

**St. Jude Children's Research Hospital  
Pediatric Hematology-Oncology Fellowship Program  
Goals and Objectives**

**Mission**

The mission of St. Jude Children's Research Hospital is to find cures for children with catastrophic illnesses through research and treatment. The hospital is dedicated to providing the highest quality medical care to children with catastrophic illnesses—primarily pediatric cancer—and to finding cures for those diseases. The institution is committed to research that seeks to understand the molecular causes of disease, to improve diagnosis and treatment, and to minimize the immediate and long-term side effects of therapy. Clinical and basic science investigators work together in the same setting at which children benefit from their research. Clinicians work closely with laboratory-based researchers to translate scientific discoveries into improved therapies.

The Pediatric Hematology-Oncology Fellowship Program supports the mission of St. Jude by training and preparing pediatric hematology-oncology specialists for careers in academic medicine with an emphasis on clinical, translational, or basic science research.

**Overall goals of the program**

St. Jude Children's Research Hospital provides a comprehensive program for training subspecialty fellows in Pediatric Hematology-Oncology. The training program is an integrated part of the University of Tennessee, Memphis, Pediatric Residency Program (Program 3274731034). The goal of the program is to train the future leaders in academic pediatric hematology-oncology in the United States. Upon successful completion of our training program, fellows will have a comprehensive understanding of the pathophysiology of pediatric hematologic and oncologic disorders, will be competent in the clinical diagnosis and management of these disorders, will understand clinical trials methodology, and will have competence in a selected research interest. Our program seeks to nurture and develop laboratory researchers and clinical investigators. Specific educational objectives are described in the program description below.

**General Pediatric Hematology-Oncology Goals and Objectives**

The Pediatric Hematology-Oncology program provides the fellows with instruction and experience in the pathophysiology of pediatric hematologic and oncologic disorders, as well as in the clinical diagnosis and management of these disorders. Upon completion of the training program, fellows will be competent in the clinical practice of pediatric hematology-oncology and will be prepared to conduct meaningful clinical, translational, or laboratory-based research. The fellows will also receive training in ethics, biostatistics, administration, and teaching. By the end of the Pediatric Hematology Oncology training program, the residents are expected to expand and cultivate knowledge and skills developed during previous training and to achieve the following objectives based on the six general competencies. Under the supervision and guidance of the faculty, the residents will assume graded responsibility as educational experience and procedural skills increase.

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
Patient Care	<b>GENERAL OBJECTIVES</b>			
	Provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	Communicate effectively and demonstrate caring and respectful behaviors when interacting with patients and their families.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	Gather essential and accurate information about their patients.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgments.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Develop and carry out patient management plans.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Counsel and educate patients and their families.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	Use information technology to support patient care decisions and patient education.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Perform competently all medical and invasive procedures considered essential for the area of practice.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Provide health care services aimed at preventing health problems or maintaining health.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Work with health care professionals, including those from other disciplines, to provide patient-focused care.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See specific rotations for a detailed list of patient care objectives.			
	Identify the presenting complaints of patients with common pediatric malignancies.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Manage the acute complications of therapy, including the treatment of infections in the compromised host	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Indicate the appropriate use of transfusions of blood components.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly

	Effectively communicate the diagnosis, prognosis, and treatment plan to patients and their families.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	Perform bone marrow aspirations and biopsies, and spinal taps with intrathecal chemotherapy administration	Clinical Teaching	360-Degree Evaluation Global Rating Form Procedure logs	Monthly
	Prescribe appropriate nutritional intervention and pain management.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
Medical Knowledge	<b>GENERAL OBJECTIVES</b>			
	Demonstrate knowledge about established and evolving biomedical, clinical, and cognate sciences and the application of this knowledge to patient care.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Demonstrate an investigatory and analytic thinking approach to clinical situations.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Know and apply the basic and clinically supportive sciences which are appropriate to their discipline.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See specific rotations for a detailed list of medical knowledge objectives.			
	Describe the frequency and age distribution of common pediatric malignancies.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Discuss the prognosis of common pediatric malignancies.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Discuss the basic principles and mechanisms of action of chemotherapeutic agents.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Describe the major side effects of common chemotherapeutic agents.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Summarize the long term complications of therapy.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Describe the treatment of fever and infection in the immunocompromised host.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
Practice Based Learning and Improvement	<b>GENERAL OBJECTIVES</b>			
	Investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly

Analyze practice experience and perform practice-based improvement activities using a systematic methodology.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
Locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
Obtain and use information about their own population of patients and the larger population of patients from which their patients are drawn.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
Use information technology to manage information, access on-line medical information; and support their own education.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
Facilitate the learning of students and other health care professionals.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
Evaluate patient care practices, discuss how they meet standards, and develop ways to improve these practices.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
Compare clinical practice, patient safety, and quality of care with evidence based medicine.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
Participate in all mandated conferences (include a list of conferences).	Lectures/Seminars/ Conferences	Portfolios	Monthly
Complete a QA/QI project under faculty direction.	Project	Project Evaluation	Annual
Demonstrate improvement in clinical management and diagnostic assessment.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
Implement new scientific advances and clinical approaches from a variety of sources into current patient care practices.	Role modeling	360-Degree Evaluation Global Rating Form	Monthly
Analyze and evaluate medical literature and examine alternate sources for information that pertains to their patient's health problems.	Role modeling	360-Degree Evaluation Global Rating Form	Monthly
Take responsibility for lifelong learning.	Role modeling	Portfolios	Monthly
Use information technology such as Up-To-Date, PubMed or Ovid to enhance patient care.	Conferences	Portfolios	Monthly
Teach fellow residents, medical students, and interns.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
Maintain appropriate records documenting practice	Clinical Teaching	360-Degree Evaluation	Monthly

	activities (such as patient logs).		Global Rating Form	
Interpersonal and Communication Skills	<b>GENERAL OBJECTIVES</b>			
	Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, their patients' families, and professional associates.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	Create and sustain a therapeutic and ethically sound relationship with patients.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	Use effective listening skills and elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	Work effectively with others as a member or leader of a health care team or other professional group.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	Carefully listen to patients to assess the patient's health problems including their verbal and non-verbal communications.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	Demonstrating respectful and considerate attitudes, effectively communicate with patients, families, and other health care personnel, when addressing management plans, patient issues, and especially end-of-life decisions.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	Accurately present (verbally and written) a case to attending physicians, fellow residents, and other health care professionals.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	Provide timely, legible, and thorough medical record documentation - histories and physical examinations, admission notes, progress notes, procedure notes and discharge summaries.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	Provide education and counseling to patients, and families using non-technical and clear language. (Use non-verbal and verbal communication skills)	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	Demonstrate skill in handling all difficult patient care situations.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly

	Spend adequate time with patients addressing their questions and concerns.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	Work well within team consisting of students, residents, attending physicians, nurses, and patients.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	Function effectively as a consultant for specialty and subspecialty care.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	Represent the Pediatric Hematology-Oncology staff in interactions with patients and their families, acting with compassion and consideration at all times.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
Professionalism	<b>GENERAL OBJECTIVES</b>			
	Demonstrate a commitment to carrying our professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients, society that supercedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care confidentiality of patient information, informed consent, and business practices.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	Demonstrate a sensitivity and responsiveness to patients' culture, age, gender, and disabilities.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	Demonstrate respect, compassion, integrity, punctuality, reliability, and honesty with regards to patients and colleagues.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	Show regard for the opinions of others.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient Surveys	Monthly
	Display initiative and leadership.	Clinical Teaching	360-Degree Evaluation	Monthly

			Global Rating Form Patient Surveys	
	Acknowledge errors, alert patients and appropriate health care providers about the errors, and create a plan of action to minimize them.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Demonstrate concern for the educational development of students and residents.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Volunteer for activities for the good of the institution and community.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Ask for help when needed and accept constructive feedback.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Maintain patient confidentiality.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Compassionately respond to issues of culture, age, gender, ethnicity, and disability in patient care.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
Systems-Based Practice	<b>GENERAL OBJECTIVES</b>			
	Demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Understand how their patient care and other professional practices affect other health care professionals, the health care organization, and the larger society and how these elements of the system affect their own practice.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Know how types of medical practice and delivery systems differ from one another, including methods of controlling health care costs and allocating resources.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Practice cost-effective health care and resource allocation that does not compromise quality of care.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Advocate for quality patient care and assist patients in dealing with system complexities.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly

	Know how to partner with health care managers and health care providers to assess, coordinate, and improve health care and know how these activities can affect system performance.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	Demonstrate ability to deliver high-quality medical care in a private, government, and inner city hospital settings.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Demonstrate the knowledge of different types of medical practice and health care delivery systems and understand how this affects patient care.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Demonstrate knowledge of business aspects of medical practice including coding, billing, and insurance.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Work with ancillary team members (discharge planners, case managers, and social workers) to provide high quality cost-effective care.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Use systematic approaches to reduce errors.	QA Project	Project Evaluation	Monthly
	Practice effective allocation of health care resources to avoid compromising quality of care.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Interact with patients, attending physicians and allied health care personnel as part of a health care team.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Serve as a patient advocate in the outpatient and inpatient setting.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Direct care in inpatient and outpatient settings as a member of a multidisciplinary team.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Demonstrate knowledge of how the health care system including other physicians, nurses, and health care professionals affect their patient care practices.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly

**Leukemia-lymphoma inpatient rotation (2 months at St. Jude Children’s Research Hospital)**

Overall Goal: To learn how to diagnose leukemia and lymphoma in children and adolescents, determine the appropriate treatment plan, and enroll patients on clinical protocols.

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
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Patient Care	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	Diagnose leukemia and lymphoma including: <ul style="list-style-type: none"> <li>• Enroll patients on treatment protocols</li> <li>• Order chemotherapy</li> <li>• Provide supportive care</li> </ul>	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Supervise all patients on the leukemia-lymphoma service	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Manage complications of therapy, including infectious complications in the immunocompromised host and complications of chemotherapy	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Perform bone marrow aspirates and administer intrathecal chemotherapy.	Clinical Teaching	Procedure log	Monthly
	Formulate a differential diagnosis and diagnostic evaluation of a child or adolescent with lymphadenopathy or a mediastinal mass.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Identify the common genetic alterations in ALL and AML.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Describe the components of a palliative care plan for patients at the terminal phase of their disease.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Discuss the complete evaluation of a child or adolescent with leukemia.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
Medical Knowledge	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	Discuss the 3 common categories of Non-Hodgkin's Lymphoma and the general treatment strategies for each.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Describe the staging system and general therapeutic approach to Hodgkin's disease.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Summarize clinically important prognostic factors in ALL and AML and describe how those factors are used in risk classification of ALL and AML	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Describe the epidemiology and etiology of childhood leukemias	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Discuss the general treatment approaches used in ALL and AML.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Discuss the acute and long-term effects of various modalities used in the treatment of leukemia and lymphoma.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly

Practice Based Learning and Improvement	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Interpersonal and Communication Skills	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Professionalism	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Systems-Based Practice	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			

**Solid tumor rotation (2 months at St. Jude Children’s Research Hospital)**

Overall Goal: To learn the essential clinical, radiographic and biologic characteristics associated with various solid tumors seen in children and adolescent and their management.

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
Patient Care	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	Supervise all inpatients on the Solid Tumor service	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Diagnose, evaluate, and manage patients with malignant solid tumors, including neuroblastoma, Wilms tumor, Ewing sarcoma, osteosarcoma, rhabdomyosarcoma and other soft tissue sarcomas, hepatic tumors, retinoblastoma, germ cell tumors, colon cancer, melanoma, and other tumors, enrolling patients on treatment protocols, ordering chemotherapy, and providing supportive care.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Formulate a differential diagnosis and diagnostic evaluation of children and adolescents presenting with thoracic, abdominal, or pelvic masses, bone lesions and soft-tissue masses.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Describe the therapeutic approaches to the management of children and adolescents with solid tumors including the	Lectures/Seminars/Conferences	360-Degree Evaluation Global Rating Form	Monthly

	specific use of various chemotherapeutic agents and measures to achieve local control including the use of irradiation and surgery.			
	Discuss the acute and long-term effects of various modalities (chemotherapy, biologics, irradiation, surgery, etc) used in treatment.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Describe the components of a palliative care plan for patients at the terminal phase of their disease	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
Medical Knowledge	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	Demonstrate knowledge of the development of new agents. Fellows are thus exposed to the details of Phase I protocols, methodologies and ethical considerations	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Discuss the goals and study design components of a Phase I and a Phase II clinical trial.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Describe the epidemiology and etiology of childhood solid malignancies	Lectures/Seminars/Conferences	360-Degree Evaluation Global Rating Form	Monthly
Practice Based Learning and Improvement	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Interpersonal and Communication Skills	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Professionalism	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Systems-Based Practice	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			

**Stem cell transplant service (2 months at St. Jude Children's Research Hospital)**

Overall Goal: To provide the fellow with an introduction to the principles of autologous and allogeneic hematopoietic stem cell transplantation and the general evaluation and management of patients with disorders treated by hematopoietic stem cell transplantation.

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
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Patient Care	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	Under the supervision and guidance of faculty, perform stem cell transplantation (autologous and allogeneic)	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Manage children and adolescents who are undergoing transplantation	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Develop experience with hematopoietic and solid malignancies, bone marrow failure syndromes, immunodeficiency disorders, inherited metabolic disorders, and complications of stem cell transplantation, including graft failure, infectious complications, and graft-versus-host disease.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
Medical Knowledge	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	Recognize indications for autologous hematopoietic stem cell transplantation.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Recognize indications for allogeneic hematopoietic stem cell transplantation.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Describe the common toxicities in patients undergoing autologous hematopoietic stem cell transplantation.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Describe the common toxicities for patients undergoing allogeneic hematopoietic stem cell transplantation.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Discuss the differences between bone marrow and peripheral blood stem cell sources.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Describe the management of patients with fever and neutropenia and infectious complications in patients undergoing autologous and allogeneic hematopoietic stem cell transplantation.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Describe the process of hematopoietic stem cell infusion and the differences between fresh and cryopreserved products.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Describe basic procedures and medications to prevent graft-versus-host disease.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Describe the purpose of the conditioning regimen.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
Practice Based Learning and Improvement	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			

Interpersonal and Communication Skills	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Professionalism	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Systems-Based Practice	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			

**Hematology service (3 months at Le Bonheur Children’s Medical Center and St. Jude Children’s Research Hospital)**

Overall Goal: To learn the essential clinical, biologic, and therapeutic aspects of non-malignant hematologic disorders in children and adolescents.

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
Patient Care	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	Care for all newborns, children and adolescents with nonmalignant hematologic disorders	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Diagnose and treat the entire range of common and rare hematologic disorders in children, including bone marrow failure syndromes, hemoglobinopathies, red cell membrane and metabolism disorders, hemolytic and nutritional anemias, white cell disorders, platelet and coagulation disorders, and immunodeficiencies.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Interpret the results of hemoglobin electrophoresis at different stages of childhood.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Utilize current treatment approaches for hemophilia, Von Willebrand disease, and other coagulopathies, bone failure disorders, and Langerhans cell histiocytosis.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Interpret the results of genetic testing and new diagnostic techniques for inherited hematologic disorders	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Explain the acute and chronic complications of sickle cell disease, hemophilia, and aplastic anemia	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
Medical Knowledge	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	Describe the normal physiology and pathology of the	Lectures/Seminars/	360-Degree Evaluation	Monthly

	phagocytic system, splenic function, coagulation system, hemoglobin, iron, blood groups, and hematopoiesis.	Conferences	Global Rating Form	
	Recognize and identify peripheral blood and bone marrow findings commonly seen in general hematology practice, including: megaloblastic and microcytic anemias, bone marrow failure disorders, myelodysplasias, hemoglobinopathies, red cell shape disorders, other hemolytic anemias, and thrombocytopenias.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Describe screening and diagnostic tests for bleeding and thrombotic disorders.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Discuss the treatment of the common acute complications of sickle cell disease (e.g., acute chest syndrome, stroke, pain crisis, fever, and aplastic crisis).	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Describe the management of the long term complications of sickle cell disease (e.g., decreased intellectual and school performance, growth failure, renal dysfunction).	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Discuss and prescribe the main interventions for sickle cell disease (hydroxyurea, BMT, and chronic transfusion).	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
Practice Based Learning and Improvement	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Interpersonal and Communication Skills	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Professionalism	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Systems-Based Practice	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			

**After Completion of Therapy Clinic (2 weeks at St. Jude Children’s Research Hospital)**

Overall Goal: To increase knowledge regarding the common issues pertinent to providing optimal risk-based health care of long-term survivors of childhood cancer. This includes becoming familiar with common late effects of oncotherapy, becoming familiar with psychosocial needs and concerns of the childhood

cancer survivor and his/her family, and learning the practical issues of coordinating this care. It is also expected that the fellow prepare a talk regarding some aspect of childhood cancer survivorship.

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
Patient Care	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	Gains experience with the long-term effects of treatment	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Studies of late effects of therapy on the skeleton in evaluations of neurotoxic and cardiotoxic effects of therapy; and in investigations of risk factors for second malignancies.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Identify common childhood malignancies, including modalities of treatment and survival rates.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Identify long term side effects of commonly used chemotherapeutic agents.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Identify long term side effects of radiation therapy, specific to the site of radiation.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Develop a risk-based screening guideline plan that is patient specific, based on the type of cancer and therapy received by the survivor.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Arrange for appropriate consultative services if a late effect is identified or suspected.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Communicate the needs of a cancer survivor to primary care providers.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Perform histories, physicals, and counseling sessions with survivors of childhood cancer.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Become familiar with the process of medical record abstraction, focusing on issues during treatment that may relate to late effects.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Become proficient in communicating with survivors of childhood cancer regarding appropriate interventions for patients identifying cancer- and non-cancer-related medical and psychosocial concerns.	Clinical Teaching	360-Degree Evaluation Global Rating Form Patient surveys	Monthly
Medical Knowledge	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	Discuss long term psychosocial issues of cancer	Lectures/Seminars/	360-Degree Evaluation	Monthly

	survivorship including potential effects on insurability, employment, and relationships.	Conferences	Global Rating Form	
Practice Based Learning and Improvement	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Interpersonal and Communication Skills	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Professionalism	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Systems-Based Practice	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			

**Neuro-oncology rotation (1 month at St. Jude Children’s Research Hospital)**

Overall Goals: To learn the essential clinical, radiographic and biologic characteristics associated with various brain tumors seen in infants, children and adolescent and their management.

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
Patient Care	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	Diagnose and manage CNS tumors	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Formulate a differential diagnosis and diagnostic evaluation of infants, children and adolescents presenting with brain tumors.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Evaluate patients with low grade gliomas, high grade gliomas, medulloblastoma, pineoblastomas, CNS neuroblastoma, PNET’s, atypical teratoid rhabdoid tumors of the CNS, choroid plexus papillomas and carcinomas, ependymomas, optic pathway tumors, spinal cord tumors CNS germ cell tumors including the use of tumor specific criteria (e.g., tumor markers).	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Discuss the acute and long-term effects of various	Lectures/Seminars/	360-Degree Evaluation	Monthly

	modalities (chemotherapy, biologics, irradiation, surgery, etc) used in treatment especially as they relate to brain tumors.	Conferences	Global Rating Form	
	Describe the components of a palliative care plan for patients at the terminal phase of their disease.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Discuss the goals and study design components of a Phase I and a Phase II clinical trial.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
Medical Knowledge	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	Describe the therapeutic approaches to the management of infants, children and adolescents with brain tumors including the specific use of various chemotherapeutic agents and measures to achieve local control including the use of irradiation and surgery.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
Practice Based Learning and Improvement	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Interpersonal and Communication Skills	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Professionalism	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Systems-Based Practice	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			

**Hematopathology rotation (1 month at St. Jude Children's Research Hospital)**

Overall Goals:

1. Familiarize the rotating fellow with the basic microscopic features of normal peripheral blood, bone marrow and lymphoid organs in pediatric patients.
2. Provide the fellow with the basic knowledge necessary to recognize the microscopic features of the main pediatric malignant hematopoietic tumors of bone marrow and lymph nodes.
3. Provide the fellow with the basic knowledge necessary to pursue and understand the main types of ancillary studies used in the diagnostic work-up of malignant hematopoietic tumors.
- 4.

Competency	Required Skill(s)	Teaching	Formative Evaluation	Frequency of
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		Method(s)	Method(s)	Evaluation
Patient Care	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	Read peripheral blood and bone marrow smears	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Identify the main indications for performing flow cytometry, cytogenetic analysis (including FISH), and molecular diagnostics and be able to describe the basic principles of and main steps involved in each of these methods.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
Medical Knowledge	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	Demonstrate an understanding of modern ancillary diagnostic techniques such as cytogenetics, flow cytometry, and molecular diagnostics.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Recognize the basic morphologic features of the normal hematopoietic cells in bone marrow and lymph nodes.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Describe and recognize the basic morphologic features of acute lymphoblastic leukemia and acute myeloid leukemia; describe the general principles of acute leukemia classification, including cytochemical staining and morphologic findings.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Describe the main morphologic and immunophenotypic features of lymphoblastic lymphoma, Burkitt lymphoma, anaplastic large cell lymphoma, and Hodgkin's disease.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Describe the general principles of the current lymphoma classifications.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
Practice Based Learning and Improvement	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Interpersonal and Communication Skills	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Professionalism	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Systems-Based Practice	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and			

	objectives.			
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**Weekly Continuity clinic**

During the first year, fellows are assigned 25-30 new patients for whom they become the primary caregivers. For one-half day per week throughout the fellowship experience, fellows attend a continuity clinic at which they provide direct patient care to these patients. Faculty are assigned to the outpatient clinics each day, where they review the care provided by the fellow. Continuity patient care is discussed and reviewed at each outpatient encounter with the primary attending or clinic attending. The overall goal of this experience is for residents to learn the outpatient management of newly diagnosed and continuing patients with hematologic and oncologic disorders.

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
Patient Care	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	Identify the aspects of the history and physical examination that are critical in establishing a diagnosis of malignancy.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Describe the laboratory evaluation indicated in the workup of a patient suspected of having either a hematopoietic or solid malignancy.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Determine the most appropriate baseline diagnostic imaging evaluation for patients suspected of having a solid tumor.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Summarize the various methods available to establish a pathologic diagnosis of cancer.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Cite the information that must be transmitted to the patient and family at the time of initial cancer diagnosis, on-therapy evaluation, end of therapy, off-therapy evaluation, relapse, and death.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Identify the critical elements of informed consent.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Describe the goals of phase I, phase II, and phase III clinical trials.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Demonstrate how to treat a patient according to a clinical protocol.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Identify appropriate treatment strategies for children with cancer (at the time of initial diagnosis, at the time of relapse, and when curative therapy is not indicated).	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly

	Identify the chemotherapeutic agents active in each childhood malignancy and list their expected acute and long-term toxicities.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Cite the steps necessary to ensure adequate communication with other individuals involved in the care of patients with cancer (referring and primary care physicians, consulting physicians, nursing staff, social workers, etc).	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Identify the tests indicated for monitoring organ function during chemotherapy and define intolerable side effects that would require a change in treatment.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Describe the psychosocial aspects of cancer care in children and adolescents.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Cite the critical components of a palliative care plan.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Establish an appropriate follow-up plan for patients receiving treatment and for those who have completed treatment.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
	Demonstrate proficiency in performing diagnostic bone marrow aspirate/biopsy and lumbar puncture procedures.	Clinical Teaching	360-Degree Evaluation Global Rating Form	Monthly
Medical Knowledge	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	Identify common complications of cancer and its treatment, and summarize the evaluation and treatment of these complications.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
	Describe the goals of hospice care.	Lectures/Seminars/ Conferences	360-Degree Evaluation Global Rating Form	Monthly
Practice Based Learning and Improvement	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Interpersonal and Communication Skills	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Professionalism	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and objectives.			
Systems-Based Practice	<b>SPECIALTY SPECIFIC OBJECTIVES</b>			
	See General Pediatric Hematology/Oncology goals and			

objectives.			
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A. Scope of the Inpatient experiences

The fellows have direct supervisory responsibility for care provided by pediatric and medicine-pediatric residents and NP/PAs on all inpatient rotations. They review patient assessments and management plans and are responsible for assuring protocol requirements are completed, where applicable. They assume primary care responsibility for a minority of patients on the Leukemia, Solid Tumor and Hematology services. They assume primary care responsibility for up to one-half of the patients on the Bone Marrow Transplant service. They provide the initial evaluation for all hematology consults while on the Hematology rotation. The inpatient attending, a full time faculty member at SJCRH, directly supervises the fellow on each rotation.

Fellows participate in formal rounds with faculty at least 1 to 1 1/2 hours per morning. The attending faculty, fellows, other residents on the service, NP/PAs, social workers, a pharmacist, and nutritionist attend these rounds. All inpatients are presented orally by the primary care taker (often with input from the primary nurse) to the inpatient team, providing details of their interval history from the previous presentation (and prior history for new admissions), the present clinical status, and therapy plans. Inpatient attending physicians review the clinical findings, present status, and treatment plans, approving and amending them as clinical status requires. Attending physicians also use this time to provide ongoing instruction relevant to the clinical issues at hand. Attending physicians typically provide other didactic teaching sessions throughout the week. Acute changes in clinical status are reviewed with the attending. Status of critically ill patients is reviewed by the fellow with the faculty attending at the beginning of each day and before evening signout rounds, typically held week days at 5:00 PM.

B. Acquiring the necessary skills

Fellows are directly observed by attendings during initial performance of bone marrow aspiration, biopsy, and lumbar puncture. Most have had experience during their pediatric residency with these procedures and quickly master them. All bone marrow aspirations and biopsies are presently performed under conscious sedation or general anesthesia; outpatient procedures are performed in a designated area of the clinic, with anesthesia coverage. Fellows assist with bone marrow harvests during the Bone Marrow Transplant rotations. Peripheral blood smears and bone marrow aspirates are reviewed with the attending physician and/or the hematopathologist. Instruction in interpretation of hematologic laboratory diagnostic tests occurs primarily during the inpatient hematology rotations. The fellow also is expected to do independent study to master interpretation of diagnostic evaluations. All fellows are required to be PALS certified.

C. Familiarity with aspects of clinic care

Fellows acquire familiarity with all aspects of chemotherapy, surgical therapy and radiotherapy, treatment of complications, pain and symptom management, aspects of palliative care, appropriate use of blood products, and bone marrow transplantation through self-study, discussion at inpatient rounds, one-on-one contact with the inpatient and primary attendings and review of research protocols (available in each patient's chart and in the Protocol Office). Preparation for formal presentations at Leukemia/Lymphoma/ Hematology conference, UT Hematology conference and

Tumor Board often requires extensive literature review by the fellow. Team rounds (Leukemia, Solid Tumor and Bone Marrow Transplant) provide a forum for wide ranging discussion of clinical care of the hospitalized patients, attended by the entire clinical faculty in each discipline.

D. Specific educational meetings

1. Hodgkin's staging conference

This working conference provides a weekly update of all patients with Hodgkin's disease who have undergone initial staging or re-staging. Faculty from the Oncology, Surgery, Diagnostic Imaging, and Radiation Oncology departments participate. Fellows are encouraged to attend when one of their patients is discussed.

2. Hematology-Oncology Fellows Rounds

This weekly meeting is organized by the fellows and attended by fellows and faculty. Each fellow is expected to present a topic or journal article about two times per year.

3. Hematology conference

This is a combined conference for pediatric and adult hematologists at the University of Tennessee. At each meeting, one pediatric and one adult hematology case is presented. The St. Jude hematology fellow for that month is expected to give the case presentation and discussion. Attendance is required for the fellow on the hematology rotation.

4. Leukemia/Lymphoma conference

This is a formal conference held each week at St. Jude. The fellows are expected to present the case each week and may also be asked to present the discussion. This conference is attended by faculty from the Hematology, Oncology, Pathology, Diagnostic Imaging, and Infectious Diseases Departments. Attendance is required for first-year fellows and encouraged for all others.

5. Pediatric Grand Rounds

This weekly conference is organized by the Department of Pediatrics and is held at Le Bonheur Children's Medical Center. Attendance is optional.

6. Solid tumor staging conference

At this weekly conference, management of specific solid tumor patients is discussed by the Hematology, Oncology, Surgery, Diagnostic Imaging, and Radiation Oncology faculty. Fellows are encouraged to attend when their patients are discussed.

7. Solid tumor division rounds

In addition to daily ward rounds, the solid tumor division holds weekly rounds at which the inpatient team presents the current inpatients to the entire Solid Tumor division. The fellow on the Solid Tumor service is required to attend.

8. Leukemia division rounds

In addition to daily ward rounds, the Leukemia division holds weekly rounds at which the inpatient team presents the current inpatients to the entire Leukemia division. The fellow on the Leukemia service is required to attend.

9. St. Jude Grand Rounds

This is a weekly formal presentation of a clinical or basic science topic related to pediatric hematology-oncology. Attendance is required for all fellows.

10. BMT division rounds

In addition to daily ward rounds, the BMT division holds weekly rounds at which the inpatient team presents the current inpatients to the entire BMT division. The fellow on the BMT service is required to attend.

11. Tumor Board

This is a formal weekly conference in which a solid tumor case is presented and then discussed. Attendance is required for first-year fellows and encouraged for other fellows. Fellows are also expected to present several cases throughout the year.

12. Friday Noon Seminar

This series consists of weekly lectures presented to the entire St. Jude community by distinguished visiting scientists and clinical researchers. Fellows are required to attend.

13. Cancer Biology Forum

This lecture series for postdoctoral fellows and graduate students focuses on the major areas of cancer biology studied at St. Jude. It is held every other week and is presented by faculty members of the institution.

14. Oncology journal club

Held monthly, this is a combined journal club attended by members of the Oncology and Biostatistics Departments. At each meeting, a Hematology-Oncology fellow presents a journal article and a member of the Biostatistics Departments discusses the design and analysis of the study.

15. Hematology journal club

At this month meeting, fellows present recent articles focusing on nonmalignant hematology.

E. Psycho-social aspects of subspecialty care

Inpatient rounds on all services include members of the multidisciplinary team. Therefore, patient care decisions affecting allocation of resources, social, cultural and economic impact are routinely discussed and planned in the context of appropriate psycho-social input. End of life decisions and allocation of limited resources are reviewed with the primary and inpatient attending. Where conflicts exist among the team members, care conferences are held as necessary. St. Jude's commitment to International Outreach assures the presence of a significant population of foreign

patients. This clinical exposure provides a very wide spectrum of social, cultural, and economic considerations, not available in many training programs.

#### F. Relationship to other programs

The required inpatient rotations for the first year fellows are: Leukemia, Solid Tumor, Hematology and Bone Marrow Transplant. Because pediatric residents do not rotate on the Bone Marrow Transplant service, direct care is provided by first year fellow and nurse practitioners/physicians assistants. On the other required services, the fellow is responsible for assignment of care responsibilities, oversight of patient care, instruction of the second-year residents, and coordination of daily rounds. The fellow accepts direct patient care responsibilities for a small number of inpatients. Fellows in the second and subsequent years of training have no required in patient care responsibilities, except for outpatient care of their continuity patients. They may elect to take night and weekend call.

For patients admitted to the hematology/oncology services, both at St. Jude and LeBonheur Hematology rotations, the fellow (under the supervision of the faculty attending) has ultimate responsibility for coordination of patient care, with other subspecialty fellows acting as consultants as clinical status requires. For hematology/oncology patients admitted for surgical procedures, the pediatric hematology/oncology fellow provides ongoing consultation, however the surgical team has ultimate patient care responsibility. Patients admitted to the intensive care unit (ICU) are the responsibility of the ICU team, including the intensive care fellow (when present), with the pediatric hematology/oncology fellow providing ongoing consultation.

#### G. Service duties

The first year fellow is required to make daily inpatient rounds during each inpatient rotation and provide weekend coverage for rounds on an every other weekend schedule. Thus, every other weekend (two of each fourteen day block) is free of all clinical care responsibilities. During outpatient and elective rotations, the first year fellow provides coverage for weekend rounds on the alternate weekend not covered by the inpatient fellow. Weekend coverage is provided primarily by the first year fellows, although fellows in subsequent years are asked to provide weekend coverage for up 4-8 weekends per year.

Fellows at all levels of training may elect to take in hospital night call, up to 6 nights per month. The institution provides a generous stipend for fellows and junior faculty to provide this coverage. Therefore, usual demand for these night call slots is sufficiently high that no more than 4-5 nights per month are available to any fellow. This in-hospital night call (3 physicians assigned each night) provides complete coverage for all inpatient care, walk-ins, emergency admissions, and telephone coverage for the hospital. Consequently, once the inpatient fellow has signed out to the on-call team, his inpatient clinical care responsibilities are suspended until the following morning, but he is required to be on call from home to provide backup to the in-house physicians. All phone consultation from LBCMC for Hematology patients are handled by the hematology inpatient fellow. Routine admissions to the Hematology service are admitted by the on call resident team at LBCMC. Emergent situations and critical changes in clinical status requiring presence of the Hematologist are triaged to the Hematology fellow on call at home.

Beginning July 1, 2003, fellow work hours has been limited to 80 hours per week and no more than 30 continuous hours of patient care. Fellows continue to have 2 weekends free of all clinical duties every month.

I. Goals and objectives of the clinical year

A. Objectives related to statistics, epidemiology, ethics, teaching, and administration.

1. Identify the need for social services or psychology intervention.
2. Identify situations warranting consultation with the hospital ethics committee.
3. Effectively supervise the care given by residents and nurse practitioners.
4. Teach the residents the basic principles of pediatric hematology-oncology.
5. Present case histories and relevant discussion at Leukemia Conference, Tumor Board, and other multi-disciplinary conferences.
6. Demonstrate how to apply basic principles of biostatistics to data analysis and interpretation of clinical data.
7. Write and publish a hypothesis-based manuscript.
8. Discuss the responsibilities of clinical investigators to participants in human research.
9. Discuss the importance of medical confidentiality.
10. Describe the role of the IRB.
11. Describe the elements of the informed consent process.

II. Research program

St. Jude Children's Research Hospital is the only National Cancer Institute-designated Cancer Center solely devoted to pediatrics (Cancer Center Support Grant, P30 CA21765, Michael B. Kastan, MD, PhD, Principal Investigator). Dr. Kastan, Director of the Division of Molecular Therapeutics in the Department of Oncology, is also the Principal Investigator of the NCI training grant (T32 CA70089) for laboratory training of clinical oncologists. This grant provides support for up to three years of research training beyond the first year of clinical training.

Research at St. Jude is also supported by National Institutes of Health funding to individual investigators and by several multi-project grants, including the Pediatric Brain Tumor Consortium, U01 CA081457, (James Boyett, PhD, Program Director), the Solid Tumor Program Project, P01 CA23099, (Studies of Childhood Solid Tumors, Peter J. Houghton, PhD, Program Director), the Gene Therapy for Sickle Cell Disease Program Project, P01 HL053749, (Arthur W. Nienhuis, MD, Program Director), Childhood Cancer Survivor Study, U24 CA055727, (Leslie Robison, PhD, Principal Investigator), Pre-Clinical Paramyxoviruses Vaccine Development, P01 AI054955, (Allen Portner, PhD, Program Director), Therapeutic Monoclonal Antibodies to H5N1 Influenza U01 AI070373, (Richard Webby, PhD, Principal Investigator) Stroke with Transfusion Changing to Hydroxyurea, U01 HL078787, (Russell Ware, MD, PhD, Principal Investigator), and the Brain Tumor Program Project, P01 CA096832, Normal & Neoplastic Growth Regulation in the Brain, (Suzanne Baker, PhD, Program Director). St. Jude researchers are active participants in the Children's Oncology Group (Institutional Principal Investigator, Wayne Furman, MD). In addition, St. Jude is one of 10 comprehensive sickle cell centers to receive a grant from the National Heart, Lung and Blood Institute, U54 HL070590, (The St. Jude Comprehensive Sickle Cell Center, Winfred Wang, MD, Principal

Investigator). St. Jude has also been designated as a NIAID Center of Excellence for Influenza Research and Surveillance, N01-AI-70005 (Robert G. Webster, PhD, Principal Investigator).

The Cancer Center has been supported by consecutive Cancer Center Support Grants from the National Cancer Institute since 1977. Members of the center are committed to laboratory-based research integrated with a broad program of clinical investigation, currently supported by approximately \$50 million in extramural funding. The center is structured to emphasize interdisciplinary research programs with applicability to the understanding, prevention, and treatment of childhood cancer. The 7 programs around which the center is organized are targeted toward specific diseases (Hematological Malignancies and Neurobiology & Brain Tumor), conceptual themes (Signal Transduction, Molecular Oncology, and Infection & Host Defense), or novel therapeutic approaches (Developmental Therapeutics for Solid Malignancies and Transplantation & Gene Therapy). Each program supports cross-disciplinary, multi-departmental collaborations that foster innovative translational research. The success of such research is due in part to the use of crucial Cancer Center-supported Shared Resources, which include the Hartwell Center for Bioinformatics & Biotechnology.

The Cancer Center also includes the International Outreach Program. Based on a humanitarian mission, the International Outreach Program aims to improve the survival rates of children with cancer worldwide by assisting partner countries in establishing effective treatment protocols, facilities, educational opportunities, and collaborative research projects. Many research opportunities for fellows are available within the International Outreach Program.

The Cancer Center is currently expanding its Cancer Prevention & Control Program. Dr. Les Robison, Principal Investigator of the Childhood Cancer Survivors Study, has recently been recruited to St. Jude as the first Chair of the Department of Epidemiology and Cancer Control. He will also serve as Co-leader of the Cancer Prevention and Control Program. Under Dr. Robison's leadership, we anticipate that St. Jude will become the leader in childhood cancer prevention and cancer control and the premier program for the conduct of etiologic and outcomes-based research in childhood cancer.

Fellows begin participation in the research activities of the institution through patient care activities, by enrolling patients on protocols, ensuring their eligibility for protocol enrollment, following protocol guidelines, and carefully documenting protocol events. Preparation for important institutional presentations often requires reviews of patient materials, and these reviews occasionally lead to publishable results. During the first year, the fellows learn about the research opportunities available at the institution and select research mentors. Research mentors may be selected from any ongoing clinical or laboratory-based research program at St. Jude. During their second and subsequent years of training, fellows are given generous resources and about 90% protected research time to allow them to be productive and become fully prepared for careers as independent clinical, translational, or basic science investigators.

Fellows interested in formal training in clinical investigation may enroll in the Master of Science in Epidemiology Program at the University of Tennessee. Fellows on the clinical investigator track have the opportunity to participate in the development of clinical protocols in hematology, oncology, or stem cell transplant. Fellows are also expected to participate in the analysis, interpretation, and publication of retrospective studies. St. Jude has a substantial infrastructure dedicated to clinical research, including data managers, research nurses, statisticians, and database developers. Fellows can take advantage of these resources to develop their own ideas for studies and ask original research questions. In summary, our fellowship program offers a wide variety of research options that span all areas of pediatric hematology-oncology and that will prepare fellows for careers as clinical or laboratory-based investigators.

A more complete coverage of research activities may be found in the *St. Jude Children's Research Hospital Scientific Report* and on our Web site (<http://www.stjude.org>)

### III. Evaluation

#### A. Evaluation of fellows

Written yearly progress reports and written evaluations for all clinical rotations are required. The inpatient attending physician is responsible for completing the written evaluation form at the end of each rotation on that inpatient service. Evaluations should be discussed with the fellow. In addition, all members of the Department are asked to complete evaluation forms for all the clinical fellows every 6 months. Forms are reviewed by Drs. Rubnitz and Spunt and become a permanent part of the fellow's file. The fellow upon request may review them. The inpatient attending physician is also responsible for assurance that the fellow acquires necessary skills in performing the procedures used by pediatric hematologists and oncologists. If fellows encounter problems in acquiring these skills, the inpatient attending physician notifies the Fellowship Directors. Additional supervised training will then be made available to the fellow.

Supervision of the research training is the direct responsibility of the research mentor. Written yearly progress reports, including descriptions of abstracts and manuscripts, are required. Drs. Kastan and Rubnitz monitor progress during the research portion of the Training Program.

#### B. Evaluation of faculty

At the end of each inpatient rotation, fellows are required to provide written evaluations of the attending faculty members. These evaluations assess each attending physician's knowledge of pediatrics, pediatric hematology-oncology, and the literature relevant to these areas; conduct of rounds; teaching ability; availability; encouragement of the fellow; and overall performance. Significant problems are discussed with the inpatient attending physician. Teaching ability is one criterion established by the institution for yearly evaluations of faculty members and for academic promotion.

#### C. Evaluation of program

Once each year, the fellows are required to provide written evaluations of the fellowship program. These evaluations are reviewed by Drs. Rubnitz, Spunt, and Kastan and discussed at the Hematology-Oncology faculty meetings as needed.