

The Case Western Reserve University – Cleveland Clinic Foundation – MetroHealth Medical Center - Neonatal – Perinatal Fellowship Training.

The new, CWRU-CCF-MetroHealth Neonatal-Perinatal Training Program was initiated in 2004. Both the Cleveland Clinic Foundation (CCF) and Case Western Reserve University (CWRU) at MetroHealth Medical Center (MHMC) are nationally recognized centers of academic excellence, and now jointly offer superior training in neonatal-perinatal medicine in a combined neonatal fellowship program under the auspices of CWRU. This new combined program has grown from the long-standing (20 yr.) ACGME accredited neonatal training program at the CWRU -MHMC campus. Clinical training facilities include two high-tech Level III NICUs (49 and 18 beds) and two level II facilities with a total of over 1000 admissions annually and with provision for Nitric Oxide and ECMO. Numerous newborns with complex issues are referred to our facilities. The Program draws on 17 neonatal faculty including one Ph.D. The neonatal team is supported by over 150 Pediatric medical and surgical sub-specialists, including cardio-thoracic surgeons, at the CCF Children's Hospital and the Children's Hospital at MHMC. Current interests of the neonatal faculty, some of whom are NIH funded, include perinatal metabolism, respiratory physiology, placental physiology and preterm labor, neonatal nutrition, neonatal follow-up and bio-informatics. Extensive research training in both clinical and basic science is available. A NIH funded General Clinical Research Center supporting clinical studies sits immediately adjacent to the NICU at MHMC. The impetus for the new combined program is to train and prepare neonatologists in academic and clinical excellence through a comprehensive-structured curriculum. Fellow training will include High-Risk OB and Cardio-Thoracic rotations and participation in didactic and interactive scheduled activities e.g. weekly (NICU follow-up clinics, perinatal physiology seminars, neonatal case conferences, OB/Pediatrics conference and experimental design and statistics course); monthly (journal club, mortality review, genetics); quarterly (perinatal neurology); and biannually (cardiovascular surgery). Approximately one half of the training program time will be devoted to fulfilling the American Board of Pediatrics requirement for research or "significant scholarly activity".

For more information and program application please contact

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CCF-Based Faculty:

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Marita D'Netto, M.D.

Ronald Holtzman, M.D.

Douglas Powell, M.D.

Craig Raskind, M.D.

Jeffrey Schwersenski, M.D. – Co-Director

William Zaia, M.D.

MetroHealth Medical Center-Based Faculty:

John J. Moore, M.D. – Program Director

Satish Kalhan, M.D.

Marc Collin, M.D.
Deepak Kumar, M.D.
Chantal Dothey, M.D.
Hany Aziz, M.D.
Sigal Peter-Wohl, M.D.
Prabhu Parimi, M.D.
Maroon Mhanna, M.D.
Sharon Groh-Wargo, Ph.D.

Breakdown of Yearly Activities:

Year 1: NICU service fellow – 4 months, Maternal Fetal Medicine Required Rotation – 1 month, Research/Area of special focus - 5 months. Follow-up clinic – one day per week when not on NICU service. Call - 1/6 nights for the entire year. Vacation – 1 month.

Year 2: NICU service fellow – 4 months, Pediatric Cardiovascular Surgery Required Rotation – 1 month, Research/Area of special focus - 5 months. Follow-up clinic – one day per week when not on NICU service. . Call - 1/6 nights for the entire year. Vacation – 1 month.

Year 3: NICU service fellow – 4 months, Acting NICU attending – 1 month, Research/Area of special focus - 5 months. Follow-up clinic – one day per week when not on NICU service. Call - 1/6 nights for the entire year. Vacation – 1 month

Educational Objectives – NICU Service

Year 1

1. Clinical Knowledge: Be able to describe clinical symptoms and management alternatives for the more common problems seen in neonates.
 - A. Respiratory Distress Syndrome and its ramifications
 - B. Prematurity and its ramifications (e.g. IVH, PVL, PDA, ROP)
 - C. Early and late onset infection
 - D. Persistent Pulmonary Hypertension of the Newborn
 - E. Transitional Disorders (e.g. TTN, hypoglycemia, hyperbilirubinemia)
 - F. Congenital Heart Disease
 - G. Common surgical disorders (e.g. Gastroschisis, Congenital Diaphragmatic Hernia, NEC with perforation).
 - H. Nutritional and feeding problems
 - I. Asphyxia and its ramifications
 - J. Common genetic and developmental anomalies
 - K. Problems of infants of mothers with Diabetes
 - L. Renal Failure and problems with fluid homeostasis
 - M. Complete month rotation on High Risk Obstetrical Service.

2. Procedures: Become proficient with the following procedures in neonates:
 - A. Neonatal Resuscitation – be qualified as at least an NRP instructor
 - B. Endotracheal intubation
 - C. UAC/UVC placement
 - D. Read X-Rays and EKGs
 - E. Lumbar puncture
 - F. Percutaneous deep venous line placement
 - G. Peripheral arterial line placement

- H. Ventilator use
 - I. Developmental examination of former NICU patient
3. Teaching Skills & Presentation
 - A. Develop and give several lectures suitable for resident presentations on common topics in Neonatology
 - B. Adequate performance in OB/PEDS Conference
 - C. Adequate performance in Code Pink Teaching Sessions
 4. Research Project
 - A. Choose a Mentor
 - B. Complete an IRB protocol for a clinical project or a similar background/planning paper for a basic science project.
 - C. Competent with computer (Word and Excel)
 - D. Administration
 - E. Attend and participate in Division Meetings

Year 2

1. Clinical Knowledge
 - A. Proficient in the management of the common problems specified in the first year clinical knowledge section.
 - B. Describe clinical symptoms and management alternatives for the more common problems seen in high-risk, pregnant women.
 - C. Initiate a two-year review of Fetal and Neonatal Physiology – Read Polin and Fox.
 - D. Initiate a two-year reading program with one of the major textbooks of Neonatology.
 - E. Complete a month Rotation on the Pediatric Cardiovascular Surgery Service.
2. Procedures
 - A. Mastery of the procedures listed in the first year procedure section above.
 - B. Proficiency with non-conventional ventilators, nitric oxide.
 - C. Attend an ECMO seminar
 - D. Regional Trainer for NRP and Code Pink
 - E. Teaching Skills & Presentations
 - F. Teaches well during Work Rounds.
 - G. Can give resident level talks on many common topics in Neonatology
 - H. Excellent OB/PEDS presentations
3. Research Project
 - A. Major project initiated – collecting data
 - B. Second project considered
 - C. Background and project progress seminar given to Neonatology Division
4. Administration
 - A. Attend and participate in Division Meetings
 - B. Member of one hospital or divisional committee

Year 3

1. Clinical Knowledge
 - A. Understand medical, social, ethical, and interactional issues of neonates with any neonatal problem to the degree necessary to function as the NICU ward leader.
 - B. Complete a two-year review of Fetal and Neonatal Physiology – Read Polin and Fox
 - C. Complete a two-year reading program with one of the major textbooks of Neonatology
2. Procedures: Master and be a proficient teacher of all the Neonatology procedures listed above.
3. Teaching Skills & Presentations
 - A. Excellent teacher on Work Rounds
 - B. Can Give resident level talks on most common topics in Neonatology
 - C. Excellent OB/PEDS presentations
 - D. Regional and national presentations
4. Research Project
 - A. Complete main project
 - B. Submit manuscript of main project to peer review journal
 - C. Complete course in Experimental Design and Statistics (may be done in any of the three years).
5. Administration
 - A. Complete Acting Attending month
 - B. Serve as Senior Administrative Fellow or as Senior Teaching Fellow
 - C. Member divisional or hospital committee

High Risk Obstetrics Rotation

Educational Objectives

By the end of the Rotation, the Neonatal Fellow will be able to:

1. Describe the normal pregnancy and the physiological changes during pregnancy.
2. Describe various placental pathologies, both gross and histological.
3. Cite methods of assessing fetal growth and fetal well being.
4. Obtain a comprehensive maternal history, citing specific historical risk factors for an adverse maternal or fetal outcome.
5. Describe methods of antepartum fetal assessment, including fetal movement counts, non-stress and stress testing, biophysical profiles, Doppler flow studies and amniotic fluid assessment.
6. Assess fetal condition during labor, including the evaluation of fetal heart rate tracings and using techniques to further evaluate fetal distress.
7. Obtain a basic genetic history, citing specific risks for Trisomy 21, neural tube defects and hemoglobinopathies.
8. Discuss the etiology, clinical significance and management of intrauterine growth restriction.
9. Discuss various antenatal high-risk pregnancies and the anticipated fetal effects.
10. Describe the differential diagnosis and management of hypertensive disorders during pregnancy and the expected fetal effects.
11. List the indications for procedures like amniocentesis, PUBS, and chorionic villous sampling.

Start-Up and Events in High Risk Obstetrics Rotation

At the start of the rotation, meet with the Director of the Perinatology Service and be assigned with the Senior OB Fellow.

Rounds:

Antenatal Rounds: Antenatal Rounds begin at 7:00 a.m. in the 2C Conference Room. All the Antenatal High-Risk patients will be presented by the residents, discussed by the fellow, and moderated by the attending. Prior to this, the fellow will discuss any interesting Obstetric topics. This session ends at 8:00 a.m. Reading about the fellow's topic a day prior is recommended.

Labor & Delivery Rounds: All the patients on the L&D Board will be discussed by the resident on call for about 30 minutes.

Management Rounds: Once a week on Wednesdays at 4:00 p.m. The entire OB Faculty participates.

Clinics:

FDC Clinic: Tuesday and Friday. All Level I and Level II ultrasounds will be done. Extremely useful clinical, especially to identify the high-risk patients and to discuss with the mother the Neonatal perspective.

Diabetic Clinic: Once per week on Monday mornings. Useful to identify DM patients, participate in their management, and talk with them about the effect on the fetus.

High-Risk Clinic: Once per week on Wednesday mornings. Will get a chance to see varied high-risk pregnancy mother and their management.

Procedures:

PUBS: Discuss with Dr. Ashmead about when he has PUBS scheduled and make arrangements to observe this procedure.

Amniocentesis and CVS

Miscellaneous:

NST: Attending one session is very useful and informative.

OCT & BPP

Placental Pathology: Meet with Dr. Tomashefski, Pathology Director, and set-up a couple of days. It is better to see the gross placentas in the morning at surgical pathology and look at the placenta slides in the afternoon with any of the staff pathologists.

Reading List for High Risk Obstetrics Rotation:

1. Physiology and physiologic changes in lab values in pregnancy.
2. Role of placenta in gas exchange and placental transport.
3. Maternal immunologic disease and its effect on the fetus.
4. Maternal Diabetes Mellitus and Hypertension and its effect on the fetus.
5. Effect of maternal bacterial and viral infections, including HIV, GBS, & CMV
6. Maternal cardiac disease and its effect on the fetus.
7. Significance and management of maternal seizures

8. Post-term pregnancy and its risk to the fetus.
9. Effects of maternal substance abuse on the fetus.
10. Antenatal screening.
11. Amniocentesis and PUBS.
12. Doppler velocimetry and fetal well being.
13. Tocometry and fetal heart rate monitoring – significance, interpretation, and management.
14. Diagnosis and management of fetal-maternal blood group incompatibility.
15. Approach to fetal dysrhythmia.
16. Diagnosis and management of IUGR.
17. Testing and interpretation of fetal lung maturity.
18. Diagnosis, management and significance of abnormal amniotic fluid volume.
19. Normal physiology of labor and the factors causing preterm labor.
20. Diagnosis and management of maternal/fetal blood loss.
21. Significance and management of meconium stained amniotic fluid.
22. Approach to PROM and PPRM.
23. Birth trauma
24. Pathophysiology and management of maternal sepsis.
25. Management and complications of abnormal presentations

Cardiovascular Surgery Rotation

Educational Objectives

By the end of the Rotation, the Neonatal Fellow will be able to:

1. Describe normal and abnormal fetal cardiovascular physiology
2. Understand the role and impact of prenatal diagnosis on the management of newborns with congenital heart disease
3. Understand the anatomy and physiology of acyanotic congenital heart disease encountered in the newborn period, e.g. aortic coarctation, aortic stenosis, congenital mitral valve disease, etc.
4. Understand the anatomy and physiology of cyanotic congenital heart disease with two ventricles, e.g. tetralogy of Fallot, transposition of the great arteries, truncus arteriosus, etc.
5. Understand the anatomy and physiology of single ventricle cyanotic congenital heart disease, e.g. hypoplastic left heart syndrome, tricuspid atresia, pulmonary atresia with intact ventricular septum, etc.
6. Generally understand and describe cardiac surgical procedures for selected congenital cardiac conditions encountered in newborns
7. Generally understand and describe cardiopulmonary bypass utilized for newborn cardiac surgical procedures
8. Acquire increased experience by observing cardiac surgical procedures
9. Acquire increased experience with the postoperative management of newborns after congenital heart surgery
10. Understand the integrated role of neonatology, pediatric cardiology and pediatric cardiac surgery in the diagnosis and management of newborns with congenital heart disease

Start-Up and Events in Cardiovascular Surgery Rotation

At the start of the rotation, meet with the Dr.'s Duncan or Mee and confirm the dates of your rotation. Also confirm any changes in the weekly schedule. Dr.'s Duncan or Mee will assign the Neonatal Fellow with the Senior Pediatric and Congenital Heart Surgery Fellow.

Rounds:

PICU Rounds: PICU Rounds begin at 8:00 AM. in the PICU x-ray reading room on M43 daily except on Tuesdays when rounds begin at 7:30 AM on M40. All the pediatric cardiac surgical and cardiology patients are presented by the residents or fellows and moderated by the attending. The Neonatal Fellow will be expected to follow pediatric cardiac surgical patients and present these patients during rounds. The entire age range of patients with congenital heart disease is represented on the service, however, the Neonatal Fellow will be expected to focus on newborns, especially those with prenatal diagnosis. Rounds end at approximately 9:30 AM. Reading in advance about the patients to be presented is recommended.

Combined Cardiology/Cardiac Surgery Conference: Patients scheduled for surgery during the upcoming week are presented every Monday at 10:00 AM at the combined Cardiology/Cardiac Surgery conference. Patients who have undergone diagnostic or therapeutic cardiac catheterization procedures the prior week are also presented. Patients with complex management issues are also presented at this conference. The Neonatal Fellow does not have presenting responsibilities at this conference, however, attendance provides an excellent learning opportunity.

Journal Club: Pediatric Cardiology and Cardiac Surgery Journal Club meets every other week on Mondays at 5:30 PM. The Neonatology Fellow may be asked to present at this conference during their rotation.

Cardiac Surgical Cases: Cardiac surgical cases are routinely performed beginning at 8:00 AM in the Pediatric and Congenital Heart Surgery operating rooms on M43, Monday through Friday. Generally, two to three cases are performed every day. The Senior Pediatric and Congenital Heart Surgery Fellow makes room assignments daily for all resident and fellow staff and can assist the Neonatal Fellow in determining which cases are best for observation.

Procedures:

Observing in the Operating Rooms: The Neonatal Fellow is encouraged to observe surgical procedures on newborns with congenital heart disease. This will provide additional knowledge regarding the interaction of surgeons, anesthesiologists, nurses and perfusion personnel required for success in these surgical procedures.

Participating in Transition of Newborns with Congenital Heart Disease from Delivery Room to Intensive Care Unit: With the Neonatal Fellow's focus on newborns with congenital heart disease, the Fellow should be present at the delivery for any children born during the rotation who have congenital heart disease. The Neonatal Fellow can then assist in the transition of these patients from the delivery room to the intensive care unit to provide experience in this stage of the patient's care.

Miscellaneous:

Participation in Cardiovascular Research: Pediatric Cardiology and Cardiovascular Surgery have numerous ongoing clinical and basic science research projects, including research examining the role of therapeutic prenatal cardiac catheterization intervention. Participation in these projects by the Neonatal Fellow will be encouraged.

Reading List for Cardiovascular Surgery Rotation:

26. Fetal cardiovascular physiology
27. Transitional perinatal cardiovascular physiology
28. Newborn and infant cardiovascular physiology
29. Newborn and infant congenital heart disease diagnoses
30. Operations for newborn cardiac malformations
31. Anesthesia for newborn cardiac surgery
32. Cardiopulmonary bypass for newborn cardiac surgery
33. Prenatal ultrasonography

34. Role of diagnostic and therapeutic cardiac catheterization for congenital heart disease in newborns
35. Postoperative care of newborns after cardiac surgery

Conferences

Neonatal Physiology & Pathology: This weekly Conference (September-May) is organized around organ-system blocks (i.e. Respiratory, GI-Metabolism, Neurology, Placenta, etc.). It is designed to review the relevant physiology and pathophysiology of that organ system in the pregnancy woman, fetus, and newborn. Lectures are given by faculty with special expertise in the area or invited outside lecturers. These lectures are targeted at the fellow level. The senior fellow on the Education Committee participates in the selection of the topics and speakers. When possible, fellows additionally participate in a special Journal Club with out-of-town speakers. Fellow attendance is mandatory

OB-PEDS Conference: This is a weekly conference (September-June), focusing on cases of interest to Neonatology and High-Risk OB. This conference is jointly organized by the two Services. Cases are assigned at joint meetings every 1-2 months. Cases are presented by the fellows of both Services and discussed by the fellows and faculty. Per agreement with Pediatric Cardiology and Genetics, 25% of the cases are fetal/neonatal cardiology problems and 25% are genetics. Faculty in these areas have committed time to support these presentations. Pathology is also frequently involved. Fellow attendance is mandatory.

NICU Case Management and Morbidity Conference: This weekly conference is held year round, and focuses upon patients currently in the NICU with interesting and unusual problems, difficult management cases and unexpected morbidity. Cases are selected by the fellows on Service for presentation. Presentation is by the fellow on service or by residents assigned by the fellow. Initial discussion or background material is frequently presented by the fellow. Issues are then debated by the entire Division (all fellows and faculty). Attendance by fellows is mandatory.

Design of Experiments – Statistics: This is a formal, college style course put on by Dennis Super, M.D., MPH of the Department of Pediatrics. It is a year-long, weekly course (given every 2-3 yrs.) covering experimental design (1st semester) and statistics (2nd semester). It includes weekly reading assignments, homework, utilization of SPSS, and examinations. A Certificate of Completion is awarded. Attendance is mandatory for fellows. Course completion is a requirement for fellowship completion.

Neonatology Division Meeting: This weekly conference is held year round. All administrative and management issues in the Division and NICU are reviewed. These include financial, personnel, and medical administrative issues. Fellows are expected to take part as junior members of the Division. Fellow attendance is mandatory.

Pediatric Grand Rounds: This weekly conference is held year round. It focuses on resident education. Topics vary in terms of interest to Neonatology. NICU rounds are suspended to allow attendance of faculty, fellows, and residents. Fellow attendance is optional.

Neonatology Journal Club: This conference is held monthly, year round. Fellows discuss interesting papers from the literature. The Program Director screens literature and places potential papers in a folder from which the fellows pick. Fellows present the article from the perspective of study design and results.

Mortality Conference: 25-30 deaths occur in the NICU annually. All deaths are presented in the Division Meeting by the attending on Service when the death occurred. Discussion follows if

there are any outstanding issues. Selected deaths are presented by the fellow/attending in Mortality Conference (part of OB-PEDS) approximately every two months. Fellow attendance is mandatory.

Research Journal Clubs: Two research clubs each meet every two weeks (approximately). Fellows interested in the topics to be reviewed may attend. Fellows working in the field are required to attend.

Research:

All fellows are required to produce one first author publication in a reputable journal to be board eligible. Two faculty of the program including the Program Director have active laboratories supported by NIH RO1 funding (See Research Facilities – below).

Current areas of faculty research interest:

Vladimir Burdjalov, M.D. - indomethacin use
Marita D'Netto, M.D. - neonatal nutrition
Ronald Holtzman, M.D. - neonatal outcome
Douglas Powell, M.D. – clinical neonatology
Craig Raskind, M.D.
Jeffrey Schwersenski, M.D.
William Zaia, M.D.

John J. Moore, M.D. - control of parturition, rupture of the membranes, neonatal resuscitation
Satish Kalhan, M.D. – neonatal metabolism
Marc Collin, M.D. – neonatal outcomes
Deepak Kumar, M.D. – control of parturition, rupture of the fetal membranes, neonatal vitamin requirement
Chantal Doherty, M.D. – neonatal nutrition
Hany Aziz, M.D. – databases, use of computer in neonatology
Sigal Peter-Wohl, M.D. – neonatal nutrition and outcomes
Prabhu Parimi, M.D. – neonatal metabolism
Maroon Mhanna, M.D. – neonatal respiratory physiology
Sharon Groh-Wargo, Ph.D. – neonatal nutrition

In addition to the Neonatology Department, Fellow mentors are available in Pediatrics, and other Clinical and Basic Science Departments of CWRU, MetroHealth and CCF.

Research Facilities

Schwartz Center: The Center is located on the 7th floor of the Bell Greve Building at MetroHealth Medical Center, Cleveland, Ohio, and occupies almost 6,000 square feet of laboratory space. Laboratories include a GC-mass spectrometry laboratory equipped with three mass spectrometry systems, a radioimmunoassay laboratory, preparatory laboratory, and a laboratory equipped with a spectrophotometer, fluorometer, and HPLC system. Two other laboratories house molecular biology-related equipment. Close collaboration continues with the stable isotope laboratory in the Department of Geological Sciences, on the main campus of Case Western Reserve University.

GCRC: An NIH-funded, six-bed General Clinical Research Center at Metro Health Medical Center, equipped with an exercise lab, body composition lab (equipped with hydrodensitometry, TOBEC (newborns) bioimpedance), and general core laboratory is available to investigators. Technician and Nursing support (research nurses) for funded and unfunded clinical studies.

Cell & Molecular Biology Laboratory: (Dr. Moore). Complete cell culture facilities and molecular biology laboratory. Amino acid analysis, HPLC laboratory, complete equipment for RIA and enzyme studies. Also included are facilities for organ perfusion (placenta, liver, etc.), receptor binding, RIA, explant studies, and ion flux.

Small Animal Operating Facility and Animal Quarters: On the grounds of MetroHealth Medical Center.

Computer Facilities: All of the above laboratories have personal computers that are available for use by fellows. All of these computers have a word processor, Lotus 1-2-3, Excel, Sigma Plot, Sigma Stat, and SPSS software. The fellow offices also have computers.

Dear July, 2009 Fellow Applicant:

Thank you for your interest the Case Western Reserve University - Cleveland Clinic Foundation - MetroHealth Neonatal Fellowship Program. All applications are accepted by ERAS (Electronic Resident Application Service) through the AAMC (Association of American Medical Colleges). www.aamc.org

Our Program does accept J1 and H1B Visas.

We are on the December Application Cycle, and you can begin your application process starting November 15, 2007. The deadline for applying is 5/31/08. Once we have received your completed application, we will begin the interview process. The best days for interviews are Mondays, Tuesdays, or Fridays.

A complete application will have the following items:

- Common Application
- Original Transcripts
- ECFMG
- USMLE Scores
- Personal Statement
- Photograph

Finally,

We are requiring three (3) formal letters of recommendation rather than the form recommendation that is suggested on the American Academy of Pediatrics Organization of Neonatal-Perinatal Program Directors (ONTPD) website.
www.aap.org/sections/perinatal/ONTPD-ProqDir.htm

If there are any further questions you might have, please do not hesitate to contact me. Also, please refer to our website for further information regarding the Division of Neonatology and the Fellowship Program at <http://www.metrohealth.org/body.cfm?id=1131>.

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