

# 2014 CANCER PROGRAM ANNUAL REPORT



THE CANCER PROGRAM AND LANASA GRECO CENTER  
FOR CANCER AND BLOOD DISORDERS



CHILDREN'S  
HOSPITAL  
*New Orleans*



## ABOUT LCMC HEALTH

LCMC HEALTH is a Louisiana-based, not-for-profit healthcare system serving the needs of the people of Louisiana, the Gulf South and beyond. LCMC Health has grown from a single hospital in 2005 to a network of four today and is still growing. LCMC currently manages Children's Hospital New Orleans, Touro, New Orleans East Hospital, Interim LSU Hospital and University Medical Center New Orleans, opening Summer 2015.



# 2014

## CANCER PROGRAM ANNUAL REPORT

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### ABOUT THIS REPORT & OUR PATIENTS

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**CHILDREN'S  
HOSPITAL**  
*New Orleans*

# ABOUT CHILDREN'S HOSPITAL NEW ORLEANS

**C** **HILDREN'S HOSPITAL NEW ORLEANS** began as a dream in the minds of a group of very special community leaders about a decade before the hospital became a reality. In the years following World War II, a poliomyelitis epidemic attacked thousands of children, leaving many handicapped. Concerns about these children led the late Elizabeth Miller Robin, a polio victim herself, to establish a rehabilitation hospital for children. The facility opened in 1955.

What makes the hospital unique is the combination of the latest developments in medical treatment and an atmosphere of love and concern for the whole child. Throughout its history, Children's Hospital has served as a teaching facility where faculty from the Louisiana State University Health Sciences Center forms a strong pediatric teaching program. In 1976, Children's Hospital was expanded to become a full-service general pediatric hospital. It has since expanded continually to meet the growing healthcare needs of our community.

Today, Children's Hospital is the only full-service pediatric hospital in Louisiana. A 247-bed, not-for-profit regional medical center offering the most advanced pediatric care, the hospital's more than 300 pediatric specialists care for children from birth to 21 years in more than 40 specialties, including life-threatening illnesses, routine childhood sicknesses and preventive care. In 2014, Children's Hospital recorded the following: 5,751 acute/critical care admissions; 56,372 emergency department visits; and 83,784 subspecialty clinic visits.



**Lolie C. Yu, MD**  
*Division Chief*

**2014** has been a very busy year for us. We've seen an increase of about 15-20% in all areas of our program especially in the clinic settings where we have a record of 6,350 clinic visits. With this growth, it is important to note that we need to continue to provide the best standard of care and this can be enhanced by doing quality improvement projects. One of these projects is presented in this report, "the utility of doing peripheral blood culture in patients with febrile neutropenia." Based on our data, it appears that this method needs to continue because it can detect blood stream infections in ~ 7.5% whereas, central blood culture failed to detect these infections. Our results have also prompted us to make some changes in our practice and to continue to gather more data for further analysis.

The other presentation in this report is our experience with pediatric low grade glioma. It shows that outcome for these patients have improved significantly over the last decade due to better neurosurgical techniques, high quality imaging studies and improved chemotherapy regimens. Remarkably, our results compare very favorably with national results.

In August 2014, we saw the launch of the first region-wide cancer care program in Louisiana and southern Mississippi, known as the Gulf South Minority/Underserved NCI Community Oncology Research Program (NCORP). This program is being led by LSUH-SC, New Orleans of which we served the pediatric portion of the program. Other participants include LSU, Shreveport, Mary Bird Perkins Cancer Center, Forrest Medical Center and Gulfport Memorial Hospital.

With this recognition and partnership, we will be able to continue to be supported and funded by NCI and give access to all our patients to take part in clinical trials.

As I have previously indicated that for most if not all patients, clinical trials provide the best means for accessing a new cancer therapy. We will continue to strive to provide our patients with the best available treatment options for their diseases.

## OUR CANCER PROGRAM

**T**HE CANCER AND BLOOD DISORDERS PROGRAM at Children's Hospital comprises the largest group of pediatric hematology and oncology physicians and nurses in the Gulf South dedicated exclusively to the comprehensive treatment of all types of malignancies and blood disorders including leukemia, anemia and hemophilia, among many others. They work side by side with a medical staff of more than 300 pediatric specialists, including pathologists, radiologists, oncology surgeons and neurosurgeons. Our pediatric experts realize that caring for children with malignancies and blood disorders commands a delicate balance of medical care and emotional support. Support for patients and their families is provided by child psychiatrists, psychologists and social workers. Other members of the multidisciplinary team include bone marrow transplant coordinators, pharmacists, dietitians, laboratory technologists, and physical, occupational, speech and hearing, music and recreation and child life therapists, who provide compassionate comprehensive "total care" for the child and family.

The Center for Cancer and Blood Disorders at Children's Hospital is approved/accredited by: ■ **American College of Surgeons (ACoS), Commission on Cancer (CoC)** as a Pediatric Hospital Cancer Program. Though patient care is our primary focus, Children's Hospital is an active participant in clinical and basic research of childhood cancers and blood disorders. We have received ACoS, CoC accreditation with commendation for the years 2010, 2011, 2012, 2013 and 2014.

■ **Children's Oncology Group (COG)**, a national study group of premier research institutes in the United States and Canada. COG is a National Can-

cer Institute (NCI) sponsored cooperative group of individuals and institutions dedicated to improve the diagnosis and management of children and adolescents with cancer, with the aim of curing every newly diagnosed patient and to assure that every child with cancer achieves the highest quality of life during and following treatment. Most of the malignant tumors and leukemias are treated at Children's Hospital with the same protocols as those of the other 240 COG institutions (i.e., St. Jude's Research Hospital, MD Anderson, Johns Hopkins) have adopted throughout the nation. COG has recognized Children's Hospital as the only approved bone marrow transplant program in Louisiana for COG protocol studies.

■ **Louisiana State University Health Science Center (LSUH-SC) and the Stanley S. Scott Cancer Center** have been members of COG for more than 20 years. This allows the Children's Hospital/LSUH-SC Minority Community Clinical Oncology Program (MCCOP) to offer innovative and up-to-date clinical trials as part of the NCI-sponsored COG.

■ Children's Hospital/LSUHSC School of Medicine is also a **teaching facility** for medical and nursing students and those completing graduate and postgraduate training in other allied health programs. The hospital plays a major





role in the training of general pediatricians and pediatric hematology-oncology fellows. Our program is part of the LSUHSC, Department of Pediatrics.

■ **National Marrow Donor Program (NMDP)** as a pediatric transplant center. Through the NMDP, Children's Hospital has access to the largest worldwide registry of hematopoietic stem cell donors. This affiliation provides patients with the best chance of finding a suitable donor for transplantation.

■ **The Foundation for the Accreditation of Cellular Therapy (FACT)** has accredited our clinical Bone Marrow and Hematopoietic Stem Cell Transplant (HSCT) program and the Cellular Therapy Collection and Processing Facility. We are one of 20 pediatric HSCT programs in the United States to receive FACT accreditation.

## ONCOLOGY SERVICES

### LEUKEMIA

- Acute Lymphocytic/Lymphoblastic Leukemia (ALL)
- Acute Myelocytic/Myeloblastic Leukemia (AML)
- Chronic Myelocytic Leukemia (CML)
- Juvenile MyeloMonocytic Leukemia (JMML)

Our pediatric oncologists develop the treatment plan adequate for each child based on the type of leukemia and the risk factors identified at the time of diagnosis. A full range of treatment modalities, including chemotherapy, bone marrow stem cell transplantation, and radiation therapy is available for children. With today's risk stratification and treatment, the overall survival for some types of leukemia is as successful as 85%.

### LYMPHOMAS

- Hodgkin's Disease (HD)
- Non-Hodgkin's Lymphoma (NHL)

Children and adolescents with Hodgkin's disease and non-Hodgkin's lymphoma are evaluated and treated according to the specific subtype and stage of the disease. The supportive care provided by the members of our medical team helps alleviate the potential complications developed during the cancer treatment.

## BRAIN AND SPINE TUMORS (NEURO-ONCOLOGY)

- Astrocytoma/Glioma
- Medulloblastoma
- Ependymoma
- Primitive NeuroEctodermal Tumor (PNET)
- Germ Cell Tumors (GCT)-Central Nervous System (CNS)
- Atypical Teratoid/Rhabdoid Tumor (ATRT)

Tumors of the central nervous system (brain and spine) constitute the most common solid tumors in children. These children require a comprehensive team of specialists with expertise in the special treatment and management needed for each particular child and the family. For most of these tumors, surgery is the main treatment option. Our team of Pediatric Neurosurgeons offers the latest surgical techniques to accomplish a gross total resection when possible.

## PEDIATRIC NEUROSURGEONS

- Lorie McBride, MD
- Clarence Greene, MD
- O. A. Roberts, MD

Our pediatric oncologists coordinate the multidisciplinary team who contribute to the care of the child with a tumor of the central nervous system.

They recommend the most appropriate oncological treatment: observation with close monitoring after complete resection (for some low grade tumors); chemotherapy (standard or high doses with autologous stem cell rescue) and/or radiation therapy. Our Radiation Oncologist plan a detailed treatment program which is most appropriate for the young patient. Using advanced techniques like Intensity Modulated Radiation Therapy (IMRT) or Gamma Knife, when indicated, this team of specialists provides the care of our patients required within the national guidelines defined by COG. Touro Infirmary, where our patients receive their radiation therapy treatment, is a COG approved institution, and it is under the excellent leadership of our Radiation Oncologist.

### **RADIATION ONCOLOGIST**

- Ellen Zakris, MD

Children's Hospital hosts the best Pediatric Rehabilitation Program in Louisiana and the Gulf region. Our patients with brain and spine tumors receive comprehensive evaluation and treatment plan specifically designed to maximize the potential recovery from these tumors. Members of the Rehabilitation Team include:

- Pediatric Neurologists
- Physical Therapists
- Occupational Therapists
- Speech Therapists
- Child Life Specialists and Therapists
- Music Therapists
- Neuropsychologists
- Nutritionists
- Social Workers

### **SOFT TISSUE SARCOMAS (STS) AND OTHER SOLID TUMORS**

- Neuroblastoma
- Osteosarcoma
- Ewing's Sarcoma
- Rhabdomyosarcoma
- Wilms' Tumor

In close collaboration with our Pediatric Oncologists, The Center for Cancer and Blood Disorders at Children's Hospital offers a multidisciplinary team of specialists represented by the following medical and surgical disciplines:

### **PEDIATRIC SURGERY**

- Charles Hill, MD
- Evans Valerie, MD
- David Yu, MD

### **ORTHOPEDIC ONCOLOGIC SURGERY**

- Stephen Heinrich, MD

### **OTORHINOLARYNGOLOGY (ENT) SURGERY**

- Anita Jeyakumar, MD
- Sohit Kanotra, MD
- Daniel Nuss, MD

### **GENITOURINARY SURGERY (UROLOGY)**

- Aaron Martin, MD
- Joseph Ortenberg, MD
- Christopher Roth, MD

### **PEDIATRIC PATHOLOGY AND TRANSFUSION MEDICINE**

- Tom Carson, MD
- Randall Craver, MD
- Matthew Stark, MD

### **PEDIATRIC RADIOLOGY**

- Chris Arcement, MD
- Jane Congeni, MD
- Marie Louise Haymon, MD
- Kenneth Ward, MD
- Ewa M. Wasilewska, MD

Other pediatric subspecialties including Endocrinology, Nephrology, Infection Diseases, Psychiatry, Cardiology, Gastroenterology, and Allergy and Immunology are available for consultation when the child's oncological care requires it.

### **BONE MARROW AND HEMATOPOIETIC STEM CELL TRANSPLANT PROGRAM**

Bone marrow and Hematopoietic Stem Cell Transplantation (HSCT) have become alternative treatments for many patients as the list of diseases for which HSCT has been considered continues to grow. The sources of stem cells are varied: bone marrow, peripheral blood stem cells mobilized by growth factors or chemotherapy, and cord blood.





COG has recognized Children's Hospital as the only approved bone marrow transplant program in Louisiana for COG protocol studies. This allows patients access to all COG transplant protocols without the need to travel far to get this life saving treatment. A multidisciplinary team of physicians, nurses, social workers, nutritionists, pharmacists, physical therapists, psychologists and blood bank personnel is available, with experience and commitment to the clinical practice and basic science of hematopoietic stem cell transplantation.

Children's Hospital is accredited by the National Marrow Donor Program (NMDP) giving Children's Hospital access to the largest worldwide registry of hematopoietic stem cell donors. This affiliation provides patients with the best chance of finding a suitable donor for transplantation. The Foundation for the Accreditation of Cellular Therapy (FACT) has approved our clinical HSCT program and our cellular therapy collection and processing facility as only one of 20 pediatric HSCT programs in the United States to receive this prestigious accreditation. Children's Hospital/HSCT program is a full member of the Pediatric Blood and Marrow Transplant Consortium (PBMTC) which is the largest forum focused on Pediatric BMT and it is a core member of the NIH-funded BMT-CTN network. This affiliation allows our patients to participate in clinical trials aimed at improving the clinical outcomes of BMT.

More recently, we received approval to be a member of the Primary Immune Deficiency Transplant Consortium (PIDTC) whose aim is to improve the outcome of patients with rare, life-threatening, inherited disorders of the immune system. It is part of the NIH rare diseases clinical research network (RDCRN) and is funded by the National Institute of Allergy and Infectious diseases (NIAID) and the NIH Office of Rare Diseases Research (ORDR).

In order to provide to our patients the most innovative and advanced knowledge and technology, our HSCT program has several firsts:

- **The first HSCT center to implement the use of mesenchymal stem cells (MSC) in transplantation to treat severe refractory graft versus host disease more effectively.**
- **The first program in Louisiana to perform dual cord blood transplantation.**
- **The first program in Louisiana to participate in a clinical study with Celgene to perform transplants**

### **utilizing human placenta-derived stem cells (HPD-SC) in combination with cord blood stem cells.**

For additional information regarding our hematopoietic stem cell transplant program, please contact Dr. Lolie Yu in the Hematology/Oncology department at (504) 896-9740.

## **LATE EFFECTS CLINIC AND SURVIVORSHIP PROGRAM**

With advances in current therapy, 80% of childhood cancer patients will be cured of their disease and become survivors. Currently, there are more than 270,000 pediatric cancer survivors living in the United States. Research has demonstrated that some survivors are at risk for physical and psychological issues related to cancer diagnosis and its therapy. Radiation, chemotherapy and surgery are used to successfully treat childhood cancer and can lead to "late effects." **The Treatment After Cancer and Late Effects (TACLE) Clinic** is Louisiana's first dedicated cancer survivorship clinic under the leadership of Dr. Pinki Prasad. Throughout her fellowship at Vanderbilt University, she conducted research specific to late effects in childhood cancer and is currently involved in the late effects group at COG. The main goals of the TACLE Clinic is to improve the health and well-being of childhood cancer survivors by promoting adherence to a schedule of follow up appointments and routine screening tests, and to educate patients, families, and healthcare professionals about the long term effects of cancer treatment. The clinic meets twice a month. For appointments please call Dr. Pinki Prasad at 504-896-9740.

A visit in the Treatment after Cancer and Late Effects clinic includes:

- An individualized treatment summary
- A complete physical exam and routine laboratory and diagnostic testing as needed
- A review of previous therapy and potential long-term effects
- Guidance from the team on ways to improve quality of life and future health
- Availability of a psychologist to discuss any emotional or cognitive (learning) issues resulting from cancer and its treatment
- An opportunity to participate in research studies that focus specifically on the issues of childhood cancer

## OUTPATIENT CLINIC AND INFUSION AREA

Treatments that once required a child to be admitted to the hospital are now often given on an outpatient basis. Patients visiting the Hematology/Oncology Outpatient Clinic will find themselves in an environment where the comfort and care of the child and family come first. Located in the hospital's Ambulatory Care Center, a separate HEPA-filtered patient suite with private entrance and waiting area has been dedicated for patients with cancer or blood disorders. The outpatient clinic provides the safest conditions for immunocompromised patients. Under the close monitoring and supervision of our Pediatric Hematology-Oncology team, a highly skilled group of nurses, trained in chemotherapy administration, blood products (platelets and red cells) transfusions, and gammaglobulin infusions, cares for our patients with compassion and sympathy.

Our infusion area consists of a large treatment room where the patients may watch TV, play video games, or relax while watching tropical fish in tanks set within the walls of the room—all this to induce a friendlier and non-threatening environment while the child receives chemotherapy infusions, blood product transfusion and other therapies.

The clinic sees on average 40 patients per day and is open Monday through Friday, 8 a.m. to 4:30 p.m.

If the need arises during a clinic visit, patients can be promptly admitted to the hospital's acute care unit, designated specifically for hematology/oncology patients. To better serve our growing patient population, the Outpatient Clinic and Infusion Area has recently had a complete renovation and expansion. For an appointment please contact the Pediatric Hematology/Oncology Office at 504-896-9740.

## LANASA GRECO CENTER FOR CANCER AND BLOOD DISORDERS INPATIENT UNIT

The LaNasa Greco Center for Cancer and Blood Disorders is on the fourth floor of Children's Hospital's West Tower. The inpatient unit boasts of 18 private rooms in a state-of-the-art and comfortable environment for patients and families. Each room, as well as the entire unit, is equipped with high efficiency particle air (HEPA) filtration. This system allows bone marrow transplants to be performed



in any room and is essential to reducing the risk of infection. Accessed through a positive pressure vestibule, the unit allows for the highest level of protection for patients.

The unit, overlooking Audubon Park, also includes a playroom stocked with games, toys, art supplies and computers, and an activity center, where music and recreation therapists can interact with small groups of children for organized play. A parents' lounge is available for those needing peace or respite.

Patients and their families develop a special bond with the staff on the fourth floor, and the staff is committed to helping them cope both emotionally and physically with the side effects and complications associated with disease and treatment.

## HEMATOLOGY SERVICES

The Hematology/Oncology service treats a wide variety of hematologic disorders including sickle cell disease and other anemias, neutropenias, platelet and bleeding disorders. More children with blood disorders come to Children's Hospital for treatment than to any other hospital in the state. They receive the highest level of care from a medical staff experienced in the latest treatments for a full spectrum of disorders.

## **HEMOPHILIA, OTHER BLEEDING DISORDERS, AND THROMBOPHILIA CENTER**

In 2013, the Division of Hematology-Oncology at Children's Hospital received accreditation as a federally-recognized **Hemophilia Treatment Center (HTC)** to provide state-of-the-art comprehensive multi-specialty care to Louisiana children with all types of bleeding and clotting disorders. Furthermore, our Program became an affiliate of the American Thrombosis and Hemostasis Network (ATHN), the leading organization committed to advancing and improving care for individuals affected by bleeding and clotting disorders in the U.S. Through its HTC status and ATHN affiliation, our Division is collaborating with the Centers for Disease Control and Prevention and its Universal Data Collection Program, a national public health surveillance project created to address the needs and improve the health of individuals with hemophilia and other blood disorders. In addition, our Program actively participates in several industry-sponsored clinical trials, with the goal of locally providing the most advanced and up-to-date treatments for our patients.

## **SICKLE CELL DISEASE AND OTHER HEMOGLOBINOPATHIES**

Children's Hospital provides comprehensive management and care for over 300 patients with sickle cell disease. Satellite clinics are located in Baton Rouge, Lafayette and Lake Charles, La. From the time the patients are first identified as having a hemoglobinopathy, they are offered the most progressive treatment available for stroke prevention, iron chelation, retinopathy screening, and monitoring for long-term complications of sickle cell disease. In collaboration with the Blood Banking Services at Children's Hospital, we offer erythrocytapheresis, a method to minimize iron overload in individuals receiving chronic transfusion. We are involved in national collaborative studies which are designed to investigate newer ways of minimizing pain during sickle cell crisis or to lessen the frequency of problems associated with sickle cell disease. In addition to sickle hemoglobinopathies, we also treat individuals who are diagnosed with other hemoglobinopa-

thies like thalassemia, Hemoglobin E, and Hemoglobin C disease. Our involvement in the National Marrow Donor Program and the National Cord Blood Registry permits us to offer transplantation to greater numbers of patients with hemoglobinopathies, who might otherwise have had to forego this treatment option due to the unavailability of a suitable donor. We are currently in an agreement with Celgene to collect and bank cord blood for families whose child has been inflicted with a malignancy or blood disorder—a service often beyond the financial means of many of our families.

## **RESEARCH**

The members of the Hematology/Oncology section of the Department of Pediatrics (LSU and Children's Hospital) have maintained a strong and energetic interest in research, in the effort to improve care and expand knowledge regarding the various disease processes that are encountered by them. One main venue for research has been with the Children's Oncology Group (COG), in which all members of the division participate. Collaboration with other LSUHSC faculty and with research staff in The Clinical Trials Center has also brought exciting and fruitful results.

## **CLINICAL TRIALS CENTER**

The Clinical Trials Center™ (CTC) was established in 1999 to improve healthcare for children and adolescents through the development of new medications and treatments. Our efforts help to create a culture in which safer and more effective drugs and treatments are available for a wide range of health problems. The Clinical Trials Center™ organizes community and hospital-based physicians into a multispecialty research network. The CTC is located in the Research and Education Building on the main campus of Children's Hospital. The 60,000-square-foot, state-of-the-art facility is the permanent home for the Research Institute for Children (RIC), a collaboration between Children's Hospital, LSUHSC and University of New Orleans, which houses some of the region's foremost scientists and clinicians dedicated to pediatric research. The RIC benefits from the ease at which research efforts can be transferred from the laboratory to the bedside.





Support services are essential to providing the infrastructure to conduct research. The CTC provides a full-range of services designed to provide researchers with the tools necessary to conduct clinical trials within the confines of their practice. CTC staff provide complete administrative and clinical support to assist researchers through the protocol lifecycle. Services include, but are not limited to:

- Study procurement
- Protocol review
- Sponsor contract and budget negotiation
- Completion, submission and maintenance of required regulatory documents
- Institutional Review Board submissions
- Coordination of ancillary services
- Confidentiality of record
- Facilities

The clinical facilities and resources at Children's Hospital are available to researchers and study teams. The CTC staff coordinates inpatient and outpatient services to ensure research procedures are performed according to the protocol. For more information visit our website at [www.chnola.org](http://www.chnola.org).

## CLINICAL AND TRANSLATIONAL RESEARCH

Our faculty members have been active as mentors for the summer cancer and/or genetics research programs offered at LSUHSC and the Stanley S. Scott Cancer Center. Some of this year's projects include:

■ **Survivorship Analysis for Adolescents and Young Adults (AYA) with Cancer: Our Experience at Children's Hospital.** Drs. Chittalsinh Raulji (fellow); Amanda Glinky (LSU School of Medicine); Renee Gardner and Pinki Prasad (faculty). A 10 year retrospective study examining our institution's survival data in the adolescent and young adult population and comparing it to national Survival, Epidemiological and End Results (SEER) data. The results of this study are published in this annual report and will be presented at local and regional professional meetings.

■ **Survivorship Analysis for Osteosarcoma and Ewing's Sarcoma in Children and Adolescents at Children's Hospital of New Orleans: Comparison to SEER Data.** Drs. Chittalsinh Raulji (fellow), Hope Pritchett (resident), and Jaime Morales (faculty). The results of this study are published in this annual report and are submitted for publication in a peer-reviewed journal.

■ **Patient Satisfaction with Hurricane Readiness Plan Given to Hematology-Oncology Patients at Children's Hospital New Orleans.** Drs. Chittalsinh Raulji (fellow); Maria C Velez, and Renee Gardner (faculty). This study's aim is to assess the effectiveness of our hurricane plan given to our patients and their families and the barriers encountered at the time of evacuation. The results of this study were presented at our local professional meeting (LSUHSC and School of Medicine).

■ **Optimization of Pain Management Strategies in Children with Sickle Cell Disease and Vaso-occlusive Crises.** The aim of this study is to develop a standardized treatment plan for the management of

these children, including healthcare providers and patients' education to enhance the recognition of signs and symptoms and prompt intervention. Drs. Dana LeBlanc (fellow); Maria C. Velez and Renee Gardner (faculty).

■ **Establishing a Palliative Care Program at Children's Hospital New Orleans.** A collaborative effort to establish a palliative care team at Children's Hospital to provide comprehensive care to children with life threatening or life-limiting diseases. Cori Morrison (faculty).

■ **Development of a Co-morbidity Scale in the Adolescent and Young Adult Population using the AYA Hope Study Data.** Using a population based series of AYA cancer patients to determine the prevalence of co-morbidities by socioeconomic and clinical characteristics. Dr. Pinki Prasad is co-Principal Investigator in this national study in collaboration with the Children's Oncology Group (COG).

■ **Psychological and Neurocognitive Outcomes in Survivors Diagnosed with Cancer as AYA: A Report from the Childhood Cancer Study (CCSS).** The aim of this study is to describe the neurocognitive and emotional functioning among long term survivors of cancer diagnosed during AYA using the CCSS cohort. Dr. Pinki Prasad is co-Principal Investigator in this national study in collaboration with the Children's Oncology Group (COG).

■ **The Utility of Peripheral Blood Cultures in Febrile Pediatric Oncology Patients.** Our primary objective is to assess the frequency of blood stream infections detected by peripheral blood culture when the central line culture is negative in order to determine if the peripheral blood culture is necessary in the evaluation of the pediatric febrile neutropenic patient. Drs. Dana LeBlanc (fellow); Lolie Yu (faculty).

## SCIENTIFIC TRANSLATIONAL RESEARCH

■ **The Role of Myeloid Derived Suppressor Cells in Graft vs. Host Disease in Pediatric Hematopoietic Stem Cell Transplantation.** The aim of this study is to evaluate the role of the immunomodulatory cells (myeloid derived suppressor cells) in pediatric hematopoietic stem cell transplant patients to better understand the etiology of graft vs. host disease and potentially find new therapies for this disease. This research is being conducted in collaboration with the Louisiana Cancer Research Center and is supported by the Hyundai Hope on Wheels Grant Program. Drs. Matthew Fletcher (fellow); Drs. Paulo Rodriguez (Research Mentor) and Lolie Yu (Clinical Faculty Mentor).

■ **Recruitment of Frontocortical MAPK Signaling in Sickle Cell Disease Pan.** LSUHSC Department of Physiology, Alcohol and Drug Abuse Center of Excellence. Dr. Dana Leblanc (Fellow), Scott Edwards, PhD (Research Mentor).

■ **Peritumoral Neuroprotection Induced by Docosahexanoic Acid (DHA) Administration in Experimental in vivo Murine Model of Glioblastoma Multiforme (GBM).** (Received Hyundai Hope on Wheels grant for this project). Drs. Chittal Raulfi (Fellow) Alberto Musto (Research Mentor) and Nicholas Bazan (Research Mentor).



## OUR TEAM OF SPECIALISTS



**LOLIE C. YU, MD, DIVISION CHIEF**

Director, Bone Marrow Transplant Program, Children's Hospital/LSUHSC  
Pediatric Oncologist  
Professor of Pediatrics, LSU Health Sciences Center  
LSU CCOP/Children's Oncology Group (COG) Principal Investigator



**RENEE V. GARDNER, MD**

Director, Sickle Cell Clinics  
Pediatric Oncologist, Children's Hospital  
Professor of Pediatrics, LSU Health Sciences Center



**JAIME MORALES, MD**

Pediatric Oncologist, Children's Hospital  
Director, Bleeding and Thrombosis Clinic  
Associate Professor of Pediatrics, LSU Health Sciences Center



**CORI MORRISON, MD**

Pediatric Oncologist, Children's Hospital  
Assistant Professor of Pediatrics, LSU Health Sciences Center



**PINKI K. PRASAD, MD**

Director, Late Effects Clinic  
Pediatric Oncologist, Children's Hospital  
Assistant Professor of Pediatrics, LSU Health Sciences Center



**MARIA C. VELEZ, MD**

Pediatric Oncologist, Children's Hospital  
Director, Pediatric Hematology-Oncology Fellowship Program  
Professor of Pediatrics, LSU Health Sciences Center

# CANCER COMMITTEE MEMBERS

**Lolie C. Yu, MD**, Professor of Pediatrics, Cancer Committee Chairman, Pediatric Hematology/ Oncology

**Matthew Stark, MD**, Physician Liaison, Pediatric Pathology

**Simone Bienvenu, RN**, Quality Assessment & Improvement

**Cynthia Boudreaux, CTR**, Cancer Registrar

**Chittalsinh Raulji, MD**, Pediatric Hematology/Oncology Fellow

**Randall Craver, MD**, Pediatric Pathology

**Hemant Menghani, MD**, Pediatric Hematology/Oncology Fellow

**Renee Gardner, MD**, Professor of Pediatrics, Hematology/Oncology

**Cherie Hadley, RN**, Pediatric Nurse Coordinator

**Kristen Haugen**, Child Life Specialist

**Anita JeyaKumar, MD**, Pediatric ENT

**Emily Kirk, LSCW**, Social Services

**Marie-Louise Haymon, MD**, Radiology

**Wendy Huval, RHIA**, Director of Medical Records

**Dana LeBlanc, MD**, Pediatric Hematology/Oncology Fellow

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**Lisa Patterson, RN**, Pediatric Nurse Coordinator, Hematology/Oncology

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**Claudette Vicks, RN**, Pediatric Nurse Coordinator, Hematology/Oncology

**Lynn Winfield, RN**, Nurse Manager, Hematology/Oncology

**David Yu, MD**, Pediatric Surgeon

**Ellen Zakris, MD**, Pediatric Radiation-Oncologist

**P**ediatric cancer is a devastating diagnosis that affects the entire family. When a child is diagnosed with cancer, the child and his/her family can experience intense and often overwhelming feelings of anxiety, helplessness, anger, guilt, fear, depression, shock and denial. As part of our comprehensive and multidisciplinary program, the following supportive services are available to all our patients:

## SOCIAL SERVICES

The Pediatric Hematology-Oncology Social Services staff is here to support families during this difficult time. Social workers help patients and families identify their concerns, consider effective solutions, and better cope with the child's illness. Support for families is offered in the form of emotional assistance, coping with the child's illness, sibling support, assistance with school needs, and wish granting organizations. Assistance is also provided in the areas of temporary lodging while the child is receiving treatment, directing families to transportation services, providing forms of financial assistance, referrals to community programs, crisis intervention, discharge planning. Our overall goal is to assist families with problem solving and adjusting to daily life after diagnosis.

## EMOTIONAL SUPPORT

- HOPE Group
- Sunshine Kids
- Super Sibs
- Bec's R&R Fund
- The S.M.I.L.E Project

## LODGING

- **RONALD MCDONALD HOUSE**—provides temporary residence for the families of children receiving treatment in New Orleans area hospitals

## ADDITIONAL SUPPORT PROGRAMS

Coordinating with the child's primary oncologist the child's wish through one of the following organizations:

- **MAKE-A-WISH FOUNDATION**—provides children throughout Louisiana with an opportunity to participate in activities that they might never otherwise have been able to enjoy. For more information: <http://texgulf.wish.org/>
- **DREAMS COME TRUE**
- **CAPS FOR KIDS**—an international non-profit organization dedicated to providing headwear autographed by athletes, entertainers and other notable personalities to children, adolescents and young adults with cancer who lose their hair as a result of their treatment. Caps for Kids was founded in 1993 by Dr. Stephen Heinrich, a pediatric orthopedic oncology surgeon at Children's Hospital. The program now exists at more than 70 hospitals in the United States, four in Canada, and one in Frankfurt, Germany. For more information: <http://www.capsforkids.org>

## PSYCHIATRY/PSYCHOLOGY

The Child Psychiatry and Psychology departments provide comprehensive evaluation and management of emotional and behavioral disorders stemming from the diagnosis of cancer and its treatments. They work closely with the Hematology/Oncology physicians and social workers pioneering multidisciplinary psychosocial conference to ensure the stability of mental health of these patients under stressful conditions. Counseling is provided for patients and families allowing them to freely discuss their concerns regarding the diagnosis, treatment, treatment aftermath, school and other social concerns.

## PASTORAL CARE

Pastoral care services are provided to assist the child and family members as they ask these and other

questions and express their feelings. Our chaplains are on call at all times and in case of emergencies. The chaplain participates in meetings with the staff as an integral member of our team and also participates in family conferences when asked to do so. A non-denominational chapel is located in the main lobby area where the parents, family members, and friends can gather to pray, meditate, or spend some quiet time.

## CHILD LIFE

Using developmentally appropriate play, the dedicated child life staff:

- Promote opportunities for children to understand their new diagnosis
- Adjust to the hospital experience
- Learn effective coping skills and decrease anxiety
- Express themselves
- Maintain normal growth and development
- Encourage mastery and control
- Provide activities for normalization
- Bridge the gap between hospital and home

An attractive playroom, with a view of Audubon Zoo is located on the Pediatric Hematology Oncology unit. Some of the playroom activities during the evening hours include bingo night and music night. Teen Room is a place for hospitalized teens to meet emotional and social needs. The Child Life department is dedicated to improving the quality of life for children facing the many challenges of cancer treatment while they remain hospitalized.

Other activities Child Life staff encourage patients to participate in are:

- Prom of Champions
- Pablove Shutterbugs
- Camp Challenge
- Camp Quality LA
- Paul Newman's Hole in the Wall Gang Camp
- Heart of Passion Weekend retreat
- Sunshine Kids events
- Beads of Courage
- Caps for Kids
- Alicia Rose Victorious Foundation Teen Kits

## THE S.M.I.L.E. PROJECT: STUDENTS MAKING IT A LITTLE EASIER

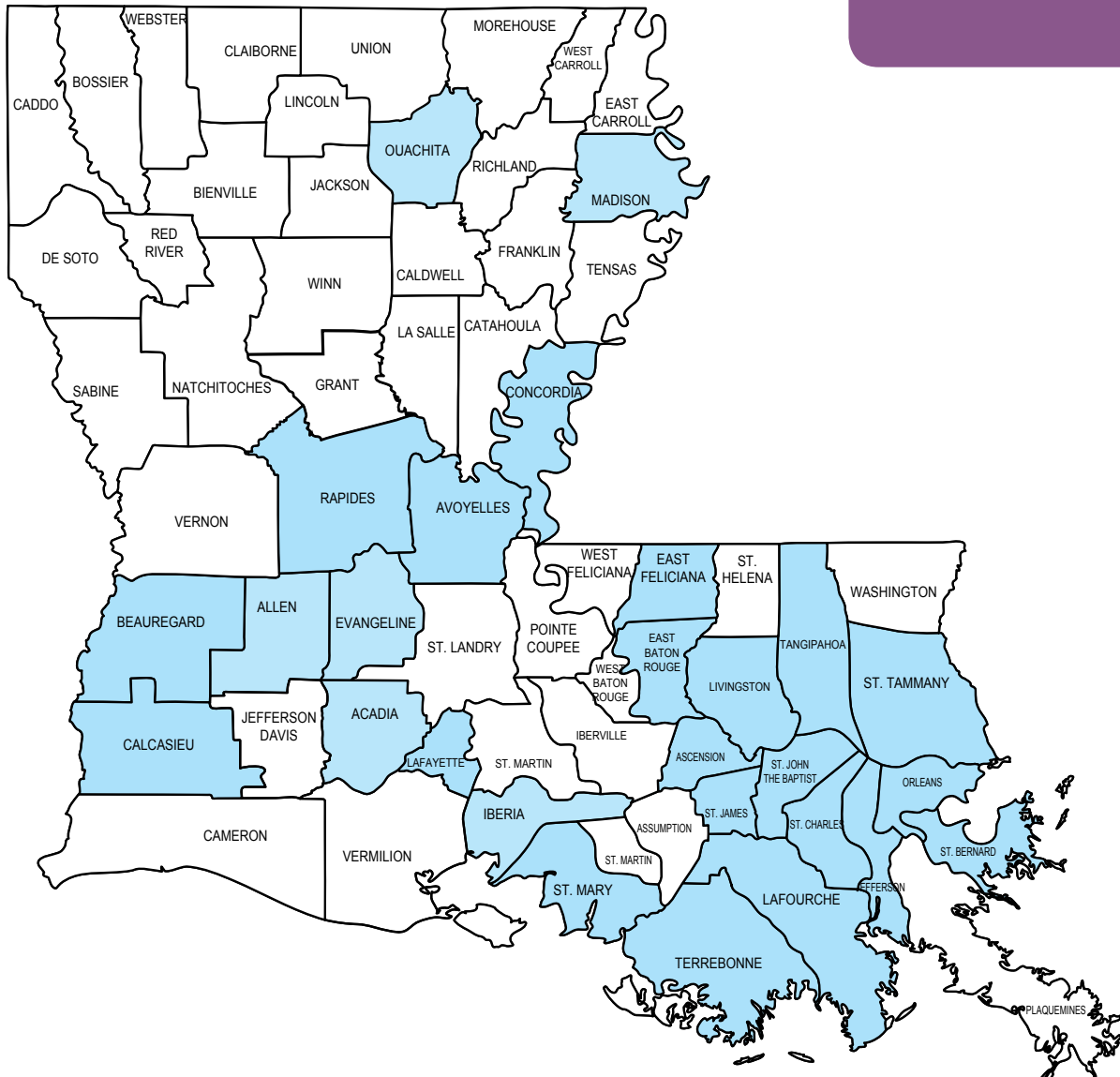
For over a decade now, Children's Hospital has had the only successful SMILE Program in the state. The SMILE Program is a collaboration between Children's Hospital, LSUHSC School of Medicine-New Orleans, and the American Cancer Society. The goal is to pair first-and-second year medical students as "buddies" with children with cancer and their siblings. The buddies then maintain a relationship with the children that are non-medical but emotionally supportive through difficult hospitalizations and treatment. Throughout the year, members of the SMILE program plan theme-specific parties to enjoy time together with the patients while creating crafts and lifetime memories. This has proven to be a very rewarding program for both patients and medical students alike.

## FERTILITY IN CANCER SURVIVORS

As the number of childhood cancer survivors continue to increase with modern treatment modalities, the concern of the survivors, their partners and relatives, as well as their oncology treating team about their fertility has ignited the identification of fertility specialists who help our cancer survivors find answers to their concerns. The LSUHSC Department of Obstetrics and Gynecology under the leadership of Dr. Amy Young offers consultation to our patients when needed. Since January 2011, we have actively offered Sperm Banking Services to our young male patients at the time of diagnosis to cryopreserve sperm for future use if needed.



# PATIENT DATA



## LOUISIANA (PARISHES)

Acadia .....	1
Allen .....	1
Beaugard .....	2
Calcasieu .....	2
Concordia .....	2
East Baton Rouge .....	2
Evangeline .....	1
Iberia .....	1
Jefferson .....	10
Lafayette .....	2

Lafourche .....	2
Livingston .....	1
Madison .....	1
Orleans .....	12
Quachita .....	1
St Bernard .....	1
St. Charles .....	1
St. James .....	2
St. John the Baptist .....	2
St. Mary .....	4
St. James .....	9

Tangipahoa .....	1
Terrebonne .....	4
Mississippi .....	4
<b>MISSISSIPPI (COUNTIES)</b>	
Harrison .....	2
Jackson .....	2



## FELLOWSHIP PROGRAM

The Pediatric Hematology-Oncology and Hematopoietic Stem Cell Transplant Fellowship Program at LSUHSC/Children's Hospital was formally accredited by the Accreditation Council for Graduate Medical Education (ACGME) in 1989. The program is directed by Dr. Maria C. Velez and comprised of faculty members Drs. Gardner, Morales, Morrison, Prasad and Yu. Our program draws individuals from around the country and throughout the world. Graduates of the program have gone on to distinguish themselves in many fields, assuming at times roles of leadership wherever they have gone. The program utilizes the clinical resources and faculty expertise available at Children's Hospital and LSUHSC, New Orleans.

Teaching and patient care take place at Children's Hospital. The program maintains an active partnership with the LSUHSC Stanley S. Scott Cancer Center and the Louisiana Cancer Research Consortium (LCRC). Research activities are conducted through the establishment of partnerships with experienced and capable investigators such as Drs. Augusto Ochoa, Paulo Rodriquez, Nicolas Bazan, Alberto Musto and Scott Edwards. Different rotations for the fellowship are offered in blood banking, hemophilia, bleeding disorders and thrombophilia care, morphology, pathology, HSCT, radiation oncology and hematopathology. Fellows play an integral role in the planning and organization of conferences and lectures. Teaching activities include the Cancer Conference, journal club, protocol reviews, psychosocial conferences, and core lectures. Guest speakers with expertise in different areas of our subspecialty involved in cancer care, both local and national, help round out the fellowship's educational opportunities.

## HOPE GROUP (HEMATOLOGY ONCOLOGY PARENTAL/CAREGIVER SUPPORT GROUP)

Having a child diagnosed with a life threatening disease can be a devastating time in both the child and the caregiver's life. Not only are families faced with financial stressors, but emotional strains may arise as well. In order to provide our families with support, the Hematology/Oncology social workers developed the Hematology Oncology Parental Encouragement Group. The Hope Group's purpose is to create a safe opportunity for caregivers to give and receive emotional and practical support, as well as to exchange information. Meeting with others who share a common experience enables them to not only sympathize, but empathize. Group members can relate to each other's experiences, minimize feelings of loneliness, and learn and/or share new coping strategies. The HOPE Group meets the first Wednesday of each month from 6:00 p.m. to 7:00 p.m. in the second floor conference room at Children's Hospital. Each group is facilitated by two Hematology/Oncology social workers.

# RETROSPECTIVE ANALYSIS OF PEDIATRIC BRAIN TUMORS WITH FOCUS ON LOW GRADE GLIOMA AT CHILDREN'S HOSPITAL NEW ORLEANS: 1994-2013

**CHITTAL RAULJI, MD\*;  
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PINKI PRASAD, MD, MPH; AND MARIA C. VELEZ, MD**

**PEDIATRIC HEMATOLOGY-ONCOLOGY, LSUHSC AND CHILDREN'S HOSPITAL NEW ORLEANS**

*\*Both authors contributed equally as first authors to this paper*

**T**UMORS OF THE CENTRAL NERVOUS SYSTEM (CNS) are the second most common malignancies in children between the ages of 1 to 19 years second only to acute leukemia. Although these tumors account for almost 20% of all malignancies, pediatric brain tumors (PBT) comprise the leading cause of morbidity and mortality in pediatric cancer. In the United States, approximately 3400 new cases are annually diagnosed in patients younger than 20 years<sup>1</sup>. During the past decades, the national incidence of PBT has continued to increase from 13.5 cases per 100,000/year in 1970s to 16 cases per 100,000/year in the 1990s, and remained stable through the 2000's. The worldwide annual incidence of newly diagnosed individuals under the age of 20 years is estimated in about 11 new cases of CNS tumors per 100,000<sup>2-4</sup>. The reasons for this trend are still not well understood.

Existing data strongly indicates that spontaneous mutation is the most common cause of PBT. Certain genetic conditions are known to predispose to brain tumors including Neurofibromatosis type 1 and 2 and Gorlin syndrome, among others; however, fewer than 10% of children diagnosed with PBT have a genetic disorder<sup>5</sup>.

Gliomas, tumors that arise from the glial cells, constitute over 50% of all PBT. The most common glial histological types in children are low grade glioma (LGG): juvenile pilocytic astrocytoma (JPA) and fibrillary astrocytoma (World Health Organization or WHO classification grades 1 and 2). Other common low grade glial histological sub-types include oligodendroglioma, ganglioglioma and optic glioma.

The most common location for PBT is in the posterior fossae or infratentorial region. The optimal

treatment modality for children with tumors of the CNS is still to be clearly defined. However, data from retrospective institutional studies suggest that gross total (GTR) or near total resection of these tumors offers the best opportunity for long-term event free survival and cure<sup>1</sup>. Tumors in the posterior fossae seem to be more amenable for GTR or near total resection.

Other treatment modalities for children include observation when GTR or near total resection is accomplished, adjuvant or neo-adjuvant chemotherapy for those with residual, progressive, or recurrent disease after surgery; radiation therapy; and in some cases, second look surgery. Due to the potential long-term sequelae associated with radiation therapy including neurocognitive defects and neuroendocrine problems, this treatment modality is usually deferred, when possible, until the children are 10 years of age or older<sup>6</sup>. Several chemotherapy regimens are now established as standard of care for children with residual (defined as > than 1.5 cm<sup>3</sup>) or recurrent disease. Examples of these regimens include: carboplatin and vincristine (CV); thioguanine, procarbazine, lomustine, and vincristine (TPCV); or vinblastine weekly<sup>7-9</sup>. These chemotherapy regimens have been developed and investigated in clinical trials within the cooperative group, Children's Oncology Group (COG).

The Children's Oncology Group (COG), a National Cancer Institute supported clinical trials group, is the world's largest organization devoted exclusively to childhood and adolescent cancer research. The COG unites more than 8,000 experts in childhood cancer at more than 200 leading children's hospitals, universities, and cancer centers across North America, Australia, New Zealand, and Europe in the fight against childhood cancer. The faculty members

of the LSUHSC Department of Pediatric Hematology-Oncology and Children's Hospital New Orleans are active members of the COG since its initial organization.

Although CNS tumors have been extensively studied, they still remain a clinical challenge for the pediatric oncologists, neurosurgeons, and radiation oncologists in close collaboration with other members of the pediatric neuro-oncology team (neuroendocrinologist, neuroophthalmologist, neuropsychologist, neurologist, neuroradiologist, nutritionist, child life specialist, and physical medicine and rehabilitation team). These children deserve special attention and care expertly provided here at Children's Hospital New Orleans under the leadership of the faculty physicians in the LSUHSC Pediatric Hematology Oncology Division.

## PURPOSE OF THIS STUDY

The main objective of this study is to determine the incidence and outcomes of children diagnosed with pediatric brain tumors at Children's Hospital New Orleans from 1994-2013, and to compare our data and results to national data and results reported at the Surveillance, Epidemiology, and End Results Program (SEER) and Children's Oncology Group (COG). Because LGG are the most common PBT, we focused our study in this specific population.

As a secondary objective, we will compare the data and results from 1994-2003 to 2004-2013 to determine if a trend in the survival and outcome of children with PBT is found when these results are analyzed per decade of occurrence.

## MATERIALS AND METHODS

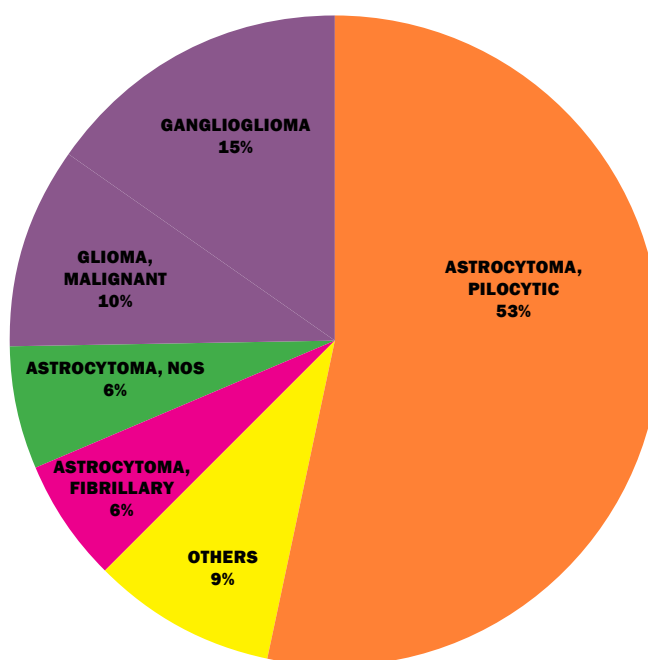
A retrospective analysis of the medical records of subjects diagnosed with low-grade glioma (LGG) (WHO classification grades 1 and 2) diagnosed at Children's Hospital New Orleans (CHNOLA) from 1994-2013 was performed after appropriate Institutional Review Board approval was obtained. The number of cases diagnosed during the study period

was abstracted from the institutional tumor registry after obtaining approval from the Cancer Committee Chair. Internal Classification of Diseases (ICD-9) codes were also used to facilitate the identification of the CNS tumors. During the study period, 275 subjects were identified with the diagnosis of tumors of the CNS at Children's Hospital New Orleans. Out of those, 108 subjects were diagnosed and classified as LGG.

Information was gathered and abstracted from the medical records. These included demographic data (age at diagnosis and race [when available as identified in the record]); location of the tumor (infratentorial or posterior fossa, supratentorial, or spinal cord); histopathological diagnosis with subtype of LGG (pilocytic astrocytoma, fibrillary astrocytoma, ganglioglioma, or others); treatment modality (surgical resection [GTR, near total resection, or biopsy only], observation, chemotherapy regimens if any was needed, or radiation therapy); and outcome.

The data collected and results were statistically analyzed using JMP® software. Overall survival percentages were calculated for all LGG as well as for the identified histological subtypes. For survival analysis, Kaplan Myers estimator was used; for comparison of two survival curves, log rank test was used.

**FIGURE 1: DISTRIBUTION OF DIFFERENT HISTOLOGICAL SUBTYPES OF LGG.**



**TABLE 1. DEMOGRAPHIC DATA OF STUDY SUBJECTS**

		<b>Pilocytic Astrocytoma</b>	<b>Ganglioglioma</b>	<b>Optic Glioma</b>	<b>Fibrillary Astrocytoma</b>	<b>Astrocytoma NOS</b>	<b>Other</b>	<b>All</b>
<b>GENDER</b>	Female	32 (56%)	4 (25%)	4 (36%)	4 (57%)	3 (50%)	2 (20%)	49 (46%)
	Male	25 (44%)	12 (75%)	7 (64%)	3 (43%)	3 (50%)	8 (80%)	58 (54%)
<b>RACE</b>	Caucasian	37 (65%)	11 (69%)	8 (72%)	2 (33%)	4 (57%)	4 (40 %)	66 (62%)
	African American	16 (28%)	5 (31%)	3 (27%)	4 (67%)	2 (29%)	6 (60%)	36 (34%)
	Other	4 (7%)	0 (0%)	0 (0%)	0 (11%)	1 (14%)	0 (0%)	5 (5%)
<b>AGE AT DIAGNOSIS</b>	0-10 years	40 (71%)	9 (56%)	11 (100%)	3 (43%)	5 (83%)	5 (50%)	73 (69%)
	>10 years	16 (29%)	7 (44%)	0 (0%)	4 (57%)	1 (17%)	5 (50%)	33 (31%)
<b>SITE</b>	Supratentorial	11 (19%)	13 (81%)	NA	2 (33%)	6 (86%)	10 (100%)	42 (44%)
	Posterior Fossa	46 (81%)	3 (19%)	NA	4 (67%)	1 (14%)	0 (0%)	54 (56%)

TABLE1. Demographic Data of Study Subjects: Data analysis of subjects by histological subtype of LGG, gender, race, age at diagnosis, and tumor location with absolute numbers and percentage.

## RESULTS

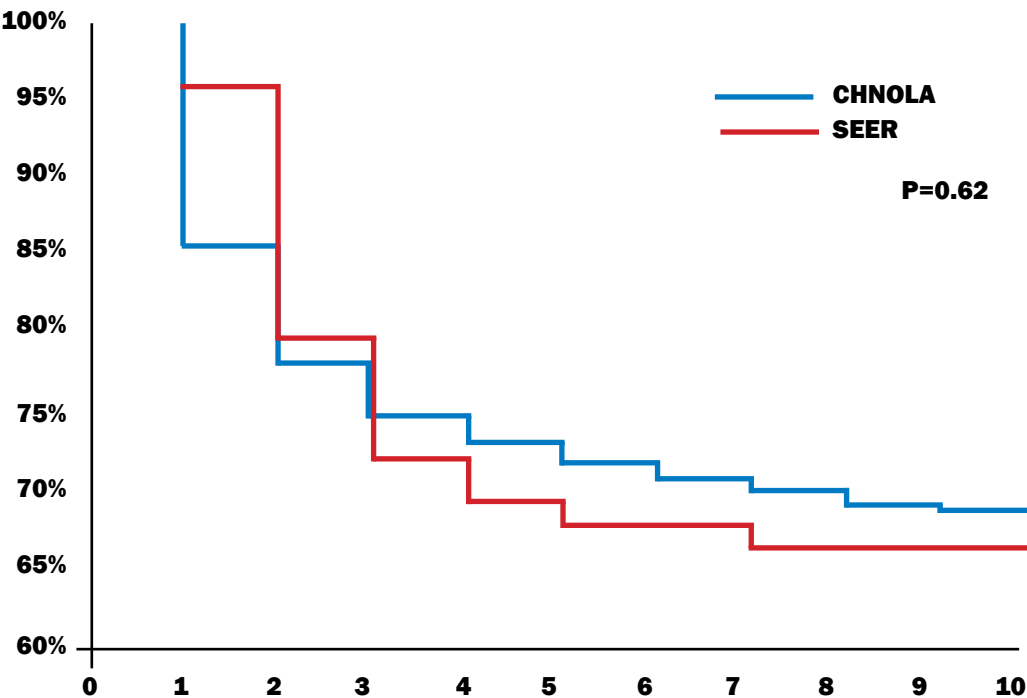
We identified 275 patients who were diagnosed and treated with CNS tumors at Children's Hospital New Orleans during 1994-2013. Out of these, 108 were classified as low-grade glioma (LGG). As shown in figure 1, the most common LGG were pilocytic astrocytoma (53%) followed by ganglioglioma (15%) and optic glioma (11%) respectively. Demographic data are shown in table 1. Most tumors (69%) were diagnosed in children less than 10 years of age with a median age of diagnoses of 6 years (mean: 7 years 3 months; range: 18 days - 20 years). There were 58 (54%) males and 49 (46 %) females for the M:F ratio of 1.2:1. Most patients were Caucasian (62%) or African American (34%) and only 5% were classified as other race. The posterior fossa is the most common location for pilocytic astrocytoma (81%); however, when considering all LGG, 56% were found in posterior fossa while 44% were found in the supratentorial region. Surgery was mainstay of treatment for LGG patients; 79 (73%) patients having undergone either gross total or partial resection. Chemotherapy was the next most common mode of treatment followed by radiation therapy.

The overall survival for all 275 PBT patients at our institution during the study period was 64%; these results are comparable to the reported national SEER survival of 69%. Figure 2 shows comparison

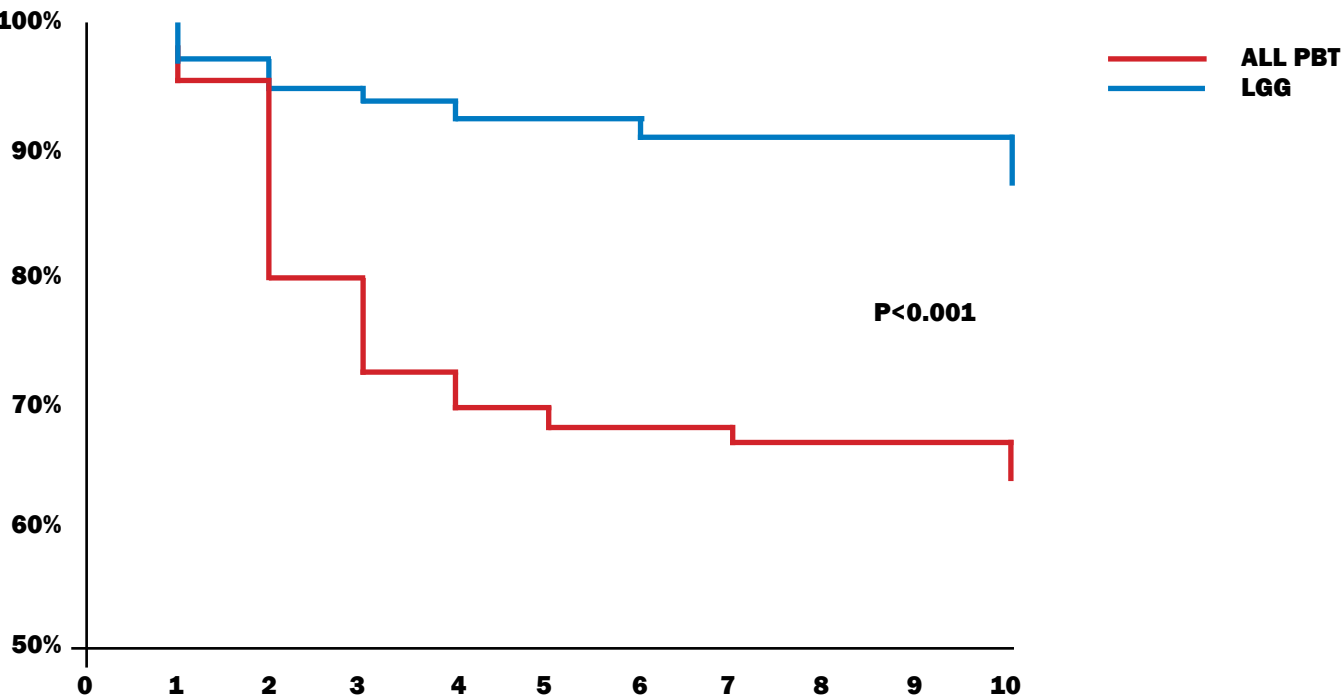
of relative survival-by-survival times for patients at CHNOLA vs. SEER. There was no significant difference in survival between the two groups ( $p$  value = 0.62, log-rank test). The 10 year overall survival (OS) for LGG patients was 87%. The OS for the period of 1994-2003 was 82%, which improved to 94% for the years 2004-2013. Figure 3 shows the survival for LGG when compared to all PBT at Children's Hospital New Orleans; there was a significant difference in survival between these two groups ( $p$  value < 0.01, log-rank test).

Table 2 shows factors affecting survival in LGG patients: gender, race, or location of LGG did not affect survival in our patient cohort. Survival was significantly affected by histological subtype of LGG and extension of surgical resection e.g., if a gross total resection (GTR) was achieved or not. Survival for patients with fibrillary astrocytoma (29%) was significantly lower than the rest of the LGG subtypes ( $p$  value < 0.001). Also of note, patients who had undergone GTR had significantly better survival (98%) with only 1 death reported in this patient cohort. There was a significant difference in survival between patients who received chemotherapy (79%) compared to those who did not receive chemotherapy (95%) due to the fact that most patients who received chemotherapy were not able to undergo GTR of their tumors (not shown in the table).

**FIGURE 2: COMPARISON OF RELATIVE SURVIVAL-BY-SURVIVAL TIMES FOR SUBJECTS AT CHNOLA VS. SEER**



**FIGURE 3: COMPARISON OF SURVIVAL FOR LGG AND PBT AT CHNOLA**





**TABLE 2. FACTORS AFFECTING SURVIVAL IN LGG**

DEMOGRAPHICS		% SURVIVAL	P VALUE
<b>GENDER</b>			0.8242
	Female	90%	
	Male	91%	
<b>RACE</b>			0.0958
	Caucasian	95%	
	African American	83%	
	Others	80%	
<b>SITE</b>			0.4899
	Supratentorial	93%	
	Posterior fossa	89%	
	Optic Nerve	100%	
<b>HISTOLOGY</b>			<0.0001
	Pilocytic Astrocytoma	93%	
	Fibrillary Astrocytoma	29%	
	All others	95%	
<b>TREATMENT</b>			0.003
	Gross Total resection	98%	
	No gross total resection	81%	

*Factors Affecting Survival in LGG. Subjects' extension of tumor resection and histological subtype significantly affect outcome and survival.*

## DISCUSSION AND CONCLUSIONS

When compared with national data (SEER), our patient population shows similar demographic characteristics for children diagnosed with LGG. Most of the children diagnosed with LGG at Children's Hospital New Orleans were diagnosed during their first decade of life<sup>10</sup> with a mean age of 7.25 years. Males are diagnosed slightly more often than females with the M:F ratio of 1.2:1. These results are similar to those observed and reported in the national data (SEER)<sup>5</sup>.

When LGG are further analyzed by subtype, pilocytic astrocytoma (PA) is the most common histological subtype with 53% of children diagnosed with PA. The posterior fossa region is the most common location for PA tumors (81%). Seventy three (73%) of the subjects underwent GTR or near/partial resection. For those who could not undergo GTR or near/partial resection, chemotherapy was the most common mode of treatment. Radiation therapy was used less often than the other treatment modalities. With the development and incorporation of newer chemotherapy regimens

for younger children with LGG, the role of radiation therapy has been reserved for those patients who have subsequently progressed despite different chemotherapy regimens or, even, after second look surgery. The rationale behind the decision of delaying radiation therapy is to minimize potential neurocognitive and neuroendocrine consequences of this modality in the developing brain of a young child<sup>6</sup>.

When we analyzed the data by decade (1994-2003 vs. 2004-2013), there is an increase in the number of children diagnosed with LGG in the second decade of the study period as already reported by SEER (data not shown). The 10 year OS for LGG is 87%; 82% for the period of 1994-2003 with improvement to 94% for 2004-2013. Again, SEER and national data<sup>2</sup> report similar percentages of survival. Improved OS during the second decade of our study period most likely represents better neurosurgical techniques and instrumentation to accomplish more precise tumor resections while minimizing post-surgical neurological sequelae; the role of second-look surgical resection for early recurrence; improvements in neurodiagnostic tests; newer chemotherapy regimens for younger children with residual

or recurrent disease; and novel radiation modalities which aim to reduce the potential and, sometimes, devastating neurological (neurocognitive and neuroendocrine) consequences associated with radiation therapy in a young, developing child.

The risk factors that significantly affected survival in our patient population were histology (fibrillary astrocytoma, WHO grade 2, OS was 29% with p value < 0.001 when compared with other LGG histological subtypes) and the degree of surgical resection accomplished (GTR produced a 98% OS with p value=0.003) with only one death reported in individuals undergoing GTR (histology consistent with fibrillary astrocytoma). For those with near total/partial resection or biopsy only who then required chemotherapy, their OS decreased to 79% (data not shown).

During the past two decades, our institution has continued to accomplish the same advances in the diagnosis, treatment, and ultimate cure of children with tumors of the CNS, also known as PBT. When we compare the overall survival (OS) for our patient population here with the SEER data, there is no significant difference in the OS (p=0.62). These data confirmed that the neuro-oncological care provided for children with PBT produces the same results in terms of outcome and survival as other institutions in the country.

## CONFLICT OF INTEREST: NONE

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# THE UTILITY OF PERIPHERAL BLOOD CULTURES IN FEBRILE PEDIATRIC ONCOLOGY PATIENTS WITH A CENTRAL LINE

**DANA M LEBLANC, MD; CHITTALSIKH RAOULJI, MD;  
NICHOLAS BARTEL, BS; CRUZ VELASCO-GONZALES, PHD; LOLIE YU, MD**

## INTRODUCTION

Febrile neutropenia is a frequently encountered complication among children with cancer and those undergoing hematopoietic stem cell transplant (HSCT). Prompt medical evaluation for the presence of serious bacterial infection is indicated, and mortality has decreased from greater than 20% to 0.3-7% with aggressive management.<sup>1</sup> It must be noted that febrile neutropenia associated with bacteremia and sepsis carries a 9% mortality rate, compared to 2% in febrile neutropenic patients without bacteremia.<sup>2</sup> As such, blood culture is a standard and important component of the evaluation of these patients in addition to careful history and physical exam. Intravenous broad-spectrum antibiotics are initiated empirically until a serious bacterial infection (SBI) can be excluded.<sup>3</sup>

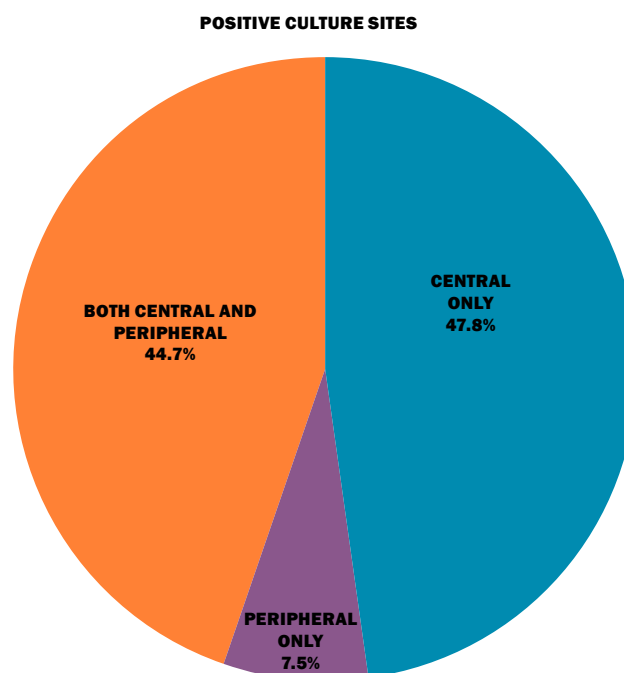
Traditionally, blood cultures are obtained from both the patient's central venous line (CVL) and a peripheral venipuncture site.<sup>4,5</sup> Some studies from the adult literature have suggested that a CVL culture alone may be sufficient to rule out SBI,<sup>6,7</sup> whereas others indicate that as much as 13% of blood stream infection would be missed by omission of peripheral cultures.<sup>8</sup> Additionally, other studies suggest that CVL cultures are associated with a higher rate of contamination and lower specificity for a true blood stream infection compared with peripheral blood.<sup>9</sup> In contrast, for most pediatric oncology practice, it is routine to culture all lumens of the CVL in addition to a peripheral venipuncture site<sup>3,10</sup>, although there is limited data on the utility of peripheral blood cultures in the pediatric oncology literature and studies report conflicting results.<sup>11,12</sup>

As with many aspects of the practice of modern medicine, the risks and benefits of any procedure must be examined. Arguments in support of the continued use of peripheral blood cultures in addition to CVL

cultures include the possibility that peripheral blood cultures may identify a blood stream infection that would otherwise be missed with CVL cultures alone. An unidentified bacteremia in a neutropenic patient carries significant and serious potential consequences, including increased risk of morbidity and mortality.<sup>2</sup>

Opposing arguments against the continued use of peripheral blood cultures suggest that they are not clinically relevant in the pediatric oncology population. In contrast to adults, positive cultures from a CVL are generally assumed to be accurate and are treated with antibiotics in an attempt to clear the infection and salvage the line, as central access sites may be limited in young patients.<sup>13</sup> There is no need to differentiate between CVL infection and bacteremia as any positive CVL culture is considered a potential infectious source and treated aggressively.<sup>13</sup> Another argument against the use of peripheral cultures addresses the possibility of isolation of a contaminant from

**FIGURE 1: DETECTION SITE OF TRUE BLOOD STREAM INFECTIONS**



the skin flora, thus leading to unnecessarily extended hospital stays and increased antibiotic exposure. This ultimately may increase healthcare cost and contribute to increased rates of antibiotic resistance.<sup>14,15</sup> A third, but important, argument point is that peripheral venipuncture cultures induce an additional degree of pain and anxiety in our pediatric population that should be avoided if not medically necessary.

Since the question of clinical benefit of obtaining peripheral venipuncture blood cultures in the initial evaluation of febrile pediatric oncology and/or HSCT patients with CVL remains unanswered, the primary objective of this study was to examine the incidence of true blood stream infections (BSI) detected only by peripheral culture. The secondary objectives were to document the incidence of any positive blood cultures in febrile oncology and/or HSCT patients with CVL, to assess the rate of probable contaminants detected in peripheral cultures, and to examine the relationship of bacteremia with other variables including neutropenia, patient age, sex, type of malignancy and type of CVL.

## METHODS

A retrospective chart review was conducted of oncology and/or HSCT patients admitted to our institution with fever between January 2012 and December 2013. Approval for the study was obtained from the Institutional Review Board.

Children were eligible for inclusion if they were oncology or HSCT patients of Children's Hospital New Orleans with a CVL (either implantable port or multi-lumen tunneled central catheter). Patients who received both CVL and peripheral blood cultures within 24 hours of each other and prior to the initiation of broad-spectrum antibiotics were included in the study. Persistently positive cultures were only included once in the analysis. Cultures growing multiple organisms were considered a separate event for each organism.

At the onset of fever (defined as temperature  $\geq 38^{\circ}\text{C}$ ) in an oncology or HSCT patient with a central line, our institutional protocol includes obtaining blood cultures from both a peripheral site and all lumens of the CVL. Broad-spectrum antibiotics are ini-

tiated until a blood stream infection can be ruled out via negative blood cultures and evidence of myeloid recovery. All oncology and HSCT patients receive prophylaxis against *Pneumocystis jiroveci*. HSCT patients receive antifungal and antiviral prophylaxis. No other antibiotic prophylaxis is routinely used among oncology patients. Neutropenia was defined as absolute neutrophil count (ANC) less than 500 for the purposes of this study.

The peripheral blood culture is typically obtained by an emergency room nurse or by a phlebotomist. CVL cultures are obtained by either an emergency room nurse or by an inpatient unit nurse. Microbiology laboratory protocol is to obtain blood volumes of 0.5 to 4mL per culture bottle.

We defined true blood stream infections in peripheral cultures due to common contaminants (e.g., coagulase negative staphylococcus) as those in which multiple cultures were positive for the same organism. All positive central line cultures were considered true BSI to reflect our common clinical practice.

Statistical analyses were performed using the two-tailed Fishers exact test.

## RESULTS

During the study, 376 episodes of fever in an oncology or HSCT patient with a CVL were reviewed. Of these, 70 (18.6%) paired peripheral and CVL cultures were identified in which at least one culture was positive for growth of an organism. Three (4.3%) of 70 positive cultures were considered a probable contaminant. Ultimately, 67 (95.7%) of positive blood culture episodes were considered true blood stream or CVL infections.

Table 1 describes the demographics of episodes of true blood stream infections. We identified a fairly even distribution of BSI between leukemia and solid tumor patients. Of these 67 episodes of true BSI, 31 (46%) were identified in leukemia patients, 29 (43%) were identified in solid tumor patients, and 5 (7%) were identified in patients with other conditions (hemophagocytic lymphohistiocytosis (3), myelodysplastic syndrome (1), chronic granulomatous disease (1)). Sixty percent of true BSI were in male patients, with an age range of 6 months to 21 years (median age 5

years). Forty eight (72%) of true BSI were in patients with implantable ports, whereas 19 (28%) were in patients with multi-lumen externalized CVLs. Thirty five (52%) of true BSI episodes occurred in neutropenic patients. Twenty three (34%) had concomitant infections at other sites (urine, stool, CSF, sputum). (Table 1)

Table 2 illustrates that gram-positive organisms cause the majority of BSI in our patient population. Of the 67 true BSI, gram-positive organisms were isolated in 53 (79.1%), gram-negative organisms were isolated in 11 (16.4%) and fungi were isolated in 3 (4.5%). Table 2 also illustrates that 37 (55.2%) of true

BSI were identified only in the peripheral or CVL culture. Importantly, the number of true BSI detected only by peripheral blood culture and not in the CVL culture was 5 (7.5%) (Figure 1.).

Table 3 depicts the seven organisms isolated by peripheral blood culture only. Three of these episodes ultimately were considered to be contaminants (*Staphylococcus epidermidis* (2) and *Staphylococcus hominis* (1)) and were excluded from further analyses.

We were unable to identify a specific group of patients at risk of having a true BSI detected only in the peripheral culture (table 4). More specifically, gender ( $p=0.65$ ), type of CVL ( $p=0.15$ ), reason for treatment ( $p=0.74$ ) or the presence of neutropenia ( $p=0.66$ ) did not influence the likelihood of isolation of a pathogen from peripheral blood culture site only. Age also was not an indicator of isolated positive peripheral cultures ( $p=0.09$ ). Unexpectedly, we found patients with implantable ports were five times more likely to have positive cultures in both central and peripheral culture sites ( $p=0.002$ ) as compared to patients with multi-lumen CVL. Patients undergoing treatment for solid tumors were more likely to have positive cultures at the CVL site only ( $p=0.01$ ), compared to patients with leukemia who were more likely to have positive cultures in both central and peripheral culture sites ( $p=0.02$ ). Finally, neutropenic patients were twice as likely as non-neutropenic patients to have BSI detected in both central and peripheral blood cultures ( $p=0.03$ ), but this was not affected by the type of CVL ( $p=0.11$ ). Additionally, neutropenia did not affect the likelihood of having isolated positive central ( $p=0.08$ ) or peripheral ( $p=0.66$ ) blood cultures. (Table 4)

**TABLE 1. DEMOGRAPHICS OF EPISODES OF TRUE BLOODSTREAM INFECTIONS (N=67)**

<i>Characteristics</i>	<i>Value</i>
Median age (range)	4.5 yrs (0.5-21yrs)
Gender, n (%)	
Male	40 (60%)
Female	27 (40%)
Diagnosis, n (%)	
Leukemia	31 (46%)
Solid tumor	29 (43%)
Other	5 (7%)
Central venous line type	
Implantable port	48 (72%)
Multi-lumen central catheter	19 (28%)
Neutropenic (ANC <500)	35 (52%)
Concomitant infection	23 (34%)

**TABLE 2. DETECTION OF BLOOD STREAM INFECTIONS BY CENTRAL AND PERIPHERAL CULTURES**

<i>Episode Type</i>	<i>Number</i>
Total number of febrile episodes reviewed	376
Total number of episodes with at least one positive culture	70 (18.6%)
True blood stream infection	
Episodes of true bloodstream infection	67 (95.7%)
Gram-positive organisms	53 (79.1%)
Gram-negative organisms	11 (16.4%)
Fungi	3 (4.5%)
Number of true bloodstream infection detected only in peripheral culture	5 (7.5%)
Number of true bloodstream infection detected only in CVL culture	32 (47.8%)
Likely contaminants	3 (4.3%)



## DISCUSSION

The results of this study indicate that among oncology and HSCT patients with a CVL, approximately 1 in 5 episodes are associated with detectable bacteremia from either peripheral venipuncture or CVL culture, or both. Importantly, 7.5% of true BSI are detected with peripheral blood culture only and would not have been detected if the peripheral culture had not been obtained. Our results are consistent with previous studies in the pediatric oncology/HSCT population in which 5.7-12.3% of BSI were detected in peripheral cultures only.<sup>11,12</sup> In another study among the adult oncology population, Rodriguez, et al. reported 13% of true BSI detected in peripheral

culture only.<sup>8</sup> The organisms isolated in such infections included a similar spectrum of clinically important gram-positive and gram-negative organisms.

There is no clear reason why a peripheral blood culture would be positive in the setting of a negative CVL culture. Increased blood sample volumes from additional cultures have been postulated to be a potential explanation<sup>16</sup>; however, there are no prospective studies delineating the optimal blood culture volume per body surface area that should be collected in the pediatric oncology population. Unfortunately, blood volumes collected in individual cultures were not available for use in our study.

Unexpected findings in this study included the

observation that patients with implantable ports as opposed to multi-lumen CVL were much more likely to have BSI isolated concomitantly from both culture sites as compared to either central or peripheral sites alone, suggesting true systemic bacteremia in these cases. Neutropenic patients were also more likely than non-neutropenic patients to have positive results from both

**TABLE 3. MICROBIOLOGY OF BLOOD STREAM INFECTION DETECTED ONLY BY PERIPHERAL BLOOD**

<i>Organism Name</i>	<i>No. of Episodes</i>
Staphylococcus epidermidis	2
Streptococcus pneumonia	1
Strep viridans	2
Candida krusei	1
Enterococcus coli	1
Staphylococcus hominis	1
<b>TOTAL</b>	<b>8</b>

**TABLE 4. INCIDENCE OF ISOLATION OF TRUE BLOOD STREAM INFECTION FROM VARIOUS CULTURE SITES IN RELATION TO PATIENT VARIABLES**

<b>Variable</b>	<b>Peripheral positive only</b>	<b>p value</b>	<b>Central positive only</b>	<b>p value</b>	<b>Both central peripheral positive</b>	<b>p value</b>
<b>Gender</b>		0.65		0.43		0.62
Male	4 (80%)		22 (69%)		17 (57%)	
Female	1 (20%)		10 (31%)		13 (43%)	
<b>Diagnosis</b>		0.74		0.01*		0.02*
Leukemia	3 (60%)		10 (31%)		19 (63%)	
Solid tumor	2 (40%)		20 (63%)		8 (27%)	
Other	0		2 (6%)		3 (10%)	
<b>Type of CVL</b>		0.15		0.09		0.002*
Implantable Port	2 (40%)		20 (62%)		25 (83%)	
Multilumen tunneled CVL	3 (60%)		12 (38%)		5 (17%)	
<b>Presence of neutropenia</b>		0.66		0.08		0.03*
ANC <500	2 (40%)		14 (44%)		20 (67%)	
ANC >500	3 (60%)		18 (56%)		10 (33%)	

culture sites. This may indicate a higher potential for more widespread and overwhelming blood stream infections among these compromised patients, which are more easily detected in blood cultures and thus are isolated from more culture sites.

Limitations of this study include a small sample size due to the relative infrequency of positive blood cultures identified among febrile oncology/HSCT patients during the selected study time period. Although future validation studies using a larger sample size will be necessary to evaluate the validity and reproducibility of the current findings, our results are similar to previous single institution studies among pediatric oncology patients.<sup>11,12</sup> An additional limitation was that we were unable to assure that equal blood volumes were inoculated into peripheral and central blood culture bottles which, as discussed above, is a variable that could affect culture results.

In summary, this single institution study found that 7.5% of true blood stream infections would not have been identified if the peripheral blood culture had been omitted in the initial evaluation of fever in a pediatric oncology and/or HSCT patient with a CVL. Although peripheral cultures may result in isolation of a contaminant, the risk of overtreatment may be tolerated in comparison to the possible harmful consequences of untreated bacteremia in a neutropenic patient. In this circumstance, the additional cost and antibiotic exposure may be negated by an unacceptable alternative. Due to the potentially dire significant consequences of undetected BSI among this vulnerable patient population, especially among those who are neutropenic, our data suggests the continued practice of obtaining peripheral blood cultures in addition to CVL cultures in the initial evaluation of fever. These results also allow for further discussion regarding our protocols for obtaining blood cultures, with specific emphasis on standardizing the blood volumes acquired for these samples. Future expanded studies will include implementation of standardized blood culture volumes in order to evaluate this variable in relation to isolation of blood pathogens from specific culture sites.

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# BONE MARROW/ HEMATOPOIETIC STEM CELL TRANSPLANT PROGRAM

## C HILDREN'S HOSPITAL/LSUHSC PEDIATRIC HEMATOPOIETIC STEM CELL TRANSPLANTATION

(HSCT) program is the only approved Children's Oncology Group (COG) transplant program in the state of Louisiana. It offers patients access to all COG transplant protocols without the need to travel far to get this life saving treatment.

We are also a full member of the Pediatric Blood and Marrow Transplant Consortium (PBMTC) which is the largest forum focused on Pediatric BMT and it is a core member of the NIH-funded BMT-CTN network. This affiliation allows our patients to participate in clinical trials aimed at improving the clinical outcomes of BMT.

The transplant patient is treated in the state-of-the-art 18-bed unit with a specialized HEPA air-filtration system. This special environment provides the severely immunocompromised transplant patients the best protection from opportunistic infections.

Our HSCT program applies a multidisciplinary approach to the care of the transplant patient. The HSCT team consists of a highly skilled team of board certified Pediatric Hematologists/Oncologists, Bone Marrow Transplant (BMT) trained nurses, dieticians, child life therapist, child psychologists, pharmacists, social workers, clinical research associates, physical therapists and transplant nurse coordinator.

Our HSCT program offers innovative treatment for children with cancer such as leukemia, lymphoma, neuroblastoma, brain tumors and other recurrent cancers as well as for children with non-malignant conditions including immunodeficiency disorders, bone marrow failure syndromes and blood disorders such as transfusion-dependent sickle cell disease and thalassemia major.

Under the leadership of Lolie Yu, M.D., director of the HSCT program, we performed the first human placenta-derived stem cell transplant (HPDSC) in the world in 2008. These HPDSC cells will be used for malignant and non-malignant conditions which can be cured with transplantation. The study is in collaboration with the cellular therapy section of Celgene. We also were the first transplant center in Louisiana to implement the use of Mesenchymal stem cells (MSC) to treat refractory graft versus host disease (GVHD).

Our HSCT is certified by the Foundation for the Accreditation of Cellular Therapy (FACT) for its high quality of patient care and HPC collection/processing laboratory performance. We are one of only 20 pediatric facilities in the U.S. to be FACT- accredited.

Our Pediatric HSCT program provides quality care that is designed to accommodate the full range of a child's unique needs with expertise in both autologous and allogeneic transplants.

## TRANSPLANT BY DISEASE

ACUTE LEUKEMIA	TOTAL
AML/MDS	57
ALL	53
Other	14
<b>SOLID TUMORS</b>	
Lymphoma	26
Neuroblastomas	52
Brain tumor	20
Wilms	3
Histiocytosis	4
Sarcoma	11
Germ cell tumor	2
<b>NON-MALIGNANT CONDITIONS</b>	
BMF	48
Metabolic disorders	7
Immunodeficiency	27
Hemoglobinopathy	
Sickle cell	11
Thalassemia	2
<b>TOTAL</b>	<b>337</b>

THANKS  
TO OUR  
SUPPORTERS!

## G. SMITH MOTORSPORTS PROM OF CHAMPIONS

The Prom of Champions is dedicated to providing amazing events throughout the year to Children's Hospital New Orleans patients battling cancer and blood disorders, as well as support for their loved ones.

The night starts out with everyone arriving in limousines and being announced on the red carpet, where local celebrities greet them as they enter. The night is filled with dancing, singing, pictures, food and quite possibly the biggest candy table ever!

The 2014 Prom of Champions was held Friday, April 18, at the Board of Trade in downtown New Orleans, and would not have been possible without all of the donations and time that we received from our sponsors. A very big thank you goes out to G. Smith Motorsports.

## JAZZ HALF MARATHON, 5K AND CHILDREN'S MEMORIAL CANCER WALK

The Jazz Half Marathon, 5K and Children's Memorial Cancer Walk was organized to raise awareness and support for the Cancer Program at Children's Hospital. New Orleans' NBC affiliate WDSU broadcasts four hours of race coverage, musical entertainment along the route, interviews and vignettes on the impact Children's Hospital's Cancer Program makes across the Gulf South and volunteers manning a phone bank of volunteers collecting pledges.

The 5th annual Jazz Half Marathon & 5K raised \$348,000. The day got off to a great start with New Orleans

Queen of Soul Irma Thomas addressing the runners and singing the National Anthem before the gun. Runners exerted their last bit of energy dancing to Shamarr Allen & the Underdawgs at the post-race celebration in Lafayette Square.

The Jazz Children's Cancer Walk, which recognized and remembered pediatric cancer patients, was added to the event this year. Several survivors were presented on stage to mass applause.

In addition to runners taking to the streets of New Orleans, several members of our Armed Forces serving overseas also participated in the run. On the Thursday before the race, several U.S. Marines based in Afghanistan participated in a shadow running of the race. Master Sgt. Marcelino Marquez, Jr., organized the event at Camp Leatherneck in Helmand Province. After hearing about the Marines' organizing a shadow race, Chief Warrant Officer Rob D. Gibbs of the U.S. Army set up a run at Camp

Arifjan in Kuwait. We thank our service men and women for choosing to defend us, our rights and freedoms, and for going the extra 13.1 miles to help Louisiana children fighting pediatric cancer and blood disorders.

Major sponsors included The Grainger Foundation, Merrill Lynch, Budweiser, Bryan Subaru, Marriott, Varsity Sports, Kentwood Springs, Blue Bell Ice Cream, Superior Grill, Take 5 Oil Change, Your Nutrition Delivered, Jefferson Auto Service, Acadian Ambulance Service, Louisiana Health and Fitness Magazine and River Parish Disposal.



## **BACCHUS CROWNING**

Each Carnival season, The Krewe of Bacchus crowns their celebrity monarch at Children's Hospital. Actor John C. Reilly was crowned Bacchus XLVI on the weekend before Mardi Gras.

The Krewe of Bacchus parade was founded in 1968 by a handful of New Orleans business leaders whose dream was to revolutionize Mardi Gras with larger and more spectacular floats, a more diverse membership, and a national celebrity as king. Bacchus staged their first parade in 1969 with 250 members and fifteen floats. Bacchus has now grown to 1,350 members and 33 animated super-floats.

## **HYUNDAI HOPE ON WHEELS**

Hyundai's Hope on Wheels program presented a grant to Children's Hospital pediatric hematology/oncology fellow Chittal Raulji, MD, to help fund brain tumor research. During the visit, pediatric cancer patients participate in the annual hand print ceremony, in which they dip the palm of their hand in paint and put their palm print on a special Hyundai car to commemorate the occasion. Since 1998, Hope on Wheels has given \$72 million to hospitals across the country, including \$330,000 to Children's Hospital over the last four years.

## **THOMAS MORSTEAD MATCHES TRIUMPH OVER KID CANCER FOUNDATION'S DONATION**

New Orleans Saints punter Thomas Morstead matched a gift from the Triumph Over Kid Cancer Foundation (TOKC), a non-profit organization founded in 2010 that raises money for pediatric cancer research, raising their total donation to \$25,000. The funds will support the Oncology department's ability to provide critical cancer services to local children.

Morstead was joined at the check presentation by foundation co-founder Mecklin Ragan, and board members John and Michelle Hennessy. For more information about Triumph Over Kid Cancer Foundation you can view their website at [www.TriumphOverKidCancer.org](http://www.TriumphOverKidCancer.org) or visit their Facebook page.

## **TOUR DE LIS SUPPORTS LATE EFFECTS CLINIC**

The very successful Tour De Lis cycling event, held each spring, commits their support to the Treatment After Cancer and Late Effects Clinic. The group made a gift of \$20,000 to help children who struggle with the after effects of the cancer treatments that saved their lives.

The Late Effects Clinic offers a comprehensive follow-up program to help childhood cancer survivors stay well. Through case-specific diagnostic tests and evaluations, Children's Hospital's Treatment After Cancer & Late Effects Clinic will be able to help patient families identify, understand, prevent and treat many of the maladies cancer survivors endure.

## **THE JEFF GORDON CHILDREN'S FOUNDATION AWARD**

The Jeff Gordon Children's Foundation awarded a \$2,000 grant to Children's Hospital's Treatment After Cancer and Late Effects Clinic to help the growing number of Gulf South children who are beating cancer yet facing potential treatment-related problems.

In the past 40 years, medicine has made major advancements in the fight against pediatric cancer. A child diagnosed with cancer in 1970 had only a 10 percent chance of survival, whereas children diagnosed today have a nearly 80 percent chance. But for the more than 40,000 children who undergo treatment each year, their struggle does not end when their disease is eradicated.



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## **ABSTRACTS, POSTERS & PRESENTATIONS**

### **2014**

Allison King, Nancy Bunin, Indira Sahdev, Allistair Abraham, Jacqueline Dioguardi,, Naynesh Kamani, MD4, et al, Lolie Yu, et al Lisa Murray1, and Shalini Shenoy.Non-myeloablative Conditioning Targeting Host Immunosuppression is Successful in Matched Sibling Donor Stem Cell Transplantation for Hemoglobinopathies in Children. Poster Presentation at the 56th annual meeting of the American Society of Hematology; San Francisco, CA. Blood. Dec 2014.

Prasad P, Landry I, Keegan T, Harlan L, Parsons H, Lynch C, Smith A, Hamilton A, Wu X. Development of a new Comorbidity Index for Adolescents and Young Adults with Cancer and its impact on Health Service Needs in the AYA Hope Study; American Society of Hematology 56th Annual Meeting; Oral Presentation; December 09, 2014

Raulji C, Velez M, Morales-Arias, J. Treatment Outcomes in Pediatric Patients with Pulmonary Embolism Using Low Dose Tissue Plasminogen Activator Therapy. Poster Presentation. American Society of Hematology. San Francisco, California. Blood. Nov 2014.

Prasad P, Landry I, Keegan T, Harlan L, Parsons H, Lynch C, Smith A, Hamilton A, Wu X. Healthcare Services Needs and Co-Morbidity Assessment among Adolescents and Young Adults with Cancer: the AYA Hope Study; Children's Oncology Group Young Investigator's Meeting; Oral Presentation, September 18, 2014

Raulji C, Pritchett H, Cruz V, Stark M, Ward K, Morales J. Survivorship Analysis for Osteosarcoma and Ewing's Sarcoma in Children and Adolescents at a Single Pediatric Institution: Comparison to SEER Data. Oral Presentation at the Southern Society of

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Chittalsinh R, Velez M, Gardner R. Patient satisfaction with hurricane plan given to hematology-oncology patients at Children's Hospital in New Orleans. 27th Annual American Society of Pediatric Hematology/Oncology Chicago May 2014

Fletcher M, MD, Wall L, Paris K and Yu LC. Successful allogeneic stem cell transplantation in X-linked lymphoproliferative disease using reduced intensity conditioning. Oral Presentation at the PB-MTC annual meeting; Chicago, IL, May 2014.

Chittalsinh R, Clay K, Velasco C, Yu. Daily bathing with chlorhexidine and its effects on nosocomial infection rates in pediatric oncology patients. 27th Annual American Society of Pediatric Hematology/Oncology Chicago May 2014

Messer A, Chittalsinh R, Fletcher M, Keith B, Velez M. Lymphoproliferative disorder in a child with Crohn's disease and thiopurine use. 27th Annual American Society of Pediatric Hematology/Oncology Chicago May 2014

LeBlanc D, Bartel N, Velasco-Gonzales C, Yu L. The utility of peripheral blood cultures in febrile pediatric oncology patients with a central line. Poster presentation to the 27th annual meeting of the Am Soc Pediatr Hemat/Oncol Chicago May 2014

Prasad P, Hardy K, Zhang N, Armstrong G, Krull K. Psychological and Neurocognitive Outcomes in Survivors diagnosed with Cancer as AYA: A Report from the Childhood Cancer Survivor Study. Journal of Investigative Medicine. 2014 Feb; 62(2) SSPR Poster Presentation; February 22, 2014; Junior Faculty Travel Research Award

Raulji C, Glinky A, Gardner R, Prasad P. Survivorship Analysis for Adolescents and Young Adults with Cancer: A Single Institution Review; Journal of Investigative Medicine. 2014 Feb; 62(2) SSPR Oral Presentation, February 22, 2014

LeBlanc D, Fletcher M, Prasad P, Simon L, Nuss D, Seybolt L, Velez M. Successful management of invasive fungal sinusitis in a pediatric leukemia patient with profound neutropenia. Oral Presentation at the Southern Society for Pediatric Research. New Orleans, Feb 2014.

Chittalsinh R, Velez M, Gardner R. Patient satisfaction with hurricane plan given to hematology-oncology patients at Children's Hospital in New Orleans. Society of Pediatric Research Regional Meeting, New Orleans, Feb 2014

Prudhomme A, Raulji C, Morrison C, Stark M. Unilateral tonsillar enlargement and sore throat: To refer or not to refer? Southern Society of Pediatric Research Regional Meeting New Orleans, Feb 2014



## ACUTE LYMPHOBLASTIC LEUKEMIA

- AALL08B1: Classification of Newly-Diagnosed Acute Lymphoblastic Leukemia (ALL)
- AALL0932: Treatment of Patients with Newly-Diagnosed Standard Risk B-Precursor Acute Lymphoblastic Leukemia (ALL)
- AALL1131: A Phase III Randomized Trial for Newly-Diagnosed High-Risk B-Precursor Acute Lymphoblastic Leukemia (ALL) Testing Clofarabine (IND #73789, NSC #606869) in the Very High-Risk Stratum

## ACUTE MYELOID LEUKEMIA

- AAML08B1: Biology Study of Transient Myeloproliferative Disorder (TMD) in Children with Down Syndrome (DS)
- AAML1031: A Phase III Randomized Trial for Patients with de novo AML using Bortezomib and Sorafenib (IND #114480; NSC #681239, NSC #724772) for Patients with High Allelic Ratio FLT3/ITD
- ACCL0933: A Randomized Open-Label Trial of Caspofungin versus Fluconazole to Prevent Invasive Fungal Infections in Children Undergoing Chemotherapy for Acute Myeloid Leukemia (AML)

## NEUROBLASTOMA

- ANBL00B1: Neuroblastoma Biology Studies
- ANBL0032: Phase III Randomized Study of Chimeric Antibody 14.18 (Ch14.18) in High-Risk Neuroblastoma following Myeloablative Therapy and Autologous Stem Cell Rescue
- ANBL12P1: Pilot Study Using Myeloblastic Busulfan/Melphalan (BuMel) Consolidation following Induction Chemotherapy for Patients with Newly-Diagnosed High-Risk Neuroblastoma

## WILMS TUMOR / RENAL

- 9442: National Wilms Tumor Late Effects Study
- AREN03B2: Renal Tumors Classification, Biology, and Banking Study
- AREN0534: Treatment for Patients with Bilateral, Multicentric, or Bilaterally-Predisposed Unilateral Wilms Tumor

## BRAIN TUMOR

- ACNS02B3: A Children's Oncology Group Protocol for Collecting and Banking Pediatric Brain Tumor Research Specimens
- ACNS0331: A Study Evaluating Limited-Target Volume-Boost Irradiation and Reduced-Dose Craniospinal Radiotherapy 18.00 Gy and Chemotherapy in Children with Newly-Diagnosed Standard-Risk Medulloblastoma: A Phase III Double-Randomized Trial
- ACNS0332: Efficacy of Carboplatin Administered Concomitantly with Radiation and Isotretinoin as a Pro-Apoptotic Agent in other than Average-Risk Medulloblastoma/PNET Patients
- ACNS0334: A Phase III Randomized Trial for the Treatment of Newly-Diagnosed Supratentorial PNET and High-Risk Medulloblastoma in Children <36 Months Old with Intensive Induction Chemotherapy with Methotrexate followed by Consolidation with Stem Cell Rescue vs. the Same Therapy without Methotrexate
- ACNS0831: Phase III Randomized Trial of Post-Radiation Chemotherapy in Patients with Newly-Diagnosed Ependymoma Ages 1 to 21 years
- ACNS1123: Phase 2 Trial of Response-Based Radiation Therapy for Patients with Localized Central Nervous System Germ Cell Tumors (CNS GCT)
- ALTE07C1: Neuropsychological, Social, Emotional and Behavioral Outcomes in Children with Cancer

## RARE TUMOR

- ABTR01B1: A Children's Oncology Group Protocol for Collecting and Banking Pediatric Research Specimens Including Rare Pediatric Tumors

## HEPATOBLASTOMA

- AHEP0731: Treatment of Children with All Stages of Hepatoblastoma

## EWING SARCOMA

- AEWS1031: A Phase III Randomized Trial of Adding Vincristine-Topotecan-Cyclophosphamide to Standard Chemotherapy in Initial Treatment of Non-metastatic Ewing Sarcoma

## **SARCOMA**

D9902: A COG Soft Tissue Sarcoma Biology and Banking Protocol

## **CANCER CONTROL, OTHER**

ACCL0934: A Randomized Trial of Levofloxacin to Prevent Bacteremia in Children Being Treated for Acute Leukemia (AL) or Undergoing Hematopoietic Stem Cell Transplantation (HSCT)

ACCL1034: Impact of Cleansing with Chlorhexidine Gluconate (CHG) on Reducing Central Line-Associated Bloodstream Infection (CLABSI) and Acquisition of Multi-drug Resistant Organisms (MDRO) in Children with Cancer or those Receiving Allogeneic Hematopoietic Cell Transplantation (HCT): A Limited Phase III Study

ACCL1131: A Phase III Open-Label Trial of Caspofungin vs. Azole Prophylaxis for Patients at High Risk for Invasive Fungal Infections (IFI) following Allogeneic Hematopoietic Cell Transplantation (HCT)

ACCRN07: Protocol for the Enrollment on the Official COG Registry, The Childhood Cancer Research Network (CCRN)

ALTE03N1: Key Adverse Events after Childhood Cancer

## **HSCT OR NON-COG EXPANDED ACCESS STUDIES**

Expanded Access of Prochymal® (Ex-vivo Cultured Adult Human Mesenchymal Stem Cells) Infusion for the Treatment of Pediatric Patients who have Failed to Respond to Steroid Treatment for Acute GVHD (Osiris Therapeutics Inc. Protocol No. 275, BB-IND No. 7939)

Defibrotide for Patients with Hepatic Veno-Occlusive Disease (VOD): A Treatment IND Study (Under CFR 312.34) (Gentium S.p.A. Protocol Defibrotide 2006-05)

A Study of Hematopoietic Stem Cell Transplantation (HSCT) in Non-malignant Disease Using a Non-myeloablative Preparatory Regimen with Campath-1H, Fludarabine and Melphalan (Washington University 01-0923)

Use of CliniMACS® CD34 Reagent System in SCT for Hematologic Malignancies and in Non-Malignant Conditions

National Marrow Donor Program (NMDP) and Center for International Blood and Marrow Transplant Research (CIBMTR) Research Database for Hematopoietic Stem Cell Transplantation and Marrow Toxic Injuries

National Marrow Donor Program Research Sample Repository

A Multicenter Access and Distribution Protocol for Unlicensed Cryopreserved Cord Blood Units (CBUs) for Transplantation in Pediatric and Adult Patients (NMDP 10-CBA)

Reduced-Intensity Conditioning for Children and Adults with Hemophagocytic Syndromes or Selected Primary Immune Deficiencies (RICHI) (BMT CTN 1204)

A Prospective Natural History Study of Diagnosis, Treatment, and Outcomes of Children with SCID Disorders (RDCRN PIDTC Protocol #6901)

A Retrospective and Cross-Sectional Analysis of Patients Treated for SCID since January 1, 1968 (RDCRN PIDTC Protocol #6902)

Analysis of Patients Treated for Chronic Granulomatous Disease since January 1, 1995 (RDCRN PIDTC Protocol #6903)

Analysis of Patients Treated for Wiskott-Aldrich Syndrome since January 1, 1990 (RDCRN PIDTC Protocol #6904)

## **PHARMACEUTICAL-SPONSORED STUDIES**

A Single-arm Study to Assess the Safety of Transplantation with Umbilical Cord Blood Augmented with Human Placental-derived Stem Cells from Partially- or Fully-HLA-Matched Related Donors in Subjects with Certain Malignant Hematologic Diseases and Non-malignant Disorders (Celgene Cellular Therapeutics)

Pathfinder 3, Efficacy and Safety of NNC 0129-0000-1003 During Surgical Procedures in Patients with Hemophilia A, Protocol #NN7088-3860 (NovoNordisk)

Evaluation of Purified Poloxamer 188 in Children in Crisis (EPIC): A Phase 3 Randomized, Double-Blind, Placebo-Controlled, Multicenter Clinical Trial of MST-188 (Purified Poloxamer 188) Injection in Children with Sickle Cell Disease Experiencing Vaso-Occlusive Crisis, Protocol #MST-188-01 (Mast Therapeutics)

An Open-Label Study Evaluating the Safety and Efficacy of Long-Term Dosing of Romiplostim in Thrombocytopenic Pediatric Subjects with Immune (Idiopathic) Thrombocytopenia Purpura (ITP), Protocol #20090340 (Amgen, Inc.)

A Phase 3, Open-label, Multicenter Study of the Safety/Tolerability and Efficacy of Brincidofovir (CMX001) for the Prevention of Adenovirus (AdV) Disease in Subjects with Asymptomatic AdV Infection at Risk of Progression and for the Treatment of Subjects with Localized or Disseminated AdV Disease, Protocol #CMX001-304 (Chimerix, Inc.)

# STUDIES CLOSED TO ACCRUAL

Safety and Efficacy of nonacog beta pegol (N9-GP) in Previously Untreated Patients with Hemophilia B, Protocol #NN7999-3895 (NovoNordisk)

The efficacy and Safety of Ferriprox® for the Treatment of Transfusional Iron Overload in Patients with Sickle Cell Disease or Other Anemias, Protocol #LA38-0411 (ApoPharma, Inc.)

## STUDIES THAT ARE ACTIVE IN FOLLOW-UP BUT CLOSED TO ACCRUAL

9404: Intensive Treatment for T-Cell Acute Lymphoblastic Leukemia and Advanced-Stage Lymphoblastic Non-Hodgkin's Lymphoma (T-Cell #4)

9904: ALinC 17: Treatment of Patients with Newly-Diagnosed Low-Risk Acute Lymphoblastic Leukemia: A Phase III Study

9905: ALinC 17: Protocol for Patients with Newly-Diagnosed Standard-Risk Acute Lymphoblastic Leukemia (ALL): A Phase III Study

9440: National Wilms Tumor Study - 5: Therapeutic Trial and Biology Study

A3973: A Randomized Study of Purged versus Un-purged Peripheral Blood Stem Cell Transplant following Dose-Intensive Induction Therapy for High-Risk Neuroblastoma

A5971: Randomized Phase III Study for the Treatment of Newly-Diagnosed Disseminated Lymphoblastic Lymphoma or Localized Lymphoblastic Lymphoma

AALL0232: High-Risk B-precursor Acute Lymphoblastic Leukemia: A Phase III Group-wide Study

AALL0331: Standard Risk B-Precursor Acute Lymphoblastic Leukemia: Phase III Group-wide Study

AALL03B1: Classification of Acute Lymphoblastic Leukemia

AALL03N1: Understanding the Ethnic and Racial Differences in Survival after Childhood ALL

AALL0434: Intensified Methotrexate, Nelarabine (Compound 506U78; IND #52611) and Augmented BFM Therapy for Children and Young Adults with Newly-Diagnosed T-cell Acute Lymphoblastic Leukemia (ALL) or T-cell Lymphoblastic Lymphoma (07/25/2014)

AALL0631: A Phase III Study of Risk-Directed Therapy for Infants with Acute Lymphoblastic Leukemia (ALL): Randomization of Highest-Risk Infants to Intensive Chemotherapy +/- FLT3 Inhibition (CEP-701, Lestaurtinib; IND #76431, NSC #617807)

AAML0531: A Phase III Randomized Trial of Gemtuzumab Ozogamicin (Mylotarg) Combined with Conventional Chemotherapy for De Novo Acute Myeloid Leukemia (AML) in Children, Adolescents, and Young Adults

ACCL1031: A Randomized Double-Blinded Trial of Topical Caphosol to Prevent Oral Mucositis in Children Undergoing Hematopoietic Stem Cell Transplantation

AHOD0031: A Phase III Group-wide Study of Dose-Intensive Response-Based Chemotherapy and Radiation Therapy for Children and Adolescents with Newly-Diagnosed Intermediate-Risk Hodgkin Disease

AHOD0431: Phase III Study for the Treatment of Children and Adolescents with Newly-Diagnosed Low-Risk Hodgkin Disease

ANBL0532: Phase III Randomized Trial of Single vs. Tandem Myeloablative Consolidation Therapy for High-Risk Neuroblastoma

ANBL0931: A Comprehensive Safety Trial of Chimeric Antibody 14.18 (ch14.18) with GM-CSF, IL-2 and Isotretinoin in High-Risk Neuroblastoma Patients following Myeloablative Therapy: A Limited-Institution Study

AOST0331: A Randomized Trial of the European and American Osteosarcoma Study Group to Optimize Treatment for Resectable Osteosarcoma Based on Histological Response to Pre-Operative Chemotherapy (IND #12697)

AREN0321: Treatment of High-Risk Renal Tumors

AREN0532: Treatment for Very Low- and Standard-Risk Favorable-Histology Wilms Tumor

ARST0331: Vincristine, Dactinomycin, and Lower Doses of Cyclophosphamide with or without Radiation Therapy for Patients with Newly-Diagnosed Low-Risk Embryonal/Botryoid/Spindle Cell Rhabdomyosarcoma

ASCT0431: A Randomized Trial of Sirolimus-Based Graft-versus-Host Disease Prophylaxis after Hematopoietic Stem Cell Transplantation in Selected Patients with CR1 and CR2 ALL

ASCT0521: Soluble Tumor Necrosis Factor Receptor: Enbrel® (Etanercept) for the Treatment of Acute Non-Infectious Pulmonary Dysfunction (Idiopathic Pneumonia Syndrome) following Allogeneic Stem Cell Transplantation

P9645: Phase II Protocol for the Treatment of Children with Hepatoblastoma

#### **PHARMACEUTICAL-SPONSORED STUDIES**

Pathfinder 2: A Multi-National Trial Evaluating Safety and Efficacy Including Pharmacokinetics, of NNC 0129-0000-1003 when Administered for Treatment and Prophylaxis of Bleeding in Patients with Haemophilia A (NovoNordisk)

Pathfinder 5: A Multinational, Open-Label, Non-Controlled Trial on Safety, Efficacy and Pharmacokinetics of NNC 0129-0000-1003 in Previously Treated Paediatric Patients with Severe Haemophilia A (NovoNordisk)

A Phase 3 Randomized, Double Blind, Placebo Controlled Study to Determine the Safety and Efficacy of Romiplostim in Thrombocytopenic Pediatric Subjects with Immune Thrombocytopenia (ITP) Protocol #20080279 (Amgen, Inc.)

**ACCESSION:** To list in order of acquisition. An accession number is assigned to each new patient who is eligible for inclusion in the Cancer Registry database.

**ALLOGENIC:** Having cell types that are antigenically distinct. In transplantation biology, denoting individuals (or tissues) that are the same species but antigenically distinct.

**AMERICAN JOINT COMMITTEE ON CANCER (AJCC):** A committee designated to coordinate efforts of sponsoring organizations to develop staging systems for various cancers within the TNM system in the United States.

**AMERICAN COLLEGE OF SURGEONS (ACoS):** A fellowship of surgeons, organized in 1913 “to elevate the standard of surgery, to establish the standard of competency and character for practitioners of surgery,” and, in general, to assure that surgeons are properly qualified.

**ANALYTIC CASES:** Cases that are first diagnosed and/or receive all or part of their first course of treatment at Children’s Hospital. In accordance with the American College of Surgeons guidelines for approved cancer programs, these cases must be accessioned, included in the patient index file, abstracted and followed for the lifetime of the patient by the Cancer Registry.

**AUTOLOGOUS:** Autogenous, related to self; originating within an organism itself.

**CLASS OF CASE:** A classification of treatment status determined by a reporting hospital. This classification is determined at the patient’s first admission. Whether a case is included in the hospital’s treatment and/or survival statistics depends upon the patient’s classification.

**INITIAL THERAPY:** Initial definitive treatment, or series of treatments, that normally modifies, controls, removes or destroys proliferating tumor tissue. This is usually initiated within the first four months (two months for leukemia) of diagnosis. Types of initial therapy include the list below:

**SURGERY:** The partial or total removal of the tumor, excluding biopsy.

**RADIATION:** Cancer-related direct beam and non-beam therapy. Non-beam includes radium, cesium and radioactive isotopes.

**CHEMOTHERAPY:** Includes antimetabolites, alkylating agents, vinca alkaloids and antibiotics, among other agents.

**HORMONE:** Includes administration of hormones/steroids, and in some cases, endocrine surgery.

**COMBINATION THERAPY:** Includes possible combinations of surgery, radiation, chemotherapy and hormone therapy.

**IMMUNOTHERAPY:** Passive immunization of an individual by administration of pre-formed antibodies actively produced in an individual.

**NO TREATMENT:** A treatment option that includes cases in which no information was available or no treatment was received.

**NON-ANALYTIC CASES:** Cases that were not seen at Children’s Hospital within the first four months following diagnosis (two months for leukemia) or who were first diagnosed at autopsy. This class of case is usually not included in a report of hospital’s treatment and survival statistics. In accordance with the American College of Surgeons guidelines for approved cancer programs, these cases must be accessioned and a patient index record prepared. Although abstracting and lifetime follow-up are encouraged, these are matters of local decision by the hospital cancer committee.

**STAGE:** The extent to which a primary tumor has spread from its original site. The extent of disease is determined at the time of diagnosis and/or initial therapy.

**SURVEILLANCE, EPIDEMIOLOGY AND END RESULTS PROGRAM (SEER):** A registry conducted by the National Cancer Institute for the collection and analysis of data on the incidence and treatment of cancer and survival of cancer patients in the United States. A staging system was developed in 1977 by SEER and is approved for use in cancer registries by the American College of Surgeons Commission of Cancer.



Children's Hospital .....	(504) 899-9511
Child Life.....	(504) 896-9350
Oncology Department .....	(504) 896-9740
Oncology Department Fax .....	(504) 896-9758
Oncology Unit – inpatient .....	(504) 896-9442
Oncology – outpatient clinic.....	(504) 896-9848
Neurosurgery Department.....	(504) 896-9568
Social Services Department.....	(504) 896-9367
Surgery Department .....	(504) 896-9478
Orthopaedics Department.....	(504) 896-9569
Medical Records/Tumor Registry .....	(504) 896-9585
Administration .....	(504) 896-9450
Diagnostic Radiology.....	(504) 896-9565
Pathology Department.....	(504) 896-9873
Bone Marrow Transplant Program .....	(504) 896-9740
Lolie C. Yu, MD	
Cancer Committee Chairman .....	(504) 896-9741
Cancer Program Liaison .....	(504) 896-9814
Matthew Stark, MD	

## CANCER INFORMATION/RESOURCES

American Cancer Society .....	(800) ACS-2345
American Cancer Society, New Orleans Chapter .....	(504) 469-0021
National Cancer Institute .....	1-800-4CANCER

## CANCER INFORMATION WEB SITES

American Cancer Society.....	www.cancer.org
National Cancer Institute .....	www.cancer.gov
Children's Hospital, New Orleans.....	www.chnola.org
National Childhood Cancer Foundation.....	www.curesearch.org
Cancer Care .....	www.cancercare.org
Cancer Survivors Project .....	www.cancersurvivorsproject.org
National Children's Cancer Society .....	www.children-cancer.com

## HOUSING

Ronald McDonald House .....	(504) 468-6668
American Cancer Society Patrick F. Taylor Hope Lodge .....	(504) 219-2202
Hotels – medical rates list available in Social Services	

## FINANCIAL

Medicaid – Enroller .....	(504) 896-9152
Office of Family Security .....	(504) 599-1700
Social Security .....	(800) 772-1213
Children's Hospital Assistance Program (CHAP).....	(504) 894-5166
American Cancer Society .....	(504) 469-0021
Leukemia/Lymphoma Society .....	(504) 887-0945
Optimist Leukemia Foundation .....	(800) 685-9611
J.L Foundation .....	(225) 698-1010
National Children's Cancer Society ....	(314) 241-1600
Cancer Recovery Fund .....	(717) 564-4100
First Hand Foundation .....	(816) 201-1569
Cancer Association of Greater New Orleans .....	(504) 733-5539
Total Community Action .....	(504) 304-6676
Kids Kicking Cancer.....	(504) 455-7754

## MENTAL HEALTH

Rehabilitation Program/RTC .....	(504) 483-0415
Via Link (24 hour counseling) .....	(800) 749-2673
Angel's Place (Respite Care) .....	(504) 455-2620
COPELINE - Suicide Prevention.....	(800) 273-8255
Children's Hospital Behavioral Health Unit, Calhoun Campus .....	(504) 896-7200
Family Service of GNO .....	(504) 822-0800

## DEATH

Compassionate Friends .....	(504) 454-5078
Seasons – The Center for Caring .....	(504) 834-1453
St. Joseph Hospice .....	(504) 734-0320
Serenity Hospice .....	(504) 366-3996

## WISHES

A Child's Wish .....	(504) 367-9474
Make-A-Wish .....	(504) 846-9474
A Special Wish .....	(614) 575-9474

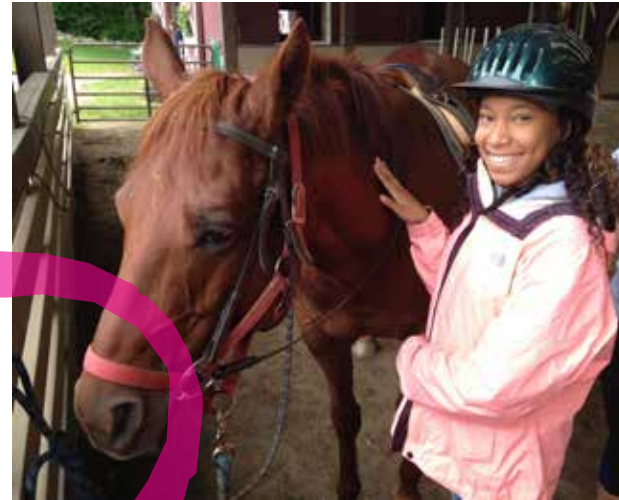
## SUPPORT

Candlelighters .....	(800) 366-2223
Sperm Bank Reproductive Services .....	(504) 454-7973
Camp Challenge .....	(504) 347-2267
Sunshine Kids .....	(713) 524-1264
Caps for Kids.....	(504) 891-4277

# SMILING FACES, HAPPY PLACES



# SMILING FACES, HAPPY PLACES







CHILDREN'S  
HOSPITAL  
*New Orleans*

200 Henry Clay Avenue  
New Orleans, LA 70118

**ADDRESS CORRECTION REQUESTED**