pathophysiology in guiding the discussion and eventual formulation of a plan of care
- **Plan of care:** Facilitate the formulation and summary of the plan of care. Provide a brief and simple summary of the discussion and plan of care to parents, whenever present at the bedside.
Post-Round

The fellow’s activities during this period include the following:

- ICN Fellow-Attending Meeting – review problems and evidence-based approaches to care plans
- Note Writing: See ‘Delineation of Clinical Responsibilities by Level of Training’ for additional information
- ICN Communication: Conduct Family Care Conferences or Comprehensive Rounds and/or update parents and referring/primary physicians (this section addresses a specific competency and will be evaluated by faculty, parents, and social worker/chaplain)
- Transportation/Admission: Coordinate transportation and admission of sick neonates into the ICN. The fellow will supervise the process of admission and will write a complete admission note in selected cases, especially when the patient is admitted on to the fellow’s service.
- Consultation: Handle initial consultation from the General Surgery and Pediatric Services
- Procedures: Document all procedures on New Innovations (attending will subsequently validate)
- Attend academic activities within and without the section (see Conferences)

Transportation of the Critically Ill Neonate: (See also Appendix C– Neonatal Transport Medical Control)

Understanding the processes involved in transportation of the critically ill neonate is an essential component of the fellow’s training. From 2:00PM each day, the ICN fellow takes over medical control of neonatal transports.

Evening Hand-off Round

When possible, hand-off from the unit fellow to the on-call fellow and/or faculty should commence by 4:30PM. Consistent with Joint Commission requirements, each hand-off must ensure clear communication about the patient’s condition and the proposed plan of care. Briefly, the hand-off round shall consist of the following:

1. Acquisition of hand-off printout containing patients’ basic demographic and medical information

2. Verbal communication of patient information to include
   a. Diagnoses and current condition of the patient
   b. Recent changes in condition or treatment
   c. Anticipated changes in condition or treatment
   d. Things to watch out for during the succeeding period of care (call)

3. Provision of opportunities to ask and respond to questions

Night Round

Night rounds typically occur between 10:00 PM and 1:00 AM, depending on the level of activity within the ICN. The location of night rounds will be at the discretion of the fellow, with attending oversight; bedside rounds are recommended. Night rounds should be an interactive process and, as with the morning round, the goal is to identify significant new or on-going challenges and develop succinct plans of care, consistent with the available medical evidence. The night round also provides a special opportunity for one-on-one fellow-resident and fellow-attending interaction and should be utilized as much as possible.
Intensive Care Clinical Rotation at Truman Medical Center

The intensive care nursery at Truman Medical Center is closely allied with the MFM unit and a regular newborn nursery. Fellows will be provided with clinical experience and instruction adequate to effectively manage critically ill neonates. In addition to the general principles of critical care, this will include, but is not be limited to, techniques of neonatal resuscitation, venous and arterial access, needle/tube thoracostomy, tracheal intubation, ventilator support, continuous monitoring, temperature control, nutritional support, and medical control for neonatal transport.

Fellows will learn to identify the high-risk pregnancy, and will become familiar with the methods used to evaluate fetal well-being and maturation. They will also become familiar with factors that may compromise the fetus during the intrapartum period, and recognize the signs of fetal distress. To achieve these goals, the fellow will actively participate in consultation of expectant women and communicate with referring MFM physicians. Fellows will also receive instruction about and participate in the education of resident physicians and other healthcare professionals regarding emerging issues and factors impacting regional perinatal morbidity and mortality.

During the ICN rotation, the fellow will be expected to attend to patients at the CMHC High Risk Continuity Care Clinic. Faculty and fellow will be expected to provide a written evaluation of the clinical experience at the end of the rotation. The daily activities on the neonatal intensive care unit can be delineated into activities that occur prior to 9AM (pre-round) and a variety of separate and related activities when the rounds begin. The daily activities include:

Pre-Round Activities

The fellow shall be expected to attend the following unit-specific and center-wide pre-round events:

- CMHC Fellowship Core Curriculum Lecture: 1st Tuesday at 8:00AM - targets requirements for teaching competencies and professional developmental milestones.
- TMC Perinatal Mortality and Morbidity Review: 3rd Thursdays, at 7:30AM
- CMHC Grand Rounds: Weekly, Thursday at 8:00 AM
- CMHC Cardiology Conference: Odd-number months, 2nd Wednesday, at 7:30AM; collaboration of the NPM and Cardiology services to review interesting cases with specific learning objectives
- CMHC Neonatology-Surgery Conference: The 5th Friday at 8:00AM; collaboration of the NPM and Surgery services with the goal to review interesting cases with specific learning objectives.

Daily Morning Ward Rounds

Rounds will start punctually at 9:00AM. The fellow shall be expected to supervise resuscitation of the high risk newborn. The 1st year fellows will observe during their first month of TMC rotations and then will conduct the round during the subsequent rotations during the rest of the fellowship training. Responsibilities of the rounding fellow include:

- Review of X-rays: Facilitates the discussion on interval radiological studies
- Presentation: Elicit concise and focused presentation of the problems from residents and nurse practitioners.
- Discussions: Encourage participation from all team members with expertise on the problem, including the patient’s bedside nurse. The fellow should use available evidence and pathophysiology in guiding the discussion and eventual formulation of a plan of care.
- Plan of care: Facilitate the formulation and summary of the plan of care.
Post-Round

The fellow’s activities during this period include the following:

- Note Writing: The neonatologist and 2nd/3rd year fellow should meet to determine the nature of note writing at TMC. Note writing may be in the form of the daily progress notes or discharge summaries. However, it is expected that all fellows will write incidental notes as clinically indicated.
- ICN Communication: Conduct family care conferences and/or provide family and primary physician with update.
- Admission: Coordinate delivery room resuscitation and ICN admission of the sick neonate. The fellow will write a complete admission note in selected cases.
- Perinatal Consultation: Supervise initial consultation from the perinatal service.
- Procedures: Document all procedures in New Innovations (attending to validate).
- Attend academic activities including but not limited to those listed under “Conferences”.

Evening Hand-Off Round

Hand-off from the unit fellow to the on-call fellow and/or faculty should commence between 4:30PM and 5:00PM and be completed by 6:00PM. Joint Commission requires each hand-off provide clear communication about the patient’s condition and the proposed plan of care to consist of the following:

- Patients’ basic demographic and medical information.
- Communication of patient information to include.
- Diagnoses and current condition of the patient.
- Recent changes in condition or treatment.
- Anticipated changes in condition or treatment.
- Things to watch out for in the next interval of care.
- Provision of opportunities to ask and respond to questions.

Night Round

Night rounds at TMC do not usually require the participation of the fellow except when a critically ill patient with frequently changing clinical status is present on the unit. Nonetheless, the fellow is encouraged to call the Senior Resident Physician/Nurse Practitioner for a telephone update and review of the plan of care for patients of interest. Such discussions provide unique opportunities for one-on-one fellow-resident interaction and should be utilized as much as possible.
Delineation of Clinical Responsibilities by Level of Training

The specific nature of the fellow’s responsibilities varies with the site of the activity, CMH versus TMC, and with the level of training (see also Competency Based Goals and Objectives). This section is more relevant to the clinical rotation at CMH and this aspect of the fellow’s training addresses all the competencies and professional developmental milestones set forth by the ACGME. In order to ensure patient safety, it is expected that all fellows will comply with the duty hours rules (see also Appendix B: Management of Subspecialty Resident Fatigue).

First Year (PGY 4):

Prior to the start of the rotation, the fellow is also encouraged to meet with the attending on or before the first day of the rotation to review expectations and objectives for the rotation. At CMHC, the first year fellow may provide coverage for either Purple (Resident Team), Pink (Neonatal Cardiology Team) or general Neonatology/Chronic Lung Disease teams (Yellow/Green + Orange/Red).

Rounds: The work day starts promptly at 8:00AM every day with a hand-off from the night call fellow/attending. A timely hand-off reflects respect for peer and faculty and contributes to a smoother transition between shifts. Although not expected to write daily progress notes on the patients on their team, the first year fellow is encouraged to write admission and incidental notes. In order to avoid duplication, the plan to write an admission note should be discussed with the attending physician. These notes should be reviewed by the attending physician.

Technical Procedures: First year fellows are expected to perform and supervise care procedures (tracheal intubation, spinal tap, umbilical arterial/venous lines, etc) for patients on their team and encouraged to take advantage of opportunities offered by the senior fellow for similar procedures on patients in the second team. It is the fellow’s responsibility to document all procedures performed in New Innovations (computer data management program).

Teaching: Opportunities for teaching abound. The first year fellow will be expected to participate in the resident lecture schedule. Lecture topics will be rotated every 6 months to provide the fellow with a broad teaching experience and portfolio. Furthermore, the bedside clinical encounters provide opportunities for the first year fellow to research topics and educate the team with up-to-date information from the medical literature.

ECMO: The first year fellow will be responsible for the care of the first ECMO patient admitted during the rotation. The care of additional ECMO cases will be assumed by the second/third year fellow. Fellows are the primary medical care providers for ECMO patients in the ICN. Responsibilities include physical examination, evaluation of laboratory and other investigations, developing a plan of care, writing orders, and presenting the patient on rounds to the attending physician and other members of the ECMO team. The fellow is expected to write daily progress and incidental notes and, when on-call, collect ECMO data for the on-coming day-time fellow. In order to facilitate continuity of care, the fellow and attending will have joint responsibility for the hand-off of the ECMO patient to the on-call fellow/attending physician.
Second/Third Year (PGY 5/6):

Prior to the start of the rotation, the fellow is also encouraged to meet with the attending on or before the first day of the rotation to review expectations and objectives for the rotation. In collaboration with the attending, the PGY 5 fellow will select patients on whom to lead the round and write daily progress notes. The PGY 6 fellow is encouraged to manage one of the teams under the care of their attending, for example, either the yellow or the green team. Note writing will include admission notes for their patients and patients admitted to other teams while the fellow is on call. The development of a fellow’s independence is facilitated by the respectful distance, despite active oversight, provided by the attending physicians during rounds.

At a patient’s discharge, it is the rounding fellow’s responsibility to write the discharge letter and contact the patient’s primary physician. As with the coordination of transports and admissions, the discharge planning process provides an opportunity for fellows to interact with community physicians. The PGY 5/6 fellow is expected to perform and supervise care procedures (tracheal intubation, spinal tap, umbilical arterial/venous lines, etc) for patients on their team. The fellow should take advantage of opportunities offered by patients on teams other than those they cover. During months when there are two fellows at CMH and none at TMC, the senior fellow may be called upon to assist at TMC with the supervision of the resuscitation that typically follows the birth of the very premature newborn.

Resident lecture: The PGY 5/6 fellow will be expected to participate in the resident lecture schedule similar to PGY4.

ECMO: At all levels of training, the fellow will be the primary medical care provider and will write progress notes, orders, and present the patient at a round with the attending physician and other members of the ECMO team. In order to facilitate continuity of care, the fellow and attending will have joint responsibility for the hand-off of the ECMO patient to the on-call team.

Common Expectations – PGY 4-6

Ad hoc Post-Round Fellow-Attending meeting: On occasion, a meeting is called by the fellow or an attending physician to discuss cases that pose ethical dilemmas for the primary team.

Post-Round Activities: The transport/admission phone will be transferred to the fellow at 2:00PM each day. When there are two fellows on the unit, both fellows will meet to allot responsibility for addressing acute problems and the handling of the transport/admission phone. However, to facilitate timely completion of care responsibilities (note writing, telephone calls, meetings, etc) by second/third year fellows who round on patients, the first year fellow will handle the phone and assist with on-going activities (e.g., ROP surgery) until a mutually agreed-upon time after which coverage responsibilities will be shared. In order to facilitate prompt communication from the nursing and ancillary staff, fellows are expected to inform the charge nurses about their ICN coverage responsibilities between 2:00PM and 5:00PM. Other than when on call, fellows are strongly discouraged from staying on the unit past 6:00PM.

Calls: Hand-off to the on-call fellow/attending will takes place between 4:30PM and 5:00PM daily. On average, fellows take five in-house calls each month providing coverage to the ICNs at CMH and TMC. During the call, the fellow is primarily housed at the CMH ICN and may be called upon by the residents or obstetric services to provide supervisory or consultative services at TMC. All calls are supervised by an in-house attending neonatologist. It is important that fellows recognize their limitations, an attribute of good physicians, and communicate with the supervising attending in a timely manner. Therefore, fellows are advised to discuss criteria for consulting the attending prior to the start of call in order to facilitate efficient and effective communication and the safe delivery of services to patients.
Outpatient Clinical Rotation – Special Care Clinics:

The ICN at CMH and TMC discharges a number of infants to the Special Care Clinics (SCC) to assure appropriate outpatient experience for each fellow. During the 2011-2012 year, the clinic had 2,555 outpatient visits. The Special Care Clinic is directed by a General Pediatrician, and staffed with General Pediatric/NPM physicians and a Psychologist.

The clinic provides developmental assessments and post-discharge medical care for the neonate with complex medical problems. In addition, the Ventilator Clinic, a subset of the SCC, provides education on the outpatient care of infants receiving home ventilation care for chronic lung disease. These experiences enable our fellows to understand the relationship between neonatal illnesses and later health and development, and to better appreciate the socioeconomic impact and psychosocial stress that these infants may experience and/or place on their families.

Attendance at the Continuity Care Clinic is limited to 12:00PM to 4:00PM twice monthly, irrespective of ICN-service, approximately 20 to 24 visits per calendar year. Fellows are assigned to one of two Fellows’ teams. The experience is as follows:

1\textsuperscript{st} year: The fellow will evaluate patients, develop a plan of care, and make appropriate medical documentation under the supervision of SCC faculty. Fellows will spend some visits working with the clinic psychologist, observing and participating in developmental assessments.

2\textsuperscript{nd} / 3\textsuperscript{rd} year: The fellow will evaluate patients, develop a plan of care, and make appropriate medical documentation in a timely manner. The fellow’s activity will be supervised by a Special Care Clinic attending.

A detailed log of cases seen at the Special Care Clinic is maintained in New Innovations. Fellows are required to record their visits to the Special Care Clinic in the binder located in the clinic.

Maternal Fetal Medicine Rotation: (See Appendix – Competency-Based Goals and Objectives)

In the second year of fellowship training, the fellow will spend one month of their training in a Maternal-Fetal Medicine Rotation at FHC (CHMC) and MFU (TMC). During this time, the fellow will receive didactic education that addresses the ACGME’s six core competencies and professional developmental milestones in MFM. In addition, the fellow will work with the MFM specialists in the assessment and daily management of the potentially compromised fetus and mother.
Children’s Mercy Hospital Critical Care Transport
See also Appendix C- Neonatal Transport Medical Control

Emily McNellis, MD, Assistant Professor, University of Missouri Kansas City School of Medicine, currently serves as the Neonatology Director of the Children’s Mercy Hospital Critical Care Transport (CMHCCT). CMHCCT, specialized in the transport of neonatal and pediatric patients, has been in operation since 1971 and, in 2007, received recognition as the Commission on Accreditation of Medical Transport Systems (CAMTS) Medical Transport Team of the Year in 2007. With about 5000 transports per year (25% neonatal), the program primarily serves Missouri and Kansas and occasionally provides national and international transports. On any given day, there are three (3) teams on service, each consisting of a registered nurse (RN), respiratory therapist, and an emergency medical technician. The service offers three modes of transport, fixed-wing air, helicopter, and ground ambulance; 80% by ground and 20% by air transportation. Modes of respiratory support during transport include high frequency ventilation, nitric oxide, and helium/oxygen. Currently, the Neonatology Fellow participates in the program by providing medical control during their rotation in the neonatal intensive care unit at CMH. Fellows are also encouraged to participate in the quarterly educational conferences, skills labs and ongoing QA projects. In order to join the team on transports, “ride along”, the Neonatology fellow will require additional training in transport safety. A curriculum for formal involvement and education in neonatal transport medicine is being developed by the director of the neonatal transport service.

Children’s Mercy Hospital Home Ventilator Management Program

The Neonatal Home Ventilator Program (NHVP) is directed by Linda L. Gratny, MD (Associate Professor of Pediatrics) and staffed by two other neonatologists, Charisse Lachica, MD (Assistant Professor of Pediatrics) and Winston Manimtim, MD (Associate Professor of Pediatrics), a nurse, and social worker.

The NHVP provides comprehensive care to infants who need chronic mechanical ventilation through a tracheostomy. In addition, to their respiratory problems, it is not uncommon for these children to have other complex medical needs that require the consistent care of the medical home provided by this program.

The program’s involvement with patients and their families starts prior to their discharge from the neonatal intensive care unit and pediatric intensive care unit. The NHVP team assists the inpatient care providers in preparing the families to manage the complex outpatient medical needs of their children. Most of the outpatient direct patient interactions take place at the Special Care Clinic where the program conducts two half-day clinics a week, in close collaboration with multiple pediatric sub-specialties. The program’s collaboration with third party payors and community agencies facilitates the care provided to these patients with complex health care needs.

In addition to clinical care, the NHVP provides opportunities for research collaboration. Current areas of research interest include factors associated with airway complications, pulmonary and developmental outcomes for patients requiring chronic outpatient mechanical ventilation, identifying social barriers to successful outpatient management and the social/financial support needs of families that care for these patients.
Summary of NPM Fellowship Training Program Rotations/Activities

High Risk Follow-up Clinic: Twice-monthly attendance at the Continuity Care Clinic, irrespective of ICN – service

Scholarship Activity: Participation in projects in which fellows develop hypotheses or in projects of substantive scholarly exploration and analysis that require critical thinking. At a minimum, the fellow will commit 13 months to conducting and completing the scholarship/research activity. The acceptable product is a well-written manuscript that has been submitted to a peer-reviewed journal.

Quality Improvement: The fellow is expected to demonstrate major involvement in a quality improvement project. Major involvement is defined as having an active role in the conception, planning, implementation, analyses, and reporting of the results. A presentation to the Faculty and Fellows and a written product will expected on conclusion of the QI activity.

ICN Rotation: The fellow will spend no more than 15 months on ICN service during the 3-year fellowship as follows:

1st year: 5 months (3 months at CMH-ICN and 2 months at TMC-ICN)
2nd year: 5 months (3 months CMH-ICN; 1 month TMC-ICN; 1 month MFM)
3rd year: 4 months (2-3 month CMH-ICN; 1-2 months TMC-ICN; 0-1 month Elective)

Conferences: (Also see Appendix A) The Graduate Medical Education office provides a series of monthly lectures directed at specific core competencies and professional developmental milestones entitled the ‘CMH Fellow Core Curriculum’ and Fellows are expected to have attended each lecture at least once during their fellowship. NPM Fellows are encouraged to participate in most (90%) of Fellows-Faculty (F&F) and Statistic Conferences and at least 75% of other conferences and meetings:

- Cardiology Conference - Odd-numbered months; 2nd Wednesday, 7:30am
- Clinical Case Conference - Once monthly; 3rd Wednesday, 12:00PM
- Comprehensive Rounds - Once monthly; Thursday, 1:00PM
- Critically Appraised Topics - Once every-other-month; 3rd Tuesday, 12:00PM
- Fellows and Faculty Seminars - Twice monthly; 1st and 3rd Thursday, 12:00pm – 2:00PM
- Journal Club - Once monthly; 2nd Tuesday, 12:00PM
- Mortality Conferences - 4th Wednesday; Peds Dept–12:00pm/NPM - 1:00PM
- Pathology Conference - Every other month; 1st Wednesday, 12:00 PM
- Quality Improvement Conference - Once every other month; 3rd Tuesday, 12:00 PM
- Research Conference - Once monthly; 1st Tuesday, 12:00 PM
- Division Meetings - Once monthly; 2nd Friday, 2:00PM
- Special Care Clinic Case Conference - Quarterly; 1st Wednesday, 12:00PM
- Statistics seminar - Once monthly; Friday, 11:00AM)
Conferences and Meetings

**Research Conference** (Tuesday, 12:00PM - 1:00PM, ICN Large Conference Room)
The research conference provides a forum for the discussion of current research activities within and without the section and for critical appraisal of topics of interest to the section. Fellows are encouraged to use this medium to present their research while still in its formative stage because of the opportunities it provides for constructive critique from the faculty and fellows.

**Comprehensive Rounds** (Thursday, 1:00PM - 2:00PM, ICN Large Conference Room)
The Comprehensive Round is a meeting of professionals involved in the care of a patient of interest. These cases are selected on the basis of their medical complexity, perceived breakdown in communication among care providers or between care providers and the family, and ethical dilemma.

**Radiology Conference** (Tuesday, 8:30AM, Radiology Conference Room)
The Radiology Conference is the product of collaboration between the Department of Radiology and the Division of Neonatal-Perinatal Medicine. This weekly conference identifies a topic of interest and consists of a brief clinical presentation (resident or neonatal nurse practitioner) followed by a review of the range of radiological examinations and findings for the condition and concludes with a discussion of the outcomes for the case specifically, and for the condition in general.

**Ethics Brown Bag Luncheon** (2nd Tuesday, 12:00PM-1:00PM)
The Ethics Brown Bag is a collaborative activity with the Center for Bioethics based here in Kansas City. These discussions may be case-directed, didactic, or reviews of an article or a book chapter. The forum will explore opportunities for epidemiological research in the form of case reports, care provider and patient/family surveys, trends in specific ethical issues, or standard treatment dilemma. In addition to fellows and faculty, other care providers in the ICN will be invited to participate.

**High Risk Follow-up Clinic Conference** (1st Wednesday, 12:00 – 1:00PM, Conference Room 23)
The Follow-up Clinic Conference holds on the first Wednesday in March, June, September, and December. It provides an update on former ICN inpatients. The conference provides opportunities to review the condition’s impact on the emotional and financial health of their family and the evidence regarding long-term outcomes.

**Pathology Conference** (1st Wednesday, 12:00 – 1:00PM, Conference Room 23)
A collaborative conference with the Pathology Department, this conference takes place on the first Wednesday of every month except for those months when the High-Risk Follow-up Clinic is scheduled to take place. The conference consists of a brief presentation of the hospital course by a fellow followed by a review of the autopsy findings and a brief didactic session on the pathophysiology.

**ICN Clinical Case Conference** (3rd Wednesday, 12:00 – 1:00PM, By-Ways Conference Room)
The third Wednesday is reserved for an active case in the ICN. In conjunction with the on-service ICN Attendings, the fellow will identify a case and provide learning objectives for presentation at the clinical conference. It should review currently available evidence regarding clinical course, treatment and outcomes.

**Mortality and Morbidity Conferences** (4th Wednesday)
(Pediatric Department - 12:00PM-1:00PM, Auditorium) (NPM - 1:00PM-2:00PM, ICN Large Conf. Room)
All fellows and members of the Faculty are expected to attend the mortality and morbidity conference conducted by the Department of Pediatrics on the 4th Wednesday of each month. This is followed by a similar program in the Division of Neonatal-Perinatal Medicine. The presentation uses the Fish-Bone diagram in guiding the discussion of a case of interest at both events.
**Division Meetings** (Friday, 2:00PM)
The Division of Neonatal-Perinatal Medicine meets on the second Friday of each month. The meeting addresses wide-ranging issues of staffing, work schedules, community relations, faculty development and activities, and on-going programs within the section. Attendance at this meeting meets the requirement of experience with organization and management in the Systems Based Practice competency.

**Statistics seminar** (Friday, 10:30AM – Noon)
The statistics seminar provides education on interpreting the medical literature and explores a select range of statistical tools that the fellow may employ in biomedical research. The program is conducted by the Office of Research and provides a unique opportunity for interaction with fellows in another section of the hospital.

**Teaching**
Development of teaching skills is a key component of the ‘Practice Based Learning and Improvement’ competency. In addition to teaching opportunities provided by the conferences listed above, Fellows will be expected to participate actively in the teaching of residents rotating in the ICN. Called the Resident Didactic Series, the program provides opportunities to teach a different topic every six months. The fellow’s ability to transfer information in a clear and meaningful manner will be evaluated by the faculty and house staff.

**Resident Lecture Series**
As part of your teaching responsibilities, you have been teamed up with faculty members in the section to deliver the lectures to the residents. You should attend the lecture listed on the date below and thereafter volunteer to give the lecture when it comes around. Lecture materials are provided (on the section’s shared drive) or you can develop your own.
Appendix B

Management of Subspecialty Resident Fatigue

The purpose of this document is to provide objective guidelines for recognition of and management of fatigue in subspecialty residents. This document is being circulated to all subspecialty residents in the Neonatal-Perinatal Medicine program as well as attending faculty. The purpose of this document is to make all individuals, both trainees and mentors, aware of the signs of fatigue and to provide guidelines about what to do when unacceptable levels of fatigue are observed either in oneself or by other health care providers (nurses, peers, etc.).

Signs and symptoms of unacceptable subspecialty resident behavior may include, but are not limited to, the following:

- Unable to stay awake during sitting or walking rounds;
- Deficits of short-term memory regarding patient care activities for the past 24 hours;
- Disorientation to person, place or thing;
- Emotional liability;
- Egregious errors in order writing in the previous 12 to 24 hours;
- Inability to complete appropriate documentation of patient care activities;
- Unkempt appearance;
- Unprofessional behavior in patient care areas.

When one or more of these signs is recognized by the mentor/attending neonatologist in one of the subspecialty residents, the individual subspecialty resident needs to be at least temporarily relieved of patient care activities, and adequate facilities for sleep need to be provided, and assurance of safe transport home needs to be provided. This may including providing a taxi or having a third party individual drive the subspecialty resident to his or her home. This will be at the discretion of the attending neonatologist; differences of opinion will be settled by the program director and/or the section chief.


The study of Papp et al utilized a standardized semi-structured discussion format; trained moderators conducted focus groups of residents in good standing in programs including Pediatrics. Residents described multiple adverse effects of sleep loss and fatigue on learning and cognition, job performance, professionalism, and personal life.
NEONATAL TRANSPORT MEDICAL CONTROL

Responsibilities of Neonatal Transport Medical Control:

Hold the “56054” phone.

Receive incoming referrals; they can come to you in 3 ways:

- Physician calling the “56054” phone directly
- Physician calling through the nursery – in this case you will be paged with the number the referring physician is holding on
  - on the “56054” phone, press #3 then the number
  - on a land line press “pick” then the number
- Through the Transportation Communication Center
  - The Communication center will conference you with the referral physician

**All calls through the communication center will be recorded**

Record the patient information on the transport intake form (found in the Transport binder on the Unit Administrative Assistant’s desk).

Record suggestions for therapy on the intake form.

If you received the incoming call directly from referral physician (II 1 or 2), call the Communication Center at 53329. Give the Communication Specialist the Name, DOB, wt and indication for transport. If you received the call from the Communication Center (II 3), they will already have the information. They will then conference you with a team member.

Report information to the team member, give special instructions at this time including need for high frequency, iNO, surfactant, prostins, etc.

Call the charge nurse at 56040 and report the patient information, team assignment, need for pumps, ventilator, etc.

You will receive a call back from the team once they have arrived on site, assessed the patient and have performed interventions per protocol. Any intervention outside of protocol will need an order. Record all interventions / suggestions / orders / change of status on the Transport Intake Sheet.

Receive report from the Transport Team upon arrival to the Unit.

Once you are done with the Transport Intake sheet, place it in the Transport binder on the Unit Administrative Assistant’s desk.
Appendix D

Vacation and Leave Policy

As stated in the Fellowship Agreement of Appointment, the Vacation and Leave policy is as follows:

CMH provides all Trainees with up to twenty (20) days of paid vacation for each term, which cannot be carried over from one year to the next. No payment will be made for unused vacation. Vacation must be approved by the Program Director in advance.

Trainees are provided 1 day (8 hours) of paid time off for illness after each full month of service. Accrued paid time off for illness may be used concurrently and can be carried over from one year to the next. In addition, the Trainee is provided up to ten (10) working days to be used for any absences due to illness or maternity leave during the term of appointment, without being required to use accrued paid time off. Trainees may use up to five (5) working days of accrued paid time off for illness of a family member or for paternity leave. A family member is defined as a spouse, child, parent or sibling.

Leaves of Absence are granted on a case-by-case basis by the Program Director, in accordance with the particular Residency Review Committee (RRC) and/or specialty board rules. Leaves of absence are either paid or unpaid depending on the case. The use of leave exceeding the limits established by the Hospital or Program may require extension of training. All stipend payments and benefits will be suspended during a Leave of Absence without pay. However, Trainees may continue to pay for their portion of the contribution toward the health care and the hospital will pay its part if a Trainee takes a leave of absence. The Trainee, upon return from a leave of absence, may be required to reapply to the Program and he/she may not be assured a position.

During the first year of fellowship, the Neonatal-Perinatal Medicine Fellowship Program discourages vacation requests during the first two months of PGY4. In addition, vacation requests by all fellows are discouraged during the last half of June (exceptions are made for the graduating fellows) and the first half of July.