Physiology/Pathology Course Thursday 7:45 AM
Charles Rosenfeld; Luc Brion

- Placental Growth & Blood Flow
- Placental Transport & Function
- Maternal Nutrients and Fetal Growth & Development
- Hormonal Regulation of Growth & Development
- Alterations in Fetal Growth and Outcome
- Clinical Assessment of Maternal-Fetal Blood Flow and Growth
- Physiology of Amniotic Fluid Production & Clearance
- Cardiac Development & Congenital Heart Disease
- Development and Regulation of Fetal Cardiovascular System
- Cardiovascular Adjustments at Birth
- Postnatal Blood Pressure Regulation
- Ductus Arteriosus: Physiology & Pathophysiology
- Lung Growth and Development: Ateleic and Vascular
- Lung Growth and Development: Surfactant Lipids and Proteins
- Hyaline Membrane Disease: Pathophysiology
- Pulmonary Hypertension: Pathophysiology
- Control of Respiration: Pathophysiology of Apnea
- Control of Respiration: Pharmacology of Theophylline/Caffeine
- Chronic Lung Disease: Pathophysiology
- Postnatal Temperature Regulation – Maria Afanador, MD
- Genetics: Molecular basis of inherited diseases
- Genetics: Cytogenetics in pre- and post-natal diagnosis
- Genetics: Prenatal diagnosis – screening tests and ultrasound
- Genetics: Approach to inborn errors of metabolism
- Genetics: Teratology and dysmorphology
- Renal development and functional maturation
- Fluid and electrolyte balance
- Anomalies of the GI tract: Pathogenesis and Diagnosis I
- Anomalies of the GI tract: Pathogenesis and Diagnosis II
- Gastroesophageal reflux: Pathogenesis and Diagnosis
- Fetal and neonatal glucose homeostasis
- Nutrition: metabolic needs after birth
- Nutrition: use of parenteral nutrients
- Nutrition: initiation and use of oral nutrients
- Nutrition: vitamin and mineral requirements
- Breast Milk and Preterm Feeds
- NEC: pathophysiology
- NEC: epidemiology and diagnosis
- Bilirubin metabolism
- Pathogenesis of hyperbilirubinemia
Hemolytic Diseases of Newborn
Anemia of Prematurity & Transfusion Therapy
Physiology of Cerebral Blood Flow
Neonatal Intracranial Hemorrhage: Epidemiology/Pathogenesis
Neonatal Coagulation & Coagulopathy.
Neonatal Early Onset infection
Neonatal Nosocomial Infection
Diagnosis of Neonatal Infection
Perinatal Infection: HIV and Syphilis
Perinatal Infection: CMV, Herpes & Toxoplasmosis
Fetal/Neonatal Adrenal Development and Function.
Fetal/Neonatal Thyroid Development and Function
Retinopathy of Prematurity: Retinal Development and Pathogenesis
Retinopathy of Prematurity: Epidemiology
VLBW Outcome: Neurologic Development
VLBW Outcome: Growth
Fetal Hydrops: Pathogenesis & Diagnosis
Neonatal Pharmacology I
Neonatal Pharmacology II
Pharmacokinetic calculations

Evidence-based Medicine Conference  Thursday 7:45 AM
Myra Wyckoff, Lina Chalak, Becky Ennis, Vishal Kapadia, Mamkambath Jaleel, Luc Brion
Reference books:
- Hulley & Cummings
- Sacket

Introduction to Evidence Based Medicine

Chapter 1 H & C: The Anatomy and Physiology of Clinical Research

Chapter 2 H & C: Conceiving of the Research Question

Chapter 3 H & C: Choosing the Study Subjects
PICO: In near-term and term infants does use of moderate whole body hypothermia vs routine care improve long-term neurodevelopmental outcome?

Chapter 4 H & C: Planning the Measurements: Precision and Accuracy
Diagnostic Question: How good is US assessment at predicting fetal weight?
3) Interrater Reliability and Effect of State on Blood Pressure: Pediatrics 2008;122;e590.

Chapter 5 H&C: Hypothesis and Underlying Principles
Bring your research question, null hypothesis and alternative hypothesis for your own fellowship research study
PICO: Does Room air vs O2 resuscitation reduce morbidity and mortality in preterm infants
Articles: Rabi et al. Room-air versus oxygen administration for resuscitation of preterm infants: The ROAR Study. Pediatrics 2011;

Chapter 6 H&C: Estimating Sample Size and Power
PICO: Does use of IVIG vs Placebo decrease mortality from sepsis in newborns?
**Chapter 7 H&C: Designing a Cohort Study**  
*Articles:*  
2) DeMauro et al. Title: Impact of Delivery Room Resuscitation on Outcomes up to 18 Months in Very Low Birth Weight Infants: Results from the Caffeine for Apnea of Prematurity Trial. J Peds 2011; 128(2):e374-381

**Strauss Chapter 3: Diagnosis and Screening**  
*Diagnostic Question:* How good a screening test is pulse oximetry for Cyanotic Congenital Heart Disease?  
*Articles:*  
4) Pulse oximetry screening as a complementary strategy to detect critical congenital heart defects. *Acta Paediatrica* 2009 98, pp. 682–686 (population study)

**Chapter 10 H&C: Designing a Randomized Controlled Trial**  
*PICO:* Are Pressors versus Volume more effective for treatment of neonatal hypotension?  
*Articles:*  
1) Osborn DA, Evans NA. Early volume expansion versus inotrope for prevention of morbidity and mortality in very preterm infants. Cochrane Review  

**Diagnostic Question:** What is a better marker of sepsis - CBC (neutrophils) versus CRP?  
*Articles:*  

**PICO:** Does does early versus late ventricular intervention improve neurodevelopmental outcomes of ELBW with post hemorrhagic ventricular dilatation.  
*Articles:*  
1) Kennedy: *Pediatrics* 2001;108;597  

**Diagnostic Question: What is a better marker of sepsis-CBC (neutrophils) versus CRP?**  
*Articles:*  

**PICO:** Does Prophylactic versus Rescue Surfactant decrease CLD and Mortality?  
*Article:*  
1) Prophylactic versus selective use of surfactant Soll  
2) Morley: Cochrane Review  

**PICO:** Does IPGE1 versus placebo improve PAH in Term Infants?  
*Articles:*  
1) Pediatric Cardiol 18:3–7, 1997  
3) NRN proposed protocol (IPGE1)
**PICO:** In premature infants does Indomethicin versus Ibuprofen result in better PDA closure

**Articles:**

**PICO:** In premature infants does High versus Low Dose Caffeine on long-term Neurodevelopmental Outcome

**Articles:**

**PICO:** Does CPAP versus intubation in the delivery room decrease the risk of death/BPD in preterm infants?

**Articles:**

**PICO:** Does use of Diuretic therapy compared to placebo decrease the risk of CLD in preterm infants?

**Articles:**
1) Stewart et al. Distal Renal Tubule diuretics for CLD. Cochrane 2011
2) Stewart et al. Loop diuretics for CLD. Cochrane 2011.

**Will invite Audra Stewart as guest content expert**

**PICO:** Does hypothermia versus eutherma increase mortality in preterm infants?

**Articles:**

**PICO:** Does early versus late initiation of feeds improve outcomes in ELBW infants?

**PICO:** Does early versus late protein administration improve outcomes in ELBW infants?

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**Topic**

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**Introduction to EBM-Slide presentation**

**Didactic Reading:** How to review a Therapeutic Article: Straus Chap 5 p115-144

**PICO Question:** For premature infants does Epo-A vs placebo decrease the need for transfusions

**Review Article:** Von Kohorn et al. Anemia in the Preterm Infant

**Therapeutic Article:** Ohls et al. Pediatrics 2001; 108:934-42

**PICO Question:** For premature infants does liberal vs conservative transfusion practice decrease mortality and short term morbidity

**Review Article:** 2008 Neoreviews: Treatment and Prevention of Neonatal Anemia

**Therapeutic Articles:** Kirpalani et al. J Pediatr 2006; 149:301-7

**PICO Question:** For asphyxiated, encephalopathic term infants, does Whole Body Cooling vs routine management improve survival and long-term neurodevelopmental outcomes

**Review Article:** Higgins and Shankaran. Hypothermia for hypoxic ischemic encephalopathy in infants ≥36 weeks. EHD. 2009

**Therapeutic Articles:** Azzopardi et al. NEJM 2009;361:1349-58
Shankarn et al. NEJM 2005;353:1574-84

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<table>
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<tr>
<th>PICO Question: For ELBW's, does early indomethacin vs placebo prevent intraventricular hemorrhage and improve long-term outcomes</th>
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<tr>
<td>Specific Article: Schmidt et al. NEJM 2001;344:1966-72. (TIPP)</td>
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<th>Didactic: How to critique an observational study</th>
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<td>Topic: VLBW Outcomes</td>
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<td>Specific Article: Stoll et al. Pediatrics 2010;126:443-56</td>
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<tr>
<th>Topic: Early Onset Infection (why do we do what we do for GBS)</th>
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<th>Topic: Therapies for congenital infections</th>
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<th>Topic: Surfactant for HMD</th>
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**Resuscitation conference Monday 12 PM**

**Myra Wyckoff and L&D Faculty**

- Indications for high-risk delivery that should prompt calling the Resuscitation Team and in addition when the Resuscitation team should call for additional support (Fellow, NNP, Faculty)
- Non-Reassuring Fetal Heart Rate Tracings
- Physiology of primary and secondary apnea in response to hypoxia
- The importance of gathering maternal and fetal information prior to delivery

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The importance of setting-up and checking all equipment that one might need for an effective resuscitation
Oxygen use for preterm infants in the delivery room
Oxygen versus RA for Resuscitation
The routine use of oxygen in the DR for vigorous infants
Initial Steps of Resuscitation
Temperature Regulation in the Delivery Room-Term and Preterm
The paramount importance of providing effective ventilation (how do you achieve it, how to you judge the effectiveness)
Self-inflating bags, anesthesia bags, T-Piece Resuscitators
Meconium physiology
Management of the meconium exposed infant
The difficult airway that cannot be intubated
EXIT Procedure-indications and management
Use of LMA
Stabilization of the pre-term newborn
Stabilization of the hydronic newborn
Stabilization of the hypovolemic newborn
Stabilization of the newborn with diaphragmatic hernia
Stabilization of the newborn with cyanotic congenital heart disease
Stabilization of the newborn with abdominal wall defects
Stabilization of the Rh disease infant
Stabilization of the infant with spinal defect
Stabilization of the infant with Pierre-Robin
Differential Diagnosis of the severely depressed infant
Importance of leadership and good communication during resuscitation
Coordination of cardiac compressions during neonatal CPR
Physiology of cardiac compressions during neonatal CPR
Placement of emergent IV access in the DR
Evidence for use of epinephrine during neonatal CPR
Evidence for use of volume administration during neonatal CPR
Evidence for use of sodium bicarbonate during neonatal CPR
Evidence for use of Naloxone during neonatal resuscitation
Consideration and management of pneumothorax in the delivery room
Indications for and issues regarding intubation in the DR
When is it appropriate to redirect care in the delivery room
When is it appropriate to not initiate resuscitation
How to communicate with families in the delivery room
How to communicate with families during antenatal consult
Benefits and risks of End-tidal CO2 detectors to confirm airway placement in the DR
Resuscitation of the newborn outside the delivery room (NICU)
Resuscitation of the newborn outside the delivery room (ambulance dock, ER etc)
Use and abuse of the Apgar Score
How to utilize QA in the DR to improve performance
Effects of maternal anesthesia on newborn stabilization

OB/GYN Ultrasound, Prenatal Diagnosis & Genetics Grand Rounds
Friday 12 PM Jodi Dash and Diane Twickler
Anomaly Reviews and Updates
Thorax
The Endometrium and Sonohysterography
Fetal Cardiac Evaluation
Genetic Counseling Strategies for Health Care Providers

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Fetal GI
Trisomy 13 and 18
Fetal GU
Fetal Skeletal Dysplasias
Applications of Molecular Cytogenetics
Placenta and Cervix
Imaging Maternal Complications
Twins
First and Second Trimester Down Syndrome Screening
Fetal CNS
Cystic Fibrosis & Other Genetic Carrier Testing
Innovations in Fetal Therapy

Mortality/morbidity at Parkland and CMC AND CLINICAL CARE CONFERENCE Tuesday 12 PM (CMC) and Thursday 12 PM (PHHS)

Lina Chalak

Respiratory
Surfactant therapy
Artificial ventilation: conventional
HFO
High frequency Jet ventilation
BPD
Pulmonary hemorrhage
Meconium Aspiration
Apnea of prematurity
Apnea of infancy
PFT’s
Respiratory surgical problems in the newborn
CCAM/Pulmonary sequestration
Congenital diaphragmatic hernia
PPHN, nitric oxide
PIE
Pneumothorax

Cardiovascular system:
ECMO: PICU
EKG, arrhythmia
Pacing
Transitional/Post natal circulation
Cyanosis
2D echo
CHF
Congenital heart disease: differential diagnosis
Cardiac surgery in neonates
Hypotension, Shock
Single ventricle
TAPVR
Coarctation
HLH
Conotruncal anomalies
Heterotaxy
Cardiomyopathy
Myocarditis
Vein of Galen
AVM
Cardiac tumor

Growth and nutrition:
Small for gestational age/IUGR
Macrosomia
IDM, Gestational diabetes
Abnormalities in fetal growth, SGA, LGA, perinatal

Endocrinology/Metabolism
Hypoglycemia
Hyperglycemia
Metabolic diseases (2 or 3 talks)
Neonatal screening
Galactosemia

Endocrinology:
Calcium and phosphate
Osteopenia
Hypoglycemia
Thyroid treatment
Ambiguous genitalia
Steroids treatment

Genetics:
Prenatal genetic diagnosis
Approach to congenital malformations
Down syndrome
Trisomy 13
Trisomy 18
Other chromosomal anomalies
Craniofacial malformations: treatment
Craniosynostosis

GI Tract:
NEC
Gastrochisis, omphalocele
TEF
Duodenal Atresia/stenosis
Jejunal/ileal stenosis/ataresia
Malrotation
Meconium plug/ileus
Short bowel syndrome
Bile secretion, metabolism
Liver disease/ cholestasis
Mec plug/ileus
Intestinal obstructions
Hirschsprung & related
Anal atresia
Cloaca

Hematology/Oncology:

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Hyperbilirubinemia, 
Anemia, hematopoiesis 
Polycythemia 
Neutropenia 
Thrombocytopenia; Alloimmune thrombocytopenia 
Thrombophilia 
Hemostasis 
Blood transfusion 
Blood typing and antibodies screening 
Erythropoeitin in newborn 
Leukemoid reaction 
Teratoma 
Neuroblastoma 
Angioma 
Vascular tumor 
Retinoblastoma 
Myofibromatosis 
Iron 

Renal, fluids: 
Acute renal failure 
Congenital renal anomalies with renal failure 
Hypertension 
Fluid management: Approach to hyponatremia, hypernatremia, hyperkalemia, acidosis 
GU Anomalies: medical therapy 
Surgery for GU anomalies 
Hydrops 

Infectious diseases 
HIV 
GBS 
Syphilis 
TORCH 
TB 
Hepatitis 
Parvo virus 
Herpes 
Yeast 
RSV 
Listeria 
Gram negative sepsis 

Immunology: 
Immune deficiency diseases 
HLH 
Neonatal Lupus 

Other systemic diseases 
Tuberous sclerosis 
Neurofibromatosis 
Cystic fibrosis 

Neurology:
EEG
Congenital muscle disorders
NTD’s, hydrocephalus, folic acid
Congenital CNS malformations
Holoprosencephaly, agenesis of corpus callosum
Dandy Walker
Head trauma,
Brachial plexus injury
Pain management
aEEG
Hydrocephalus and management
Seizures
Stroke
Microcephaly
Myasthenia
Other Neuromuscular disorders
Hypoxic Ischemic Encephalopathy

Pain, sedation
Neonatal anesthesia
Withdrawal/ Toxicology
Pain management

Eye, ENT, dermatology
ROP
Vitamin E supplementation
Skin maturation
Vesicles and bullae
Hearing screening, hearing loss
Stridor in neonates
Glaucoma
Cataract

Orthopedics
Hip dysplasia

OTHER:
Teaching and Assessing Professionalism: ABP and APPD 2008
Conflict resolution
Cultural diversity, disparities
Medicolegal aspects of neonatology
Computers in medicine
Perinatal/neonatal Ethics
Practice management
Neonatology practice venue
Finances: Medicaid/medicare/insurance/Billing
Breaking bad news: Prenatal
Breaking bad news: Redirecting care
Breaking bad news: DNR
Transport, altitude physiology
Asphyxia
**Life after Fellowship (Wednesday 12 PM): 3-year cycle**

**Luc Brion and Sunjun Kang**

- Second year fellows (March): Initial steps before the interview: individual development plan, establishing priorities.
- All fellows; presentation by Senior fellows (May or June presentation).
- Spring session for 2nd year fellows: CV, portfolio, letter.

**Tracks:**
- Private Practice
- Clinician/Educator
- Administrator
- Clinical Scholar
- Basic Sciences

**Orientation of First Year Fellows**

**Luc Brion**

- UTSW Orientation: Human Resources 6363 Forest Park Rd, 14th floor.
- Children’s Medical Center General Orientation: CMC, Doctor’s Dining Room.
- Parkland’s All Day General Orientation: Parkland, Gooch Auditorium.
- Neonatal-Perinatal Medicine Fellowship orientation,
  - Pediatrics Conference Room F3.112
  - ‘Division of Neonatology Welcome Breakfast’
  - Goals and Objectives of the program
  - Department of Pediatrics and UTSW
  - Clinical training
  - Education in neonatology, pediatrics and UTSW
  - Scholarship
  - Evaluation and feedback
  - A.W. Faculty Club – Lunch
  - Parkland 5 South E Conference –Orientation to Parkland resuscitation and NNICU

- Transport Ventilator: Bronchotron: F3.112
- Transport Services, Love Field Airport, 8111 Lemmon Ave., Ste 200, Dallas, TX 75209
  - Transport operations and expectations
  - Rotor Wing training
  - Flight Safety
  - Fixed Wing Safety Training

- Neonatal nutrition
- Fluid management
- Acid-base

- Orientation to NICHD Neonatal Network

- Parkland Respiratory Therapy NNICU- Parkland 5 South E Conf Rm:
  - Conventional ventilation
  - High-frequency ventilation,
  - CPAP, oxygenation

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Ventilatory/airway support
  Oxygen and blood gases
  Artificial ventilation
  Pulmonary hypertension
  High frequency oscillation
Fellows NICU Procedure Skills Lab

CMC NICU Respiratory Therapy Orientation:
  Siemens ventilator,
  High-frequency jet ventilation,
  End tidal CO2,
  High frequency oscillation

Computer programs for CMC rotations: EPIC, iSite, Apollo

MFM highlights

Department of Pediatrics: Fellows Core Conference – Thursday 5 PM
Charles Rosenfeld
1. Physician Care – Fatigue, Impairment, CME
2. Prevention of Medical Errors – QA, Recertification
3. Program Administration
4. Economic and Development of Health Care
5. Proficiency in Teaching – Bedside, Large Groups
6. Principles of Evidenced-Based Medicine
7. Critical Literature Review
8. Bioethics – Patient care, Research
9. Preparation of Funding Applications
10. Preparation of Research protocols
11. Study Design
12. Research Methodology: Clinical, Laboratory
13. Biostatistics
14. Career Development – Choices

Specific Topics
Fatigue and On-Call Schedule
Why is a Research Experience Required?
Choosing a Clinical or Basic Research Mentor
Intrusive Regulations and the Medical Profession
Protection of Research Subjects: Learning the Alphabet
How to Write an Informed Consent
Masters Program in Clinical Investigation
Faculty Presentation of Clinical Research
Ethics of Animal Research
IACUC Requirements for Animal Research
Faculty Presentation of Laboratory Research
Physician Impairment
Why Continuing Medical Education And Recertification?
Choosing a Career Path
Principles of Evidenced-Based Medicine
How to use Evidenced-Based Medicine
Career Development: Small Group Discussion x 3
Faculty Research Presentations

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Principles of Bedside Teaching  
Quality Assurance & Prevention of Medical Errors  
Choice of Performance Indicators in the Practice of Medicine  
Evidence-base Medicine  
Practicing Evidence-base Medicine  

List of topics for high risk pregnancy conference, 5 South Classroom, Monday 8 AM
Scott Roberts

Preconceptional counseling  
Folic acid  
Biophysical profile  
Antenatal testing  
Doppler  
Fetal growth restriction  
Amniocentesis and CVS  
Polyhydramnios  
Oligohydramnios  
Isoimmunization  
Hydrops fetais  
Placenta  
Abruptio placentae  
Placenta praevia  
Preeclampsia  
Chronic hypertension  
Cardiovascular disease  
Pulmonary disease  
Diabetes mellitus  
Thyroid disorders  
Renal failure  
Connective tissue disorders  
Systemic lupus erythematosus  
Thrombocytopenia  
Thromboembolic disorders  
Hepatic/biliary disorders  
Cancer  
Trauma  
Intravenous drug abuse  
Cocaine  
Seizures, epilepsy  
Neuromuscular disorders  
Psychiatric disorders during pregnancy  
Postpartum depression  
Post-term pregnancy  
Induction of labor  
Preterm labor  
Abnormal labor  
Fetal heart tracing  
Fetal distress  
Premature rupture of membranes  
Cesarean section  
Forceps and vacuum  
Anesthesia  
Breech delivery  
Shoulder dystocia  
Chorioamnionitis  
Herpes  
HIV  
CMV  
Syphilis  
Hepatitis  
Rubella  
Toxoplasmosis  
Tuberculosis  
Group B streptococcus  
Chickenpox  
Listeria  
Multiple pregnancy  
Twin-to-twin transfusion  
Scalp edema/cystic hygroma  
Screening for trisomy  
Fetal tachyarrhythmia  
AV block  
Congenital heart disease  
Neural tube defects  
Fetal hydrocephalus  
Fetal microcephaly  
Fetal hydronephrosis  
Fetal surgical intervention  
CCAM  
Congenital diaphragmatic hernia

Imaging Series for Fellows in Neonatal-Perinatal Medicine:
Marcia Pritchard & Luc Brion G3.207, 2 sessions a year:
Head ultrasonogram  
Head CT  
Head MR,  
Bone/soft tissue (Eugene Sheffield),

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Abdomen,  
Chest  
Contrast studies/intervention radiology: IVP, VCUG, Barium enema, esophagogram, Ba swallow/upper GI, position of lines and chest tubes  
Echocardiogram (Claudio Ramaciotti): normal, CHD, function, PDA, PAH

Professionalism Series (3-year series):  
**LPB & Lina Chalak**, 2-3 sessions a year:  

1. Didactic  
   
   Introduction to Professionalism: Luc Brion  
   Social Networks: Dorothy Sendelbach  
   Medicolegal aspects of Neonatal-Perinatal Medicine  
   Texas Medical Board vs. other Boards  
   Acculturation  
   Impaired physician  
   Leadership  
   Aiming at excellence  
   Palliative care  
   Personality: DISC  

2. Case scenarios, communications, role playing  

Communications with NNPs  
Communications with parents  
Consents,  
Communicating bad news,  
Role playing

Quality Improvement Series (3-year series):  
**M Frost, M Jaleel, V Kakkilay, V Kapadia**:  
6 sessions a year (3 didactic, 3 QI project presentations):  

a. Basics on QI: Strategies, Tools and Methods (e.g., PDSA, Lean and Six Sigma Principles),  
b. Quality Measurement: constructing, interpreting and evaluating a measurement  
c. Safety: risks, disclosure, prevention, system/human factors, analytical tools, high-reliability organization  
d. Medical Informatics  
e. Interface between QI, Law and Medical Ethics  
f. Statistical analysis in QI  
g. Organization Design and Management  
h. Economics and Finance in QI  
i. Utilization Management  
j. External Quality Improvement  

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