Subspecialty residents are given opportunity to be involved with curriculum design. 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. Basic research activities primarily occur in the General Laboratory Building at LAC+USC Medical Center. The neonatology fellows are exposed to newly published information regarding the molecular basis of human disease. Clinical research activities occur in the NICUs at both Hospitals (Women’s and Children’s Hospital and Childrens Hospital Los Angeles), and the neonatal fellow is encouraged to participate with researchers in maternal-fetal medicine and subspecialty fields of pediatrics to supplement his/her particular interests and research goals. The fellows participate in meetings on statistical analysis, and laboratory oriented presentations as well as journal clubs. Faculty and program director distribute 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 echocardiographic pictures are shown in an electronic format to fellows during the fellows teaching conference. 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.

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 Labor 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 anemia in the neonate: Identification and management.
6. Hyperviscosity syndrome.
7. Rh isoimmunization: “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 postmature infant
   (4) Infant with history of third trimester bleeding
10. Differential diagnosis of respiratory distress and cyanosis in the neonate - investigation and management.

GROUP III 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. Hemolytic problems in the neonate.

GROUP IIIa 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
1. Thermoregulation.
2. Energy expenditure and caloric requirement of the neonate.
3. Infant nutrition: Preterm and sick infants.
4. Changes in body fluids and fluid balance in the neonate.
5. Intravenous fluid and nutrition – total parenteral nutrition.
6. Oxygen therapy and toxicity.
7. Acid-base balance and correction.
8. Late acidosis in the preterm infants.
9. Electrolyte abnormalities in the neonate.
10. Neonatal anemia and neutropenia in the special care nurseries.
11. Hemorrhagic and coagulation problems in the neonate.
12. Implications and management of jaundice in the sick neonate.
14. The jittery infant or infant with convulsions – clinical approach to diagnosis and management:
   a. Hypoglycemia and hyperglycemia
   b. Hypocalcemia
   c. Hypomagnesemia
d. Hyperammonemia  
e. Other metabolic disorders  
f. Congenital CNS malformations

15. Respiratory distress syndrome.


18. Pneumothorax, pulmonary interstitial emphysema, and other air leaks.

19. Aspiration syndrome:
   a. Meconium  
b. Blood

20. Intrapartum pneumonia.


23. Persistent pulmonary hypertension, nitric oxide.


25. Neonatal cardiac arrhythmias.

26. Renal failure in the neonate.

27. Congenital diseases of the kidney.


29. Gastrointestinal problems in the neonate.

30. Surgical emergencies in the neonate.

31. Bacterial and viral diseases in the neonate – including sepsis and meningitis.

32. Maternal disease and its effects on the fetus and neonate:
   (i) Diabetes mellitus  
   (ii) Toxemia and chronic hypertension  
   (iii) Maternal drug addiction  
   (iv) Thyroid diseases  
   (v) Maternal infection
(vi) Systemic lupus and connective tissue disorders

33. Metabolic disorders in the neonate.
34. Common endocrine disorders.
35. The floppy infant – Neuromuscular disorders.
36. Basic immunology for clinicians.
37. Introduction to cell and molecular biology.
39. Caring for parents of a premature or sick infant.
40. Caring for parents of an infant with congenital malformation.
41. Caring for parents of an infant who dies.
42. Perinatal mortality and morbidity.
43. Concepts of regionalization of perinatal care.
44. Interview with mother:
   (a) The premature infant
   (b) The sick neonate
   (c) The critically ill neonate
   (d) Neonatal death
45. Ethical issues in neonatal care.
46. Cost issues in neonatal care.
47. Neonatal pharmacology – Pharmacokinetics and pharmacodynamics.

**GROUP V Special Skills**

1. Resuscitation of the newborn.
2. Nursery techniques – conduct, handwashing, gowning, 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, extracorporeal membrane oxygenation.

13. Interpretations:
   (i) Roentgenographs, i.e., chest, abdomen, long bones, skull films.
   (ii) EKG’s in the neonate.
   (iii) Echocardiography in the neonate.
   (iv) Pulmonary function testing.
   (v) Fetal monitoring.
   (vi) Neonatal monitoring.
   (vii) Cranial ultrasonography, CT scans, MRI.

14. Management and pitfalls of infants in:
   (i) Incubators
   (ii) Radiant heat warmers
   (iii) Phototherapy

15. Transport of a sick neonate.

GROUP VI Research Skills – Research Tools

1. Adequate review of medical literature.

2. Biostatistics.

3. Basic knowledge of computer technology.


5. Other courses: Physiology, Pharmacology, Immunology, Molecular Biology.

6. Clinical research, laboratory or animal research.

GROUP VIa Research – Basic Steps
1. Writing a research proposal, study design, informed consent.
2. Critical literature review.
3. Data collection.
4. Data analysis, statistics.
5. Research in progress.
6. Abstract.
7. Final manuscript preparation.

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