

NEONATOLOGY ANNUAL REPORT
ACADEMIC YEAR
2007-08

The USC Division of Neonatal Medicine has continued to operate at its four locations (Childrens Hospital Los Angeles [CHLA], Women's and Children's Hospital of the LAC+USC Medical Center [LAC+USC MC], Good Samaritan Hospital [GSH] and Hollywood Presbyterian Medical Center [HPMC]) during the 2007-08-academic year. The number of Level-IV, III and II licensed NICU beds with an average daily census of 82-90 were covered by 17 FTE neonatologists, 14 neonatology fellows and 9 neonatal nurse practitioners, and 12-14 pediatric residents (per month). The clinical program has remained busy with a total number of admissions over 1000.

The Center for Fetal and Neonatal Medicine, consisting of the Division of Neonatal medicine and the Institute of Maternal Fetal Health (IMFH) and directed by Dr. Seri, has continued to streamline the perinatal-neonatal operations, research and education at CHLA/USC. The IMFH (Directors - Drs. Murph T. Goodwin and Seri; Medical Director - Dr. David Miller; Director of Fetal Therapy – Dr. Ramen Chmait) has had 60-80 active patients on its weekly case-conference list and the Fetal Therapy and Minimally Invasive Fetal Surgical Program performed over 140 fetal interventions since its inception in March 2006. All of the fetal interventions are being performed as IRB-approved protocols with a data safety monitoring board and an ethical oversight committee in place.

The Neonatology Division had 23 faculty members while the fellowship program approved for 15 fellows, has remained at 14 fellows (up from 6 fellows in 2002). Indeed, our fellowship program is now among the largest training programs of the 98 perinatal-neonatal medicine training-programs in the nation. Our plan is to achieve the full complement of 15 fellows in the program starting July 1, 2009.

As for the profile of clinical services, the Division has continued to provide care using an academic model (attendings and fellows and residents and nurse practitioners) at CHLA's complex Level IIID Newborn and Infant Critical Care Unit (NICCU; Medical Director: Philippe Friedlich, MD, MS Epi; Associate Medical Director: Lisa Kelly, MD) where neonates with complex medical and surgical conditions are being cared for with the help of the most advanced medical technologies including Extracorporeal Membrane Oxygenation (ECMO) support, different modes of mechanical ventilation and cardiovascular and nutritional support. The NICCU's level IIID designation represents the highest possible complexity according to the American Academy of Pediatrics classifications, and the ECMO program is one of the largest Neonatal ECMO Programs in California and the nation. The Neonatal ECMO Program provided services for 13 neonatal ECMO patients in calendar year 2007. In addition, trainees provide services at the Level IIC NICU (Medical Director: Dr. Rangasamy Ramanathan) of The Women's and Children's Hospital of the LAC+USC Medical Center (the host site of the fellowship

program), where they learn to care for high-risk neonates with extreme prematurity and often complex conditions. With its profile of activities, this site also provides a unique opportunity for the fellows to make the transition from being a trainee to becoming an attending at the completion of their fellowship. At HPMC, the trainees gain experience to work with a high-volume delivery service and also have the unique experience of participating in the resuscitation and treatment of neonates born to mothers with high-risk pregnancies followed by the IMFH. Frequently seen conditions requiring specialized neonatal resuscitation and treatment during the early transition period different from the “regular” neonatal resuscitations include neonates born with complex congenital heart disease, congenital diaphragmatic hernia, congenital cystic adenomatoid malformation of the lung, twin-to-twin-transfusion syndrome, hydrops fetalis, lung hypoplasia, myelomeningocele and other brain, liver, renal and other organ-system anomalies with or without complex genetic syndromes. Newborns are then transferred over to CHLA or, less frequently and if appropriate, are being cared for at the Level II+ NICU (Medical Director: Linda Tesoriero, MD; Associate Medical Directors: Lisa Paquette, MD and Arlene Garingo, MD) at HPMC. The ability to provide service at the academic three sites of the Program with different and unique service profiles makes our program desirable for trainees as they get a experience and training they would unlikely to be able to receive at many other training programs. The highly integrated teaching structure and the research programs (highlighted below) complete the appeal of our Division for present and future trainees.

Divisional operations have remained functionally and operationally effective likely due to the new structure put in place in 2004. As per these changes, Dr. Rangasamy Ramanathan serves as Associate Division Chief and Fellowship Program Director, Dr. Philippe Friedlich serves as Section Head of the CHLA Operations and the Medical Director of the NICCU at CHLA. At HPMC, and Dr. Linda Tesoriero serves as the Medical Director of the NICU. Drs. Bijan Siassi and Rowena Cayabyab remained the Medical Director and Associate Medical Director, at GSH, respectively. With the growth of the Division, the comprehensive divisional website has continued to serve our goals well and its Intranet section provides a platform for fellow and resident education, structured board-exam training sessions and placement of information on the complex divisional operations, conferences and other venues. The websites of the Division and the IMFH also provide essential information to parents, referring physicians and prospective neonatology faculty- and fellow-applicants nationwide and internationally.

It seems appropriate to state that our present divisional structure with 3 senior-, 7 mid-career- and 10 junior time-faculty has an appropriate distribution of experience, knowledge and energy across the program that has the potential to effectively serve faculty career development and fellow and-resident education and training.

The restructured and expanded Fellowship Training Program has served our goals well as we have been able to attract more high-quality fellowship candidates. A number of our fellows and faculty presented the WSPR and PAS/SPR meeting in

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2007 and 2008. At the WSPR meeting in 2008, 2 of the fellows and 1 of the faculty received awards at the WSPR.

The faculty successfully continued to represent USC, the Keck School of Medicine, the Department of Pediatrics and the Division with strong academic presence at national and international meetings and with numerous publications in peer-reviewed journals and book chapters over the course of the academic year. Dr. Seri continues to organize and chair the “Neonatal Hemodynamics Club” at the PAS/SPR, a successful and recurring event at the PAS/SPR meeting every year. Dr. Seri continues to serve on the Council of the WSPR and the Board of Trustees of the California Association of Neonatologists (CAN) and has served as the national hemodynamic expert for the Vermont-Oxford Network. He has also written several editorials for the Journal of Pediatrics and Pediatrics in the area of neonatal hemodynamics and developmental cardiovascular physiology and a medical progress article in the Journal of Pediatrics on the use of functional echocardiography, a potential novel bedside clinical and research tool for neonatologists. Dr. Seri has also completed editing a book on neonatal hemodynamics. The book was published by Elsevier Co. in June 2008. Dr. Seri also is responsible for organizing the international IPOKRATES course on neonatal hemodynamics in Europe, Asia, and the Americas and he has continued to be invited to numerous national and international conferences as keynote-speaker. Drs. Seri and Ramanathan have continued to serve on the four-member board of the organizing committee of the annual international conference entitled “Evidence vs Experience in Neonatal Medicine”. Dr. Ramanathan has also been invited to speak at several national and international meetings and serves as the President of the California Association of Neonatologist for this academic year. Numerous clinical and basic science projects have continued to be pursued including participation in NIH-sponsored multicenter clinical trials. Strong and successful collaborations with the Division of Maternal-Fetal Medicine and other divisions and departments at CHLA and USC have continued during this year. Members of the divisional Developmental Cardiovascular Physiology and the Developmental Imaging Programs have continued to publish research papers in well-regarded peer-reviewed journals. These programs serve as excellent examples of the importance of developing close collaborations among different divisions and departments (Radiology, Pediatric Cardiology, Pediatric Intensive Care, Pediatric Surgery and Neonatology) within academic systems such as we have at CHLA/USC.

Our basic science operations, directed by Dr. Parviz Minoo, have primarily focused on investigating lung development, the role of cytokines during development and health and disease and the pathogenesis of bronchopulmonary dysplasia. The program has been highly regarded nationally and internationally and Dr. Minoo has been directly awarded or is a co-investigator on NIH grants for the next ~four years at a total award amount over to \$10 million. Dr. Minoo’s grants are coming through at both USC and CHLA. Dr. Changong Li, who trained in Dr. Minoo’s laboratories, continues as an independent researcher and runs his laboratory after having been awarded by an RO1 from the NIH in 2006. His work primarily focuses on lung

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development. There are a large number of postdoctoral trainees, neonatology fellows and trainees from other institutions (UCLA, Los Angeles, CA) and abroad (University of Padua, Italy) who take advantage of the unique research opportunities and are being trained in the basic science laboratories of the Division. Numerous publications originating from the laboratories attest to the outstanding work being done in the basic science programs of the Division.

As for clinical research operations, the Division continues to run the unique developmental cardiovascular research program headed by Drs. Istvan Seri, Mac Ebrahimi, Rowena Cayabyab and Bijan Siassi. This is the only program in the US that offers structured training in functional echocardiography for neonatologists and has opened this opportunity to neonatologists from outside institutions. The fellows in the program now take a mandatory 1-2.5-month training course at the bedside run by Dr. Mac Ebrahimi. The research focus of the program continues to center on investigating the pathophysiology and treatment of neonatal shock, the role of disturbances of brain blood flow in the pathogenesis of potentially debilitating conditions primarily affecting the immature preterm newborn and the critically ill term infant and uses advanced bedside tools of hemodynamic monitoring including 2D and 3D functional echocardiography and near infrared spectroscopy. Several papers have been published on the findings of this growing cutting-edge program. In addition, in collaboration with the Department of Radiology lead by Dr. Marvin Nelson at CHLA, MRI is being used to study the developing brain and the abnormalities associated with prematurity and complex disease entities in the newborn. Again, several publications demonstrate the research activities within this program. In addition, several projects using a translational research model are underway taking advantage of the basic science and clinical research programs. Dr. Friedlich has engaged in research focusing on long-term cardiovascular effects of ligation of the carotid artery in neonatal ECMO survivors. He presented his interesting findings at several meetings in 2007.

The Division has continued with research activities on the use of telemedicine in neonatology and we received an \$850,000.00-grant support from the UniHeath Foundation (PI: Dr. Friedlich, Co-PI: Dr. Arlene Garingo) in 2006. In addition, our research endeavors have continued in the field of epidemiology and outcomes research under the leadership of Dr. Philippe Friedlich. Under Dr. Friedlich's leadership several junior attendings, fellows and medical students have continued to participate in this program and have received awards for their work at regional and national meetings. Drs. Friedlich and Ramanathan have continued to work on developing a clinical database system for all Divisional sites so that both clinical and research needs can be appropriately served.

Division Head:

Istvan Seri, MD, PhD

Childrens Hospital Los Angeles and

The Children's and Women's Hospital, LAC+USC Medical Center

I. OTHER DIVISIONAL HIGHLIGHTS:

1. The Division continues to be one of the largest programs in the nation regarding its clinical service volume and profile, number of faculty and the Fellowship Training Program.
2. The Center for Fetal and Neonatal Medicine serves as a unifying structure for the Division and the IMFH at CHLA/USC.
3. The Division and IMFH have their own websites with the capability to be also used as a resource for didactic and bedside teaching activities.
4. The Division is responsible for the activities of the “Hemodynamic Club” at the annual PAS/SPR Meetings of the AAP (Chair: Istvan Seri, MD, PhD).
5. Drs. Ramanathan and Seri are among the four-member organizing committee running the “Evidence vs. Experience in Neonatology” annual meetings. This conference has been highly regarded nationally and the meetings were held in Chicago, IL, San Diego, CA, Boston, MA and Chicago, IL in 2004, 2005, 2006 and 2007, respectively. In 2008, the meeting will be held again in Chicago, IL.
6. Dr. Seri stepped down from the Editorial Board of NeoReviews and Dr. Victoria Camerini took his position in 2007.

II. NATIONAL AND INTERNATIONAL RECOGNITION

1. Istvan Seri, MD PhD is now the leader for the Hemodynamic Program of the international postgraduate training program “IPOKRATES” (2006-present).
2. Rangasamy Ramanathan, MD is the President of the California Association of Neonatologists in this academic year
3. Lisa Paquette, MD received a “Scholar Award” at the Annual Meeting of the Western Society of Pediatric Research in 2007

III. NATIONAL AND INTERNATIONAL COMMITTEES

1. Drs. Seri and Ramanathan have continued to serve on the four-member board of the organizing committee of the annual international conference entitled “Evidence vs Experience in Neonatal Medicine”.
2. Rangasamy Ramanathan, MD is a member of the International Organizing Committee of the “Curosurf Clinical Club for the Eastern European Countries” 2005-present
3. Rangasamy Ramanathan, MD Member Pediatric Academic Society (2004-present)
4. Parviz Minoo, PhD: Member (*ad hoc*) NIH, Division of Research Grants, Study sections, 1996-present
5. Parviz Minoo, PhD: Member, NIH, NHLBI, Division of Extramural Affairs, 1996-present
6. Parviz Minoo, PhD: Member, Research Grant Applications, California Chapter of the American Lung Association, 1997-present

7. Chair, Newer Mouse Technologies Targeted at Dissecting Mechanisms, PAS Educational Workshops Annual Meeting of the American Pediatrics Society/Society for Pediatric Research San Francisco, CA, USA, May 2006
8. Victoria Camerini, MD: Member of the American Association for Immunologists Council on Minority Affairs
9. Istvan Seri, MD PhD Member, Organizing Committee; "Evidence versus Experience in Neonatal Practice"; 2004-present
10. Istvan Seri, MD PhD: Chair, "Neonatal Hemodynamics Club" - Pediatric Academic Societies' Annual Meeting; 2004-present
11. Istvan Seri, MD PhD: Member; Kidney Council, American Heart Association (1988-present)
12. Istvan Seri, MD PhD: Member; American Association for the Advancement of Science (1994-present)
13. Istvan Seri, MD PhD: Member The Society for Pediatric Research (1995-present)
14. Istvan Seri, MD PhD: Member Pediatric Academic Society (2004-present)
15. Victoria Camerini, MD serves as Scientific Grants Review Member, Study Section Committee, Crohn's & Colitis Foundation of America; New York, NY
16. Smeeta Sardesai MD, MEdu is a Trustee, Children's Medical Care Foundation
17. Manuel Durand, MD is a Member of the Society for Pediatric Research and the American Thoracic Society
18. Dr. Philippe Friedlich: Member of the California Children's Medical Services /California Children's Services NICU Technical Advisory Committee
19. Dr. Philippe Friedlich: Member of the California Children's Services/CPQCC high-risk infants project to improve the neurodevelopmental outcomes of at risk infants.

IV. OFFICES HELD

1. Istvan Seri, MD PhD is a Member of the Western Society for Pediatric Research Council
2. Rangasamy Ramanathan, MD is the President of the California Association of Neonatologists 2006-07
3. Victoria Camerini, MD is Scientific Grants Review Member of the Study Section of the Crohn's & Colitis Foundation of America, New York, NY
4. Victoria Camerini is a member of the Board of Directors, Institute for Music and Neurologic Function; an Affiliate of the Beth Abraham Family of Health Service, Bronx, NY

V. EDITORS AND ASSOCIATE EDITORSHIPS

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1. Istvan Seri, MD PhD: Associate Editor; Journal of Maternal-Fetal and Neonatal Medicine: The Parthenon Publishing Group, Carnforth UK & Pearl River, NY; 2000-2005
2. Istvan Seri, MD PhD: Member; Editorial Advisory Board for Neonatal Intensive Care; 2000-present
3. Istvan Seri, MD PhD: Member; Editorial Board - NICUniversity.org (2005-present)
4. Istvan Seri, MD PhD: Member of the Editorial Board – AAP-NeoReviews (2005-2007)
5. Philippe Friedlich MD MSEpi: Member; Editorial Advisory Board for Neonatal Intensive Care; 2000-present
6. Rangasamy Ramanathan, MD: Member; Editorial Board – Journal of Pediatrics and Neonatology; 2000-present
7. Parviz Minoo PhD is Associate Editor of Pediatric Research, 2006-present)
8. Victoria Camerini MD is Associate Editor for the Journal Autoimmunity (2003-present)
9. Victoria Camerini MD is member of the Editorial Board of NeonReviews (2007-present)
10. Parviz Minoo PhD is Associate Editor for Pediatric Research (2006-present)

VI. PUBLICATIONS

VI/A. Peer Reviewed Papers

1. Noori S, Friedlich P, Wong P, Garingo A, Seri I. Cardiovascular Effects of Sildenafil in Neonates and Infants with Congenital Diaphragmatic Hernia and Pulmonary Hypertension. *Neonatology* 2007; 91:92-100.
2. Garingo A, Tesoriero L, Cayabyab R, Durand M, Blahnik M, Sardesai S, Ramanathan R, Jones C, Kwong K, Li C, Minoo P; Constitutive IL-10 Expression by Lung Inflammatory Cells and Risk for BPD. *Pediatric Res* 2007; 61:197-203
3. Kluckow M, Seri I, Evans N. Functional echocardiography: an emerging clinical tool for the neonatologist. *J Pediatr* 2007; 150:125-30
4. Noori S, Friedlich P, Seri I, Wong P. Cardiac Function Following PDA Ligation in the ELBW Neonate. *J Pediatr* 150:597-602, 2007
5. Crombleholme TM, Shera D, Lee H, Johnson M, D'Alton M, Porter F, Chyu J, Silver R, Abuhamad A, Saade G, Shields L, Kauffman D, Stone J, Albanese CT, Bahado-Singh R, Ball RH, Bilaniuk L, Coleman B, Farmer D, Feldstein V, Harrison MR, Hedrick H, Livingston J, Lorenz RP, Miller DA, Norton ME, Polzin WJ, Robinson JN, Rychik J, Sandberg PL, *Seri I*, Simon E, Simpson LL, Yedigarova L, Wilson RD, Young B. A prospective, randomized, multicenter trial of amnioreduction vs selective fetoscopic laser photocoagulation for the treatment of severe twin-twin transfusion syndrome. *Am J Obstet Gynecol* 197:396.e1-9, 2007

6. Seri I. Cardiovascular support in the preterm: Treatments in search of indications. *J Pediatr* 150:e31-3, 2007
7. Seri I. Summary proceedings of the 3rd Annual Evidence vs. Experience in Neonatal Practices. *Neonatology Today*; 2007
8. McEvoy C, Sardesai S, Schilling D, Durand M. Acute effects of vecuronium on pulmonary function and hypoxemic episodes in preterm infants. *Pediatr Int* 2007; 49: 631-636.
9. Cayabyab RG, Kwong K, Jones C, Minoo P, Durand M. Lung inflammation and pulmonary function in infants with meconium aspiration syndrome. *Pediatr Pulmonol* 2007; 42: 898-905.
10. McEvoy C, Schilling D, Spitale P, Peters D, O'Malley J, Durand M. Decreased respiratory compliance in infants \leq 32 weeks of gestation, delivered greater than 7 days after antenatal steroid therapy. *Pediatrics* (in press). Accepted November 2007.
11. Dhamcharee V, Boles RG. FGFR mutations and plagiocephaly. *J Craniofac Surg*. 2008 19:290-1
12. Esani N, Hodgman JE, Esahni N, Hoppenbrouwers T. Apparent Life Threatening Events (ALTE) and SIDS: Comparison of Risk Factors. *J Pediatrics*, 2008; 152: 165-170
13. Londhe VA, Nguyen HT, Jeng JM, Li X, Li C, Tiozzo C, Zhu N, Minoo P. NF-kB induces lung maturation during mouse lung morphogenesis. *Dev Dyn*. 2007 Dec 26; [Epub ahead of print]
14. Kweon SM, Cho YJ, Minoo P, Groffen J, Heisterkamp N. Activity of Bcr GTPase activating domain is regulated through direct protein-protein interaction with RhoGDI. *J Biol Chem*. 2007 Dec 10; [Epub ahead of print]
15. Minoo P, Hu L, Zhu N, Borok Z, Bellusci S, Groffen J, Kardassis D, and Li C. SMAD3 Prevents Binding of NKX2.1 and FOXA1 to The *SpB* promoter Through its MH1 and MH2 Domains. *Nucleic Acid Res* (2007). In Press
16. Ramasamy SK, Mailleux AA, Gupte VV, Mata F, Sala FG, Veltmaat JM, Del Moral PM, De Langhe S, Parsa S, Kelly LK, Kelly R, Shia W, Keshet E, Minoo P, Warburton D, Bellusci S. *Fgf10* dosage is critical for the amplification of epithelial cell progenitors and for the formation of multiple mesenchymal lineages during lung development. *Developmental Biology*. 2007 Jul 15;307(2):237-47.
17. Jain JK, Li A, Yang W, Minoo P, Felix JC. Mifepristone alters expression of endometrial steroid receptors and their cofactors in new users of medroxyprogesterone acetate. *Fertil Steril*. 2007 87(1):8-23. Epub 2006; 10/ 7.
18. Li A, Felix JC, Yang W, Xiong DW, Minoo P, Jain JK. Effect of mifepristone on endometrial matrix metalloproteinase expression and leukocyte abundance in new medroxyprogesterone acetate users. *Contraception*. 2007 Jul;76(1):57-65.
19. Minoo P, Hu L, Chen H, Zhu NL, Li M, Borok Z, and Li C. Physical and functional interactions between the homeodomain NKX2.1 & the winged helix/forkhead FOXA1 in lung epithelial cells. *Mol Cell Biol*, 2007 Mar;27(6):2155-65.
20. Zhu NL, Li C, Huang HH, Sebald M, Londhe VA, Heisterkamp N, Warburton D, Bellusci S, Minoo P. TNF-alpha represses transcription of human Bone Morphogenetic Protein-4 in lung epithelial cells. *Gene*. 2007 May 15;393(1-2):70-80.

21. Ding W, Shi W, Groffen J, Heisterkamp N, Minoo P, and Warburton D. TGF-beta-1-Samd3 signaling crosstalks with receptor tyrosine kinase signaling pathways by transcriptionally and posttranscriptionally down regulating sprouty2 expression and function J. Cell. Physiol. 2007 May 21
22. Unsal-Kacmaz K, Chastain P, Qu P-P, Minoo P, Cordeiro-Stone M, Sancar A, and Kaufmann W. The human Timeless/Tipin complex coordinates an intra-S checkpoint response to UV that slows replication fork displacement. Mol Cell Biol. 2007;3131-42
23. Flodby P, Zhou B, Ann DK, Kim KJ, Minoo P, Crandall ED, Borok Z. Conserved elements within first intron of aquaporin-5 (Aqp5) function as transcriptional enhancers. Biochem Biophys Res Commun. 2007, Apr 27;356(1):26-31.
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25. *Hunter CJ, Upperman JS, Ford HR and Camerini V. Understanding the susceptibility of the premature infant to necrotizing enterocolitis. Ped. Res. 63(2):117-123, February 2008.
26. Hunter CJ*, Podd B* and Camerini V. Evidence versus Experience in Necrotizing Enterocolitis of the Newborn. In Press J of Perinatology. 2008.
27. Upperman JS, Camerini V, Lugo B, Yotov I, Sullivan J, Rubin J, Clermont G, Zamora R, Ermentrout GB, Ford H, and Vodovotz Y. Mathematical Modeling in Necrotizing Enterocolitis - A New Look at an Ongoing Problem. J Ped. Surg., 42(3) 445-453 2007
28. Tablizo MA, Jacinto P, Parsley D, Chen ML, Ramanathan R, Keens TG. Supine sleeping position does not cause clinical aspiration in neonates in hospital newborn nurseries. Arch Pediatr Adolesc Med. 161:507-510, 2007
29. Ramanathan R. Early surfactant therapy and noninvasive ventilation. J Perinatology 27: S 4-S11, 2007
30. Bhatt DR, White R, Martin G, Van Marter LJ, Finer N, Goldsmith JP, Ramos C, Kukreja S, Ramanathan R. Transitional hypothermia in preterm infants. J Perinatology 27:S45-S47, 2007
31. Ramasamy SK, Mailleux AA, Gupte VV, Mata F, Sala FG, Veltamat JM, Del Moral PM, DeLanghe S, Pasa S, Kelly LK, Kelly R, Shia W, Keshot E, Minoo P, Warburton D, Bellusci S. FGF10 dosage is critical for the amplification of epithelial cell progenitors and for the formation of multiple mesenchymal lineages during lung development. Dev Biol, 2007 Jul 15; 307(2): 237-47.

VI/B. BOOK CHAPTERS

1. Friedlich P, Shin C, Seri I, Cardiovascular compromise in the surgical neonate. Seminar in Anesthesia, Perioperative Medicine and Pain, Elsevier 2006; pp 124-135
2. Raab E. Essentials of Normal Newborn Assessment and Care. In: Current Obstetric and Gynecologic Diagnosis and Treatment. 10th Edition. Edited by: Alan DeCherney, Lauren Nathan, T. Murphy Goodwin and Neri Laufer. New York: McGraw Hill; 2007

3. Elisabeth Raab, Lisa Kelly, Philippe Friedlich, Rangasmay Ramanathan, Istvan Seri. Neonatal Respiratory Failure. In: Rogers Textbook of Pediatric Intensive Care. 4th Edition. Edited by: David G. Nichols. Baltimore: Lippincott Williams and Wilkins.
4. Paquette, L and Miller, D. "Retinoblastoma: At risk pregnancy" in *Clinical Ocular Oncology*, Eds. Singh, A., Damato, B., Pe'er, J., Murphree, A., Perry, J., Saunders; 2007
5. Hunter C, Singamsetty V, Camerini V, Upperman J, Prasadarao N, Ford H. Enterobacter sakazakii induces necrotizing enterocolitis (NEC) in vivo by upregulating enterocyte IL-6 production. 2007 J of Amer. Col. Surg., 205 (3), S48.

VI/C. BOOKS

VI/D. ABSTRACTS

1. Villosis MF, Li C, Durand M, Ramanathan R, Kwong KYC, Minoo P. WNT5A: A potential link between inflammation and morphogenesis in bronchopulmonary dysplasia. *J Investig Med* 2007; 55: S98 (January). Presented at the Annual Meeting of the Western Society for Pediatric Research, February 2007
2. Friedlich P, Gonzales J, Keshava H, Nield T, Noori S, Seri I, Gilsanz V. Childhood Carotid Intima Medial Thickening (CIMT) Following Veno-Arterial Neonatal ECMO. APS/SPR, Toronto Canada, May 2007.
3. Guner Y, Friedlich P, Dorey F, Camerini V, Ford H, Upperman J. Mortality from Necrotizing Enterocolitis Is Increased in the Presence of Patent Ductus Arteriosus. APS/SPR, Toronto Canada, May 2007.
4. Bhatia J, Saunders WB, Friedlich P, Lavin PT, Sekar KC, York JM, Ramanathan R. Differences in Mortality among Infants Treated with Three Different Natural Surfactants for Respiratory Distress Syndrome. APS/SPR, Toronto Canada, May 2007.
5. Noori S, Patel D, Friedlich P, Seri I, Siassi B, Ramanathan R. Effects of Low Oxygen Saturation Limits on Closure of Ductus Arteriosus in Extremely Low Birth Weight Infants. APS/SPR, Toronto Canada, May 2007.
6. Patel D, Noori, S, Zamani-Noor, S, Friedlich P, Ramanathan R, Seri I, Siassi B. Effects of Low Oxygen Saturation Limit on Closure of Ductus Arteriosus in Extremely Low Birth Weight Infants. Western Society of Pediatric Research, Carmel, CA 2007
7. Hoppenbrouwers, T. Sandarupa S, Keens T and Hodgman JE. Modifiable SIDS Risk Factors and SIDS in Toraja, Indonesia. Western Society of Pediatric Research, Carmel, CA 2007

8. Bhatt DG, Ramos CG, Parikh AN, White R, Seri I, Ramanathan R. Prevalence of Transitional Hypothermia in Newborn Infants on admission to Newborn Intensive Care Units. PAS/SPR; Toronto, Canada 2007
9. Riley DM, Danielle Kurtz D, Otero M, Schulman B, Moya FR, Seri I. Validation of a Cardiovascular Scoring System to Assess Neonatal Shock. PAS/SPR; Toronto, Canada 2007
10. Chmait RH, D. Miller D, Ouzounian DJ, Ghazaryan A, Yedigaro AL, Seri I, Goodwin TM. Management of high order multiples complicated by TRAP sequence. 17th World Congress on Ultrasound in Obstetrics and Gynecology; Florence, Italy, 2007
11. Chmait RH, D. Miller D, Ghazaryan A, Yedigaro AL, Seri I, Goodwin TM Spontaneous intertwin dividing membranes rupture and membranes detachment in twin-twin transfusion syndrome. 17th World Congress on Ultrasound in Obstetrics and Gynecology; Florence, Italy, 2007
12. Kudchadker, N., Sardesai, S., Siassi, B., Luna, C., Acherman, R., DeGroff, C. Infants of Diabetic Mothers have Cardiac Dysfunction. Annual Meeting of the American Society of Echocardiography, Seattle June 2007.

VII. COMMUNITY OUTREACH

1. Istvan Seri, MD, PhD:

Provides oversight at M&M meetings at referring hospitals

2. Rangasamy Ramanathan, MD

- a. Established USC Medical Student rotations at Good Samaritan Hospital
- b. Provide consultations and moderate for mortality and morbidity conferences at Good Samaritan Hospital and Antelope Valley Hospital.

VIII. INSTITUTIONAL COLLABORATIONS

1. Istvan Seri, MD, PhD and Philippe Friedlich, MD, MSEpi, MBA

Collaboration with the Division of Neonatology at UC San Francisco on the use of sildenafil in neonates with congenital diaphragmatic hernia and pulmonary hypertension unresponsive to iNO treatment (grant in preparation)

2. Rangasamy Ramanathan, MD

- a. Multicenter Clinical Trial: Trial Director and Principal Investigator: Collaborating Institutions: University of San Diego, University of Oklahoma, University of Georgia and Vermont University.
- b. Phase 2 Trial of a new ventilator for automatic control of FiO₂ in collaboration with Dr. Eduardo Bancalari from University of Miami.
- c. Investigator in a multinational study in collaboration with Dr. Haresh Kirpalani from McMaster University, Canada.

3. Parviz Minoo, PhD

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- a) Stewart Anderson, Department of Psychiatry, Weill Medical College of Cornell University, New York, NY
- b) Stephan Glasser, Ph.D., Childrens Hospital, Cincinnati, OH
- c) Shioko Kimura, Ph.D., National Cancer Institute, NIH, Bethesda, MD
- d) Francesco DeMayo, Ph.D., Baylor College of Medicine, Houston, TX
- e) Jonathan Rubenstein, M.D., Ph.D. University of California, San Francisco, CA
- f) Rik Derynck, Ph.D., University of California, San Francisco, CA
- g) Andrew McMahon, Ph.D., Harvard University, Cambridge, MA

4. Smeeta Sardesai, MD, MSEdu

- a. Jack Turman, Jr., Ph.D. Center for Premature Infant Health and Development Dept. of Biokinesiology and PT and Dept. of Cell and Neurobiology
Keck School of Medicine; USC

- b. Krzysztof Ziêba, M.D., Ph.D.
Department of Neonatology
Polish Mother's Memorial Hospital Research Institute
Lodz; Poland

- c. Maria Katarzyna Borszewska – Kornacka, M.D. Kierownik Kliniki Neonatologii AM w Warszawie ul. Karowa 200-315 Warsaw; Poland

- d. Nivedit Kudchadker, M.D. Children's Hospital of Pittsburgh, 3705 Fifth Avenue, Pittsburgh, PA 15213-3605

5. Manuel Durand, MD

- a. Oregon Health & Science University, Portland, Oregon – C. McEvoy, M.D. "In Utero Smoke, Vitamin C and Newborn Pulmonary Function"
- b. Bnai Zion Medical Center, Rappaport School of Medicine, Haifa, Israel – A. Kugelman, M.D.
- c. "Pulmonary Outcome of Newborn Infants with Severe Respiratory Failure" Universidad de Monterey, Conchita Hospital for Women and Children, Monterey, Mexico – V.J. Lara, R. Garza.

IX. RESEARCH GRANTS

1. Parviz Mino, PhD:

- a. NIH, NHLBI
Interactive Mediators of Injury & Development - \$ 1,626,834
RO1, HL073471, Principal Investigator
December 1, 2003 - November 31, 2008

- b. NIH, NHLBI

September 2008

Pulmonary Development: Molecular and Cellular Analysis -
\$ 1,829,625; RO1, HL 56590, Principal Investigator
December 1, 2004 - November 31, 2008

c. NIH, NHLBI

GATA-6: Key Regulator of AEC Transdifferentiation - \$ 1,829,625
RO1, HL038578, Co-Investigator (Z. Borok, Prin. Invest.)
December 1, 2003 - November 30, 2007

d. NIH, NHLBI

Fetal Lung Development: The role of Wnt5a - \$ 1,626,834
RO1, HL073471, Co-Investigator (C. Li, Prin. Invest.)
July 1, 2004 - June 31, 2009

e. NIH, NHLBI

Role of FoxP2 in AEC transdifferentiation - \$ 1,626,834
RO1, HL062569-05 Co-Investigator (Z. Borok, Prin. Invest.)
July 1, 2004 - June 31, 2009

f. NIH, NHLBI

Molecular Basis of Lung Morphogenesis, Injury and Repair - \$10,454,536
PO1, HL 60231: "Molecular morphology & Pathology"- \$324,039
Core B, P. Minoo, PI; April 8, 2005 - April 7, 2010

2. *Changong Li, PhD:*

NIH, NHLBI

Fetal Lung Development: The role of Wnt5a - \$ 1,626,834
RO1, HL073471, Principle-Investigator
July 1, 2004 - June 31, 2009

3. *Istvan Seri MD, PhD:*

NIH/NICDH#HD41149-01

"Twin-Twin transfusion Syndrome Trial – A randomized multicenter trial of
amnioreduction vs selective fetoscopic laser photocoagulation for severe
twin-twin transfusion syndrome". Co-Investigator; Total direct cost:
\$6,244,419.00

Period of support :2001-2007

4. *Lisa Paquette, MD:*

a. Knights Templar Eye Foundation: "Intrauterine Diagnosis and
Management of Familial Retinoblastoma". Principal Investigator;
Award amount: \$30,000.00 for 2005-'07

5. *Manuel Durand, MD:*

a. Principal Investigator

September 2008

Project “Episodes of Hypoxemia in Preterm Infants: Computerized Pulse Oximetry and Pulmonary Mechanics”
Equipment Grant – Neonatal Pulmonary Monitors
Bicore Monitoring Systems
January 2002 – Present
\$30,000

b. Co-Investigator; C. McEvoy, M.D. (PI)
Project “In-Utero Smoke, Vitamin C and Newborn Lung Function”
NIH/National Heart, Lung, and Blood Institute Grant, 1 K23
HL080231-01
September 2006 – August 2011 (Funding approved for 5 years)
Amount of grant: \$675,000

c. Nellcor-Tyco Healthcare
August 2005 – Present
\$20,000

6. Philippe Friedlich, MD, MSc and MBA and Arlene Garingo, MD

Principal investigator and Co-investigator, respectively
“The Use of Telemedicine in the NICU” – UniHealth Foundation
February 2006 – January 2010
\$ 895,000

X. INVITED PRESENTATIONS

1. Istvan Seri MD, PhD

- “*Blood Pressure Management in the Critically Ill Neonate*” - The Conference for Neonatology; Orlando, FL (February 8-10, 2007)
- “*Decision Making at the Limits of Viability*” – Grand Rounds, St. Joseph’s Medical Center, Burbank, CA (January 23 , 2007)
- “*Neonatal Shock: Case Presentations*” - The Conference for Neonatology; Orlando, FL (February 8-10, 2007)
- “*Neonatal Hemodynamics*” – Course Director, IPOKRaTES Course; Lecco, Italy (April 10-12, 2007)
- “*Principles of Developmental Cardiovascular Physiology*” – IPOKRaTES Course; Lecco, Italy (April 10, 2007)
- “*Definition of Neonatal Hypotension*” – IPOKRaTES Course; Lecco, Italy (April 10, 2007)
- “*Developmentally Regulated Actions of Vasopressors, Inotropes and Lusitropes*” – IPOKRaTES Course; Lecco, Italy (April 11, 2007)
- “*Pathophysiology and Treatment of Neonatal Shock*” – IPOKRaTES Course; Lecco, Italy (April 11, 2007)
- “*Pathophysiology and Treatment of Vasopressor-Resistant Hypotension*” –

- IPOKRATES Course; Lecco, Italy (April 12, 2007)
- “The Micropremie: How Small is too Small?” – Evidence versus Experience in Neonatology, 4th Annual Meeting; Chicago, IL (June 23, 2007)
 - “Hypotension in the very preterm infant” – Invited Speaker, Grand Rounds at Glendale Memorial Hospital, Glendale, CA (June 25, 2007)
 - “Fluid and Electrolyte Homeostasis of the VLBW infant” – Invited Speaker at the Annual Conference on “Ventilatory and Hemodynamic Management of the Neonate”; Clinica Alemana, Desarrollo University; Santiago, Chile (July 5, 2007)
 - “Hypotension in the preterm infant. Definition, diagnosis and management” – Invited Speaker at the Annual Conference on “Ventilatory and Hemodynamic Management of the Neonate”; Clinica Alemana, Desarrollo University; Santiago, Chile (July 6, 2007)
 - “*Systemic and Pulmonary hemodynamic effects of Vasopressor-Inotropes and Inotropes in the Neonate*” – Invited Speaker at the Annual Conference on “Ventilatory and Hemodynamic Management of the Neonate”; Clinica Alemana, Desarrollo University; Santiago, Chile (July 5, 2007)
 - “*Neonatal Shock: Pathophysiology and Management*” – Invited Speaker at the Annual Conference on “Ventilatory and Hemodynamic Management of the Neonate”; Clinica Alemana, Desarrollo University; Santiago, Chile (July 6, 2007)
 - “*Definition of Hypotension in the VLBW Neonate during the Transitional Period*” – Invited Speaker, AAP District VIII Perinatal Section Meeting; Albuquerque, NM (July 14, 2007)
 - “*Neonatal Hypotension and Treatment*” – Invited Speaker, AAP District VIII Perinatal Section Meeting; Albuquerque, NM (July 14, 2007)
 - “*Treatment of Neonatal Shock in the VLBW Neonate during the First Postnatal Week*” – Invited Speaker, “Pediatric Best Seminar 2007 in China”, Shenzhen, Shanghai and Beijing, China (August 4,6 and 8, 2007)
 - “*Principles of Developmental Cardiovascular Physiology and Developmentally Regulated Mechanisms of Action of Vasopressors and Inotropes*” – IPOKRATES Course; Guadalajara, Mexico (October 1, 2007)
 - “*Definition and Treatment of Low Systemic Blood Flow and Hypotension during the First Postnatal Week*” – IPOKRATES Course; Guadalajara, Mexico (October 1, 2007)
 - “*Case Presentations of Neonates with Cardiovascular Compromise*” – IPOKRATES Course; Guadalajara, Mexico (October 1, 2007)
 - “Pathophysiology and Treatment of Vasopressor-Resistant Hypotension in the Neonate” – IPOKRATES Course; Guadalajara, Mexico (October 2, 2007)
 - “*Treatment of Low Systemic Blood Flow in the VLBW Neonate During the First Post Natal days: What Is The Evidence?*” – 20th Annual Phoenix Conference, Phoenix, AZ (November 2, 2007)
 - “*Vasopressor Resistant Neonatal Shock: Definition and Treatment*” – 20th Annual Phoenix Conference, Phoenix, AZ (November 2, 2007)
 - “*Definition and Treatment of Hypotension and Low Systemic Blood Flow in VLBW Neonates During the Transitional Period*” – Visiting Professor, University of Texas; Southwestern, Dallas, TX (December 11, 2007)
 - “*Treatment of Neonatal Hypotension During the First Postnatal Week*” – Visiting

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Professor, University of Texas; Southwestern, Dallas, TX (December 12, 2007)

2. Rangasamy Ramanathan, MD

- January 9, 2007 Pediatric Grand Rounds, Women's and Children's Hospital, LAC+USC Medical Center, Keck School of Medicine, USC, Los Angeles, CA. "Elective Cesarean Delivery: A Neonatal Hazard?"
- January 10, 2007 Critical Care Conference, Childrens Hospital Los Angeles, Keck School of Medicine, USC, Los Angeles, CA. "BPD: Pathogenesis, prognosis and treatment options"
- February 20, 2007 Neonatology Conference, Phoenix Children's Hospital, Phoenix, Arizona. "Choosing a Right Surfactant for treatment of RDS"
- February 21, 2007 Neonatology Conference, Banner Good Samaritan Regional Medical Center, Phoenix, Arizona. "Choosing a Right Surfactant for treatment of RDS: Pathophysiology and therapeutic options in 2007"
- February 21, 2007 Neonatology Conference, Banner Children's Hospital, Phoenix, Arizona. "Choosing a Right Surfactant for RDS Rx: Natural vs Synthetic, Prophylaxis vs Rescue Definitions and issues"
- April 2, 2007 Neonatology Conference, Children's Mercy Hospitals and Clinics, University of Missouri Kansas City School of Medicine, Kansas City. "Choosing a Right Surfactant for RDS Treatment"
- May 17, 2007 Annual Perinatal Day Symposium, Maria Fareri Children's Hospital, Westchester Medical Center, Valhalla, New York. "Lung Protective Ventilatory Strategies"
- June 22-23, 2007 Chair/Invited Speaker/Moderator: 4th Annual Evidence vs. Experience in Neonatal Practices Conference, Chicago. "Protecting the Preterm Lung: Lung Protective Ventilatory Strategies"
- August 2, 2007 Georgetown University Medical Center, Georgetown, Washington, DC. "Choosing the Right Surfactant for RDS Treatment based on Evidence"
- August 3, 2007 Neonatology Grand Rounds, Georgetown University Medical Center, Georgetown, Washington, DC. "Inhaled Nitric Oxide (iNO) in Preterm Infants: Is it Time to say to NO to iNO?"
- August 3, 2007 Neonatology Grand Rounds, Georgetown University Medical Center, Georgetown, Washington, DC. "Inhaled Nitric Oxide (iNO) in Preterm Infants: Is it Time to say to NO to iNO?"
- August 14, 2007 Pediatric Grand Rounds, Women's and Children's Hospital, Keck School of Medicine of USC, Los Angeles, CA. "First Assisted Breath in Preterm Infants: Sustained Inflation or CPAP?".

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- September 6, 2007 Neonatology Presentation, Miami, Florida. "Options when choosing Surfactants for RDS in 2007".
- October 22, 2007 Invited Speaker: Neonatology Presentation, Grand Rapids, Michigan. "Choosing a Surfactant: Factors to consider".
- October 23, 2007 Neonatology Presentation, University of Nebraska Neonatologists, Omaha, Nebraska. "Choosing a Right Surfactant for RDS management".
- October 24, 2007 Neonatology Presentation, University of Iowa Neonatologists, Des Moines, Iowa. "Choosing a Surfactant: Factors to consider".
- November 27, 2007 Pediatric Conference, Kaiser West LA, Los Angeles, CA. "Neonatal Sepsis; Diagnosis and management considerations".
- November 28, 2007 Wake Med Health & Hospitals, University of North Carolina, Raleigh, NC. "RDS: Factors to consider when selecting a Surfactant".
- November 29, 2007 Carolinas Medical Center, Charlotte, NC. "Surfactant Therapy for RDS: How to choose based on Evidence".
- January 31, 2007 Meet the Professor Seminar: Philippine Society of Newborn Medicine, 1st National Convention on Neonatal Medicine, Manila, Philippines.
- February 1, 2007 Philippine Society of Newborn Medicine, 1st National Convention on Neonatal Medicine, Manila, Philippines. "Baby's Breath: Issues, Trends and Controversies". "Radical View of Oxygen: when is less more?" and "Reducing the hazards of Ventilation in the NICU: Lung Protective Strategies"
- February 2, 2007 Philippine Society of Newborn Medicine, 1st National Convention on Neonatal Medicine, Manila, Philippines. "Baby's Breath: Issues, Trends and Controversies". "The New BPD" and "Respiratory Control and Apnea"
- April 17, 2007 Visiting Professor: Newborn Intensive Care Unit, P Universidad Catolica de Chile, Santiago, Chile. "Ventilatory Strategies to reduce lung injury"
- April 19, 2007 Visiting Professor: Newborn Intensive Care Unit, Clinica Indisa, Santiago, Chile. "Case Presentations and discussion on case management in NICU patients"
- April 20, 2007 IV Cursos International de Pediatria, Departamento de Pediatria Facultad de Medicina Pontificia Universidad Catolica de Chile, Santiago, Chile. "Oxygen: how much is too much?"
- April 20, 2007 IV Curso International de Pediatria, Departamento de Pediatria Facultad de Medicina Pontificia Universidad Catolica de Chile, Santiago, Chile. "Choosing a Right Surfactant for RDS Rx"
- May 6, 2007 Continuing Medical Education Satellite Symposium: RDS Treatment: A Fresh look. Toronto, Canada. "Mortality and Cost-Benefit as a measure of Surfactant Efficacy"

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- May 22, 2007 XIII Congresso Nazionale della Societa Italiana di Neonatologia, Rimini, Italy: "Mortality and Cost Benefit as a measure of Surfactant Efficacy"
- June 9, 2007 Moderator/Invited Presentation: 22nd International Workshop on Surfactant replacement, Ancona, Italy. "Effect of low oxygen saturation limits on closure of ductus arteriosus"
- July 18-20, 2007 Invited Speaker/ Moderator: 2nd International meeting of Mexican Perinatology and Neonatology Society and The Mexican Pediatric Society, Mexico City, Mexico. Satellite Symposium with simultaneous telecast to Guadalajara and Monterrey, Mexico. "Neonatal Sepsis: How to rule in or rule out?"; Pedregal, Mexico City: "Workshop on conventional mechanical ventilation"; " Ventilatory Strategies to Protect the Newborn Lung"; "Surfactant Therapy: Evidence Based Approach"; "Permissive Hypoxemia or Normoxemia in Preterm Infants".
- September 11, 2007 Chairman/Moderator: Free Communications, 8th World Congress of Perinatal Medicine, Florence, Italy.
- September 11, 2007 Invited Speaker: 8th World Congress of Perinatal Medicine, Florence, Italy. "Necrotizing Enterocolitis Prevention: Antenatal Steroids, Breast Milk, and Pre- and Probiotics"
- October 6, 2007 Invited Speaker / Moderator: 4th Annual Round Table Meeting of the Curosurf Clinical Club/Workshop at the European Society of Neonatology and ESPR meeting: Prague, Czech Republic. "Meconium Stained Amniotic Fluid: Intrapartum and Postnatal Management", "Delivery Room Management of Preterm Baby", "Choosing a Right Surfactant: Synthetic or Natural Based on Evidence".
- October 7, 2007 European Society for Pediatric research (ESPR) meeting, Prague, Czech Republic. "Mortality Differences among Preterm Infants treated with Three Different Natural Surfactants: Analyses from a Large National Database".
- October 10, 2007 Invited Faculty/Scientific Committee Member: PhD Thesis Defense for Dr. Boris Kramer, University of Maastricht, Minderbroedersberg, The Netherlands.

3. Philippe Friedlich MD, MSEpi

- 1) Modulation of Neonatal Pulmonary Hypertension: New Insights. Neonatal/Pediatric Care Update. California Society for Respiratory Care Meeting. Miller's Childrens Hospital Long Beach, California. February 23, 2007.
- 2) Predicting outcomes in neonatal pulmonary hypertension. The role of clinical and logistic modeling. Pediatric Grand Round. University of Minnesota. March 14, 2007.

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- 3) Modulation of Neonatal Pulmonary Hypertension: New Insights. Childrens Hospital Fresno. Fresno California. March 15, 2007.
- 4) Fetal Circulation and neonatal pulmonary hypertension. Pediatric Residency Program, Childrens Hospital Los Angeles, April 20, 2007.
- 5) The Remote Expert Neonatologist: Anywhere, Anytime. Annual Perinatal Advisory Council: Leadership, Advocacy and Consultation (PAC-LAC) Meeting. Burbank California June 7, 2007.
- 6) Management of the pre-ECMO patient, CHLA ECMO course, October 2, 2008
- 7) Veno-Arterial ECMO. CHLA ECMO course, October 2, 2008
- 8) Congenital Diaphragmatic Hernia: Strategies to Optimize Outcomes. Pediatric Grand Rounds, Women's and Children's Hospital, LAC-USC Medical Center, Los Angeles California, October 9, 2007.

4. Smeeta Sardesai, MD, MEdu

1. March 7, 2007; Winter School of Zakopane, Poland "Iatrogenic complications in Neonates".
2. March 7, 2007; Winter School of Zakopane, Poland "Resuscitation: What's New?"
3. Sept. 21, 2007; Radiology Congress, Poland "Imaging in Neonatal Cholestasis."
4. Nov. 16, 2007; Princess Anna Hospital, Warsaw, Poland. "Hemangiomas: When to Worry?"
5. Nov. 17, 2007; V symposium on Neonatal Surgery, Warsaw, Poland. "Iatrogenic Injuries in the NICU."
6. Dec. 13, 2007; International Neonatology Forum, Pune, India, "Neonatal exchange Transfusion"

6. Kate Dhamcharee, MD

1. OB/GYN Grand Rounds, USC: Fatty acid oxidation disorder and acute liver disease in pregnancy