

In the FOREFRONT

from St. Christopher's Hospital for Children

Winter 2009



Maria Delivoria-Papadopoulos, M.D., Chief of the Section of Neonatal-Perinatal Medicine; Professor of Pediatrics, Drexel University College of Medicine; and, Endla K. Anday, M.D., Clinical Director of Neonatal Services in the NICU; Professor of Pediatrics, Drexel University College of Medicine, tending to a patient in the NICU.

Neonatology: Big Services for the Littlest Patients

With a Level III Neonatal Intensive Care Unit (NICU), St. Christopher's Hospital for Children provides comprehensive care for extremely high-risk newborn infants and those with complex and critical illnesses. "What we offer here is hope to parents and families who have desperately ill infants," says Maria Delivoria-Papadopoulos, M.D., Chief of the Section of Neonatal-Perinatal Medicine; Professor of Pediatrics, Drexel University College of Medicine. "Even when cases look like they have no chance of success, our goal is to give these infants every opportunity for survival."

"The types of cases we deal with range from cardiorespiratory instability to brain injury," adds Endla K. Anday, M.D., Clinical Director of Neonatal Services in the NICU; Professor of Pediatrics,

continued on page 3

Inside This Issue

Neonatology

Neurosurgery

International Services

Neurology

Washington Township

BREAKTHROUGH

DISCOVERIES IN

MEDICAL RESEARCH

FOR CHILDREN

Published by
St. Christopher's Hospital
for Children

3601 A Street
Philadelphia, PA 19134
215-427-5000

www.stchristophershospital.com

Neurosurgical Interventions Supported with Collaborative Treatment

The Section of Neurosurgery utilizes a multidisciplinary approach to intervention and care.

For pediatric patients who require surgical interventions for problems related to the skull, brain, spinal cord and peripheral nerves, the Section of Neurosurgery at St. Christopher's Hospital for Children offers experienced, comprehensive treatment.

When treating the wide range of complex diseases and problems addressed in this specialty, the Section of Neurosurgery often utilizes a multidisciplinary approach. "We are a full-service neurosurgery program," says Joseph H. Piatt, Jr., M.D., F.A.A.P., Chief of the Section of Neurosurgery; Professor of Pediatrics, Drexel University College of Medicine. "In addressing neurosurgical interventions, they have to be put in the context of the child's other needs and sequenced in a sensible way."

One example of this collaborative approach is St. Christopher's program for children with cerebral palsy who have difficult-to-manage spasticity and involuntary movement disorders. The program is staffed by an orthopaedist, a neurologist, a physical and occupational therapist and a social worker. "There are a number of neurosurgical interventions that are sometimes appropriate, and they have to be coordinated with drug management and orthopaedic measures. The concept of this program is to provide coordinated, multidisciplinary care," says Dr. Piatt.

Procedures offered through the cerebral palsy program include pump implantation for continuous intrathecal baclofen and dorsal rhizotomy, in which the staff has extensive experience, says Dr. Piatt.

The Section of Neurosurgery also provides services through the following multidisciplinary programs:

- ▶ The Spina Bifida Clinic for spina bifida and other forms of spinal dysraphism, which is run by a developmental pediatrician and staffed by specialists in urology, orthopaedics and neurosurgery
- ▶ The Cleft and Craniofacial Clinic, where neurosurgical evaluation occurs jointly with two fellowship-trained and experienced pediatric craniofacial plastic surgeons, a pediatric dentist and an oral surgeon
- ▶ The Pediatric Epilepsy Program, in association with neurologists, when epilepsy surgery or the vagus nerve



Joseph H. Piatt, Jr., M.D.,
F.A.A.P., Chief of the
Section of Neurosurgery;
Professor of Pediatrics,
Drexel University College of
Medicine; and, epileptologist
Divya Khurana, M.D.;
Associate Professor of
Pediatrics and Neurology,
Drexel University College
of Medicine

stimulator is necessary for medically intractable epilepsy

- ▶ Brain tumor treatment, which uses children's oncology protocols in collaboration with a specialized neurooncologist at St. Christopher's and radiation therapy specialists at Hahnemann University Hospital
- ▶ St. Christopher's Level I Trauma Unit

The Section of Neurosurgery also provides state-of-the-art treatment that combines surgical expertise and medical advances for patients ranging from infants

Hospital Services Within Reach of Children Worldwide

The pediatric expertise of St. Christopher's is now accessible to patients around the world who may be needlessly suffering from conditions that can be treated here.

For some pediatric patients, the challenge is not in making the diagnosis or executing the treatment, but simply in having the necessary services available when needed. To help make expert pediatric diagnosis and treatment more accessible to all children, St. Christopher's Hospital for Children has partnered with outside organizations to facilitate worldwide access to the hospital's 270 pediatric specialists.

When these organizations identify a patient who can be served at St. Christopher's, Renée Edwards, coordinator of patient services and international affairs, works to facilitate appropriate medical services.

Edwards also assists accompanying families by identifying long-term housing, interpreters and services such as banking and dining to help them live comfortably here for periods of two to three months. Upon a patient's departure, she works with the

family's embassy to coordinate shipment of medical supplies necessary for continued care at home.

St. Christopher's recently coordinated the evaluation and treatment of a 9-year-old girl from the Middle East who was failing to thrive. Gastroenterologists inserted a gastric tube that reduced her reflux and allowed for weight gain, neurologists helped manage her seizures, and an orthopaedic surgeon recommended braces to assist with balance and allow her to sit in a wheelchair.

"We are able to comprehensively deliver not only an evaluation and appropriate treatment, but also a manageable program for patients that they can continue when they return home," said Peter D. Pizzutillo, M.D., Chief of the Section of Orthopaedic

"We are able to comprehensively deliver not only an evaluation and appropriate treatment, but also a manageable program for patients that they can continue when they return home."

Peter D. Pizzutillo, M.D.
Chief of the Section of Orthopaedic
Surgery and Director of The
Orthopaedic Center; Professor of
Orthopaedic Surgery and Pediatrics,
Drexel University College of Medicine



“In addressing neurosurgical interventions, they have to be put in the context of the child’s other needs and sequenced in a sensible way.”

Joseph H. Piatt, Jr., M.D., F.A.A.P.
Chief of the Section of Neurosurgery;
Professor of Pediatrics, Drexel University
College of Medicine

to young adults under 21 years of age for the following reasons:

- ▶ Hydrocephalus, utilizing CSF shunt placement or endoscopic intraventricular surgery
- ▶ Chiari malformations and syringomyelia
- ▶ Brain injury and pediatric craniospinal trauma
- ▶ Brachial plexus reconstruction after birth injury, in which Dr. Piatt has a special interest

Coordinator who is solely dedicated to this section through a grant from the Debbie Romano Memorial Foundation. The coordinator provides the services of a social worker and can offer assistance to neurosurgical patients and their families in areas such as follow-up care, education, housing, finances, transportation or whatever else is necessary to facilitate positive patient outcomes. ■

For a consultation or patient referral to the Section of Neurosurgery, please call 215-427-5196.

Patients of the Section of Neurosurgery also benefit from the services of a Chronic Care

Surgery and Director of The Orthopaedic Center; Professor of Orthopaedic Surgery and Pediatrics, Drexel University College of Medicine.

Other international patients, such as those with cerebral palsy, have also seen an improved quality of life as a result of their visits.

For one wheelchair-bound patient, the muscles and tendons behind his legs were so tight that he couldn’t sit in a wheelchair; he kept sliding out, up to 60 times a day. “We performed a surgical procedure to lengthen the muscles and tendons and now he is able to sit without sliding out of his chair,” said Dr. Pizzutillo. “This not only made it more comfortable for him to be seated, but it made his daily care easier for his parents.”

Offering solutions to the medical challenges of international patients is a natural extension of St. Christopher’s dedication to children, no matter where they live. “Virtually all of the hospital’s services are available to help these patients,” said Edwards. “We can really make a difference in their lives.” ■

**FACULTY
Spotlight**

Neonatal Expert Helped Transform Treatment of Premature Infants

Maria Delivoria-Papadopoulos, M.D., is a standout in the pantheon of physicians who have influenced the treatment of critically ill infants. In fact, NEO, the National Conference for Neonatology, designated her as a “Legend of Neonatology,” an honor bestowed upon fewer than 10 physicians in the country.

Practicing medicine for five decades, Dr. Delivoria-Papadopoulos

has published hundreds of scientific papers and abstracts, and was a pioneer in the use of ventilators to revive premature infants. Her groundbreaking research in oxygenation changed the course of treatment for a condition that at one time claimed the lives of more than 20,000 newborns annually. She has also contributed greatly to knowledge about the mechanisms of brain injury to the fetus and newborn.

Neonatology: Big Services for the Littlest Patients

continued from page 1

Drexel University College of Medicine. “We collaborate with a host of subspecialists to provide a multidisciplinary approach to managing complex medical and surgical problems in the newborn.”

Infants treated in the 30-bed NICU may benefit from the care of experienced neonatologists as well as subspecialists in areas such as surgery, gastroenterology, orthopaedics, endocrinology and plastic surgery.

Some of the specialized services offered include:

- ▶ **Advanced Respiratory Support:** The continuum of critical care services includes mechanical ventilation—including high frequency jet and oscillation ventilation—as well as nitric oxide therapy and surfactant replacement therapy. For babies with conditions such as persistent pulmonary hypertension of the newborn (PPHN), St. Christopher’s Hospital for Children also has an intense, multidisciplinary ECMO program (see sidebar).
- ▶ **Neurology Services:** Newborns suffering from

brain injury, seizures or other neurological issues benefit from an array of specialists, including neurologists, neurosurgeons and neuroradiologists. Twenty-four-hour video EEGs are available for identifying or ruling out seizures. Later this year, the hospital will introduce a Center for Neurodiagnostic and Therapeutic Services that will offer head and whole-body hypothermic neuroprotection.

- ▶ **Extensive Surgical Services:** Surgeries range from cardiothoracic procedures for heart malfunctions to orthopaedic procedures for congenital deformities to bowel repair of damage caused by necrotizing enterocolitis. Surgeons may be able to perform procedures at the incubator in the event an infant is too ill to be moved.
- ▶ **Feeding Program:** St. Christopher’s Hospital for Children is in the process of modifying its feeding program for pre-term infants. The new approach will focus on infant behaviors during feedings to optimize the transition from

ECMO: A Lifesaving Technology

tube feeding to breast or bottle feeding.

- *Clinical Genetics and Dysmorphology:* Staff work closely with families to provide genetic evaluation and counseling in the event of a family history of genetic disorders, suspected genetic abnormalities or birth defects. Advanced testing facilities available at St. Christopher's include a cytogenetics laboratory, metabolic testing and other studies.

"The advantage at St. Christopher's is a family-friendly setting and one in which staff members all know one another at every level of the organization," notes Jane McGowan, M.D., Medical Director of the NICU; Professor of Pediatrics, Drexel University College of Medicine. "Things tend to be a little more personal and a little less chaotic here. And that can make a big difference to a family dealing with the stress of an ill child." ■

For more information about Neonatal Intensive Care Services at St. Christopher's Hospital for Children, please call 215-427-5202.

Dr. Delivoria-Papadopoulos was born and educated in Greece. She chose her field because she was intrigued by the plight of newborns with respiratory distress syndrome, who at that time had no chance of survival.

Dr. Delivoria-Papadopoulos received a post-doctorate degree in physiology at the University of Pennsylvania, where she spent almost 30 years as a faculty member and was responsible for creating the NICU at the university's hospital.

In 1996, she became Chief of Neonatal-Perinatal Medicine at

The sickest newborns have a better chance of life thanks to the availability of extra-corporeal membrane oxygenation (ECMO). "This artificial circulatory support system uses a pump to circulate blood through an artificial lung back into the bloodstream," says Daniel Conway, M.D., ECMO Medical Director; Assistant Professor of Pediatrics, Drexel University College of Medicine. "In cases of heart and lung failure, we have used ECMO with great success."

ECMO provides sufficient oxygen for the infant while simultaneously allowing time for the lungs and heart to rest or heal. It can be used in the event of pneumonia, severe air leak problems or after heart surgery. Most frequently, however, it is used at St. Christopher's Hospital for Children in cases of persistent pulmonary hypertension of the newborn (PPHN). In these instances, oxygen in the newborn's bloodstream is limited because the arteries to the lungs remain constricted after delivery. This condition is more common in term or post-term newborns and in those whose mothers regularly used aspirin or indomethacin during pregnancy. PPHN can be associated with meconium aspiration syndrome, respiratory distress syndrome, group B streptococcal sepsis and asphyxia.

"It's important to refer infants before they get to the point when they need ECMO," says Jane McGowan, M.D., Medical Director of the NICU. "If there's a possibility they'll need it at some point, they should be referred sooner rather than later. We get better results and the infants tolerate transportation better when they're stable."

"Our ECMO program has been in place since 2001," notes Dr. Conway. "It's an intense, multidisciplinary program comprised of specialty nurses, perfusionists, respiratory physicians, surgeons and neonatologists."

"The service is not limited to neonatology," he adds. "The same team cares for patients in the Intensive Care and Cardiac Care Units, giving us substantial breadth and depth."

ECMO services benefit from the participation of Coordinator Dominick Carella, R.N., M.S.N., who has been with the program since its inception. He has developed training programs and strategies for reaching performance excellence measures to ensure the highest quality of service.

"More than 92 percent of infants receiving ECMO services for respiratory support here survive. That's well above the 76 percent national survival rate," says Dr. Conway. "I believe the key to our success is the team management approach we take with each patient." ■

To refer a neonatal or pediatric patient or to consult with the program, please call 1-877-9-ECM04U.



Maria Delivoria-Papadopoulos, M.D.

St. Christopher's Hospital for Children and, with colleagues, created the neonatal and perinatal programs here. She also serves as Professor of Pediatrics, Physiology and Obstetrics/Gynecology at Drexel University College of Medicine.

"St. Chris has a model neonatal and perinatal division and it is a wonderful

environment in which to work," says Dr. Delivoria-Papadopoulos. "St. Chris is truly a jewel."

Her many honors include the Lifetime Achievement Award of the American Academy of Pediatrics, the Virginia Apgar Award, and a Lifetime Achievement Award from healthcare research company Castle Connolly Medical Ltd. ■

To make a referral to the Section of Neonatal Medicine at St. Christopher's Hospital for Children, please call 215-427-5202.

Neurological Services Offer Experience and Innovation

Patients of the Section of Neurology benefit from a scientific approach that incorporates academics and research into clinical care.

The Section of Neurology at St. Christopher's Hospital for Children is one of the area's leading resources for children suffering from acute and chronic disorders of the nervous system. Here, eight neurologists offer expert care based on experience and a scientific approach to clinical care.

"As physicians and educators, we are continually learning from our experiences and our research. And, as we learn, we apply that to our patients," says Agustin Legido, M.D., Ph.D., M.B.A., Chief of the Section of Neurology; Professor of Pediatrics and Neurology, Drexel University College of Medicine.

The Section of Neurology treats 7,000 outpatients annually, and an additional 1,000 inpatients. Epilepsy and seizures comprise about half of the total patient visits.

In the Pediatric Epilepsy Center, a multi-disciplinary team of three

epileptologists, two neuropsychologists, a neurosurgeon, a dietician and a social worker treat patients with refractory epilepsy. Comprehensive evaluation is conducted through both inpatient and outpatient studies of continuous EEG monitoring.

Therapy options include anti-epileptic medications, epilepsy surgery, and alternative treatments such as the ketogenic diet, the low glycemic index diet and the modified Atkins diet. In conjunction with the Section of Neurosurgery, the vagus nerve stimulator has been utilized since 1997 in children as young as three years old. "For patients who have very frequent, very severe seizures, about 50 percent may have a reduction in seizures with the vagus nerve stimulator. They're not necessarily seizure-free, but seizures can be reduced significantly," says epileptologist Divya Khurana, M.D.; Associate Professor of Pediatrics and Neurology,

Drexel University College of Medicine.

This comprehensive approach to care also benefits cerebral palsy patients in a multi-disciplinary clinic.

"Our expertise is in treating spasticity," says Dr. Legido. "We assess these children and decide if the patient needs medication, physical therapy, Botox (botulinum toxin type A) injections in the muscles or a baclofen pump, which we manage with neurosurgery and orthopaedics."

The Section of Neurology also has long-term experience in the treatment and diagnosis of metabolic diseases. The 30-year-old PKU (phenylketonuria) clinic is one of four referral centers for PKU neonatal diagnosis and treatment in Pennsylvania. Expert care is also offered for Maple Syrup Urine Disease (MSUD). "We have a dietician who has worked with metabolic diseases for over 25 years. That's an important aspect of



At work in the mitochondrial lab: Agustin Legido, M.D., Ph.D., M.B.A., Chief of the Section of Neurology; Professor of Pediatrics and Neurology, Drexel University College of Medicine; and, Joseph J. Melvin, D.O., Director of the PKU Clinic; Assistant Professor of Pediatrics, Drexel University College of Medicine.

managing some of these diseases, especially PKU and the mitochondrial disorders," says neurologist Joseph J. Melvin, D.O., Director of the PKU Clinic; Assistant Professor of Pediatrics, Drexel University College of Medicine.

New to the treatment of metabolic diseases is the ability of the section's lab to provide analysis for mitochondrial disorders. The Mitochondrial Disorders Center is one of only five centers in the country equipped to analyze mitochondrial metabolism in mitochondria isolated from fresh muscle biopsy, as well as in frozen muscle and fibroblasts. Additionally, the lab can provide a detailed genetic analysis of mitochondrial disorders.

Also available in the Section of Neurology are services related to:

- ▶ Mental retardation, ADHD and other learning disabilities
- ▶ Tics and movement disorders

- ▶ Muscular dystrophy and other neuromuscular disorders
- ▶ Migraines and other chronic headaches
- ▶ Sleep disorders
- ▶ Newborn seizures, perinatal asphyxia and other neonatal neurological problems

The Section of Neurology continues to incorporate treatment innovations into its clinical care. Soon, a dense-array EEG that uses 128 or 256 electrodes will be used to better localize seizure areas. New drug therapies also are being investigated. "We have published extensively about the role of new anti-epileptic drugs in monotherapy in children with epilepsy," says Dr. Legido. "We review our experience and we do research. That gives you a higher level of quality and expertise of care." ■

For a consultation or patient referral to the Section of Neurology, please call 215-427-5470.

"As physicians and educators, we are continually learning from our experiences and our research. And, as we learn, we apply that to our patients."

Agustin Legido, M.D., Ph.D., M.B.A., Chief of the Section of Neurology; Professor of Pediatrics and Neurology, Drexel University College of Medicine

St. Christopher's Comes to South Jersey

Coming
in March



Pediatric Multispecialty Practice to Open in Gloucester County

St. Christopher's Hospital for Children is making a major commitment to South Jersey children and their families by opening StChris Care, a pediatric multispecialty practice in Washington Township, Gloucester County. The new practice means St. Christopher's advanced care and experienced pediatric specialists will be available closer to home for South Jersey residents. StChris Care at Washington Township will be located at 405 Hurffville-Cross Keys Road. Specialties available at the site will include Cardiology, General Surgery, Neurology, Orthopaedics, Plastic Surgery, Pulmonology and Urology. Besides five examination rooms and a procedure room, the facility will feature a supervised youth activity center that St. Chris patients and families can use.



StChris Care
at Washington Township

affiliated with St. Christopher's
Hospital for Children



To learn more about StChris Care at Washington Township, please call 1-888-STCHRIS.



St. Christopher's Hospital for Children
3601 A Street
Philadelphia, PA 19134

PRESRT STD.
U.S. POSTAGE
PAID
PERMIT # 138
PHILADELPHIA, PA