NEONATAL FELLOWSHIP PROGRAM

Job title: Fellowship in Neonatology
Period: 2 years
Institute: Groote Schuur Hospital Neonatal Unit
Faculty: Health Sciences
Affiliation: University of Cape Town

Entry level: 11

Minimum requirements:
1. MBChB at an accredited national or international institution
2. FCPaed or equivalent at an accredited national or international institution
3. MPhil to Register on initiation of fellowship
CORE CURRICULUM FOR NEONATOLOGY

Subspecialty residents are trained in our tertiary unit which offers a high standard of technology. However, for the training of our sub specialist, it is emphasised that all knowledge should be viewed within the larger African context. This will ensure that we are able to train Neonatologists who have a concept of what primary and secondary level of care entails in a resource limited setting.

The Core Curriculum for Neonatology is covered during our Fellows Teaching Conferences, Case Conferences, and other lectures. The fellows participate in design, implementation and write-up of basic and clinical science research projects.

Clinical research activities occur in the NICUs at Groote Schuur Hospital and, the neonatal fellow is encouraged to participate with obstetricians in maternal-fetal medicine and subspecialty fields of paediatrics to supplement his/her particular interests and research goals. The fellows participate in meetings on morbidity and mortality, the fetal anomaly group, and laboratory oriented presentations as presented by the metabolic forum, as well as weekly journal clubs held in the department.

The faculty and program director distributes material from recent publications to all fellows when relevant clinical cases are discussed. Digital images of actual cases managed in the NICU, video clips of congenital heart diseases, fetal or neonatal echo cardiographic pictures are saved and available to view in an electronic format to the fellow. Program director and faculty work with subspecialty residents in helping them with review of literature, critical evaluation of articles published in peer reviewed journals, preparation and presentation of teaching materials.

Faculty review, edit and offer suggestions when subspecialty residents prepare talks. Subspecialty residents are required and encouraged to participate in developing patient care guidelines, based on evidence. This has been an extremely valuable experience for the subspecialty residents. Subspecialty residents make formal presentations to newborn faculty, consultants, and other members of health care team. During this process, subspecialty residents learn to develop teaching materials and also to effectively communicate their ideas.
We have divided the core curriculum into the following categories:

GROUP I  Perinatal Medicine
GROUP II Perinatal Care
GROUP III a  a) Infants in Normal Nurseries
GROUP III b  b) High Risk Clinic
GROUP IV Infants Requiring Special Care
GROUP V Special Skills
GROUP VI a  a) Research Skills – Research Tools
GROUP VI b  b) Research – Basic Steps

It is the wish of this department that we train Neonatologist who are well equipped to deal with the wide spectrum of neonatal care within developing countries. In so doing, we aim to eventually through training, have an impact upon the unacceptably high neonatal mortality rate within under resourced developing countries. We also realise that this is the only way in which we can achieve the target set by the World Health Organisation’s 4th Millennium Development Goal- to reduce by two thirds the mortality rate of children under-5.

Dr Natasha R. Rhoda
MBChB (UCT), FCPAED (SA), Cert Neonatology (SA)
Program Course Co-ordinator
GROUP I Perinatal Medicine

1. Feto-Maternal Interaction
2. Intrauterine Growth
   - Including methods of assessment of intrauterine growth and maturity.
3. Management of the High-Risk Pregnancy
   - Including methods for evaluation of fetal jeopardy.
4. Effects of Labour on the Fetus and Neonate
   - Methods of identification of fetal distress.
5. Genetics and Teratogenesis
6. Neonatal Adaptations: in particular
   1) Pulmonary
   2) Cardiovascular
   3) Gastrointestinal
   4) Renal
GROUP II Perinatal Care

1. Resuscitation of the newborn.
3. Maternal drugs leading to neonatal depression – Recognition and management.
4. Identification and management of shock in the neonate.
5. Pallor and anaemia in the neonate: Identification and management.
6. Hyperviscosity syndrome.
7. Rh isoimmunisation: “immediate” and “late management.”
8. Recognition and management of acute surgical emergencies of the neonate, i.e. pneumothorax, tracheoesophageal fistula, diaphragmatic hernia.
9. Immediate management of:
   1) Infant of diabetic mother
   2) The premature infant
   3) The post mature infant
   4) Infant with history of third trimester bleeding
10. Differential diagnosis of respiratory distress and cyanosis in the neonate - investigation and management.
GROUP IIIa Infants in Normal Nurseries

1. Assessment of gestational age.
3. Physical examination of the newborn.
4. Recognition of common congenital anomalies and their management.
5. Recognition of common dermatologic problems of the neonate.
6. Interview of mother (and father).
7. Normal infant feeding.
8. Discharge instructions.
10. “Physiologic jaundice” and their accentuation – Limits and management.
11. Haemolytic problems in the neonate.

GROUP IIIb High Risk Clinic

1. Growth and development: Follow-up of high-risk infants.
2. Follow-up of infants with chronic lung disease.
GROUP IV Infants Requiring Special Care

General
Thermoregulation.
Electrolyte abnormalities in the neonate.

Infant nutrition:
Nutrition in Preterm and sick infants.
Energy expenditure and caloric requirement of the neonate.
Changes in body fluids and fluid balance in the neonate.
Intravenous fluid and nutrition – total parenteral nutrition.

Alimentary system
Gastrointestinal problems in the neonate.

1) NEC and its complications
2) Immature gut and feed intolerance
3) Surgical abdomen – e.g. obstruction

Surgical emergencies in the neonate.

Respiratory system
Acid-base balance and correction.
Oxygen therapy and toxicity.
Late acidosis in the preterm infants.
Apnoea in the neonate – implications and management.
Respiratory distress syndrome.
Chronic lung disease – Bronchopulmonary dysplasia.
Adult respiratory distress syndrome – Shock lung.
Pneumothorax, pulmonary interstitial emphysema, and other air leaks.

Aspiration syndrome:

1) Meconium
2) Blood
3) Vernix
4) Amniotic fluid

Intrapartum pneumonia.
Pulmonary haemorrhage.
Haematological system
Neonatal anaemia and neutropenia in the special care nurseries.
Hemorrhagic and coagulation problems in the neonate.
Implications and management of jaundice in the sick neonate.

Neurological system
The jittery infant or infant with convulsions
Clinical approach to diagnosis and management:
   1) Hypoglycaemia and hyperglycaemias
   2) Hypocalcaemia
   3) Hypomagnesaemia
   4) Hyperammonaemia
   5) Other metabolic disorders
   6) Congenital CNS malformations
The floppy infant – Neuromuscular disorders

Cardiovascular system
Congenital heart disease.
Persistent pulmonary hypertension, nitric oxide.
Congestive heart failure.
Neonatal cardiac arrhythmias.

Genito-Urinary / Renal system
Renal failure in the neonate.
Congenital diseases of the kidney.
Peritoneal dialysis, haemodialysis, renal transplant.

Immunological system:
Basic immunology for clinicians.
Introduction to cell and molecular biology.
Neonatal pharmacology – Pharmacokinetics and pharmacodynamics.
Bacterial and viral diseases in the neonate – including sepsis and meningitis
   1) Communicable diseases – e.g. TB, congenital and neonatal
2) TORCH infections
3) HIV and PMTCT

Endocrine system
Maternal disease and its effects on the fetus and neonate:
1) Diabetes mellitus
2) Toxaemia and chronic hypertension
3) Maternal drug addiction
4) Thyroid diseases
5) Maternal infection
6) Systemic lupus and connective tissue disorders

Metabolic disorders in the neonate

Common endocrine disorders

Social interaction
Maternal-infant bonding: Psychological needs of the mother in early mother-infant interaction
Caring for parents of a premature or sick infant
Caring for parents of an infant with congenital malformation
Caring for parents of an infant who dies
Interview with mother:
1) The premature infant
2) The sick neonate
3) The critically ill neonate
4) Neonatal death

Health care
Concepts of regionalization of perinatal care
Ethical issues in neonatal care
Cost issues in neonatal care
Perinatal mortality and morbidity
Data capturing systems: Perinatal Problem Identification Program (PPIP), Vermont Oxford Network (VON)
The high mortality in the African neonate
**GROUP V Special Skills**

1. Resuscitation of the newborn.
2. Nursery techniques – conduct, hand washing, gowing, handling of infants.
3. Heel sticks and blood drawing in neonates.
4. Techniques of peripheral intravenous lines and percutaneous central venous catheterization.
5. Umbilical arterial/venous catheterization.
11. Diagnostic procedures for suspected infection, i.e., swabs, blood cultures, spinal tap, suprapubic taps, tracheal aspirates.
12. Techniques of ventilatory support – CPAP, conventional ventilation, high frequency ventilation, use of iNO.
13. Interpretations:
    1) Roentgenographs, i.e., chest, abdomen, long bones, skull films.
    2) ECG’s in the neonate.
    3) Echocardiography in the neonate.
    4) Pulmonary function testing.
    5) Fetal monitoring.
    6) Neonatal monitoring; aEEG (Brainz prototype), CFM
    7) Cranial ultrasonography, CT scans, MRI.
    8) Basic anatomical renal scan.
14. Management and pitfalls of infants in:
    1) Incubators
    2) Radiant heat warmers
    3) Phototherapy
15. Transport of a sick neonate.
GROUP VI a Research Skills – Research Tools

1. Adequate review of medical literature.
2. Biostatistics.
3. Basic knowledge of computer technology e.g. excel, refworks etc

GROUP VI b Research – Basic Steps

1. Writing a research proposal, study design, informed consent.
2. Critical literature review.
3. Data collection in the form of one audit.
4. Data analysis, statistics.
5. Research in progress.
6. Abstract for presentation at RXH research day and or Neonatal/ Paediatric Conference nationally or internationally.
7. Final manuscript preparation for MPhil dissertation.
8. A minimum of 1 case report / article published in the training period (recommended).

Last Revision: 10/09/2011 NRR