

Fellowship Goals & Objectives

Pediatric Hematology/Oncology

November 10, 2016

The UNMC/Nebraska Medicine/CHMC Fellowship in Pediatric Hematology Oncology is a three-year program designed to provide the clinical, research, and teaching skills necessary for competence in this subspecialty. The program is also designed to meet the American Board of Pediatrics (ABP) eligibility criteria for certification. In order to meet these requirements fellows will spend one year devoting 90% of their effort to clinical work, and 75% of years 2 and 3 to training in research and teaching skills. While fellows may be expected to achieve competence in many components of patient care by the end of their 1st year, there is expected to be ongoing training and improvement for all patient care issues over the entire training period. During the first clinical year, fellows are expected to demonstrate knowledge during the first four months, comprehension during the second four months, and application during the final four months.

*The **clinical schedule for first year** for fellows includes monthly rotations during the first year: 4 months on the general pediatric hematology-oncology inpatient service at CHMC; 2 months on pediatric hematology-oncology inpatient service at Nebraska Medicine, with a focus on the bone marrow transplant service (in- and out-patient); 3 months on outpatient clinics to be divided between CHMC and Nebraska Medicine (general hematology oncology; sickle cell, hemophilia and other coagulation disorders, bone marrow transplantation). The first year fellow will also spend one month in pathology to include both solid tumor and hematopathology split between CHMC and Nebraska Medicine, and one month split between radiation oncology at Nebraska Medicine and transfusion services at CHMC. Fellows will receive 4 weeks of vacation with 1-2 weeks at a time taken from outpatient rotations. Throughout the **first year when not on clinic rotations, and during the 2nd and 3rd years**, fellows are expected to spend **½ day a week in general hematology oncology clinics** with some of that time spent focusing on subspecialty areas (e.g., sickle cell, coagulation) based on fellow preference and twice yearly assessment of individual strengths and weaknesses. During first year inpatient rotations (CHMC and Nebraska Medicine), fellows are expected to take first **home call** (with an attending as second call) for the relevant service Monday, Tuesday, and Thursday. Weekend call throughout the 3 years of fellowship will be every 4-6 weeks. Also throughout the 3 years of fellowship, fellows are expected to take Wednesday home call for the CHMC or Nebraska Medicine services no more than once every other week.*

For each competency, the minimum capability expected of each fellow includes:

Years 1 and 2: Progress toward independent practice

Year 3: Competence to practice independently

Patient Care

Goal: Fellows must be able to provide patient care that is consistent with standard of care for the treatment of pediatric hematology/oncology (including bone marrow transplantation) and related problems, while being compassionate, culturally sensitive, and ethical. Each of the following objectives will be attained in a level-based manner. Specifically, during the first four months of the clinical year, the fellow will be instructed in the aspects of each objective to attain knowledge. During the second four months, the fellow will be expected to describe each aspect of these objectives to express

comprehension. During the final four months and during years two and three the fellow will be expected to begin applying each aspect of these objectives independently.

Specific Objectives include:

- Employ management skills for the inpatient care of the following disorders as outlined by the pediatric hematology-oncology sub-board, including: leukemias, lymphomas; solid tumors; aplastic anemia; hematologic disorders of the newborn; hemoglobinopathies; red cell membrane and metabolism disorders; autoimmune disorders; nutritional anemia; inherited and acquired disorders of white blood cells; hemophilia and other inherited and acquired coagulopathies; ITP and other platelet disorders; congenital and acquired thrombotic disorders; congenital and acquired immunodeficiencies, post transplant lymphoproliferative disease; issues of cancer survivorship and palliative care
- List the side effects and mechanisms of action of the common chemotherapies;
- Demonstrate the ability to interpret common laboratory tools including a complete blood count, review of blood smears, PT, PTT and relate abnormalities to specific disease processes;
- Demonstrate the ability to manage oncologic emergencies such as (but not limited to): fever/neutropenia, SVC syndrome, Mediastinal Mass, Hyperleukocytosis, transfusion reactions;
- Recognize the benefits of and a basic working relationship with the Cooperative Childhood Cancer Groups (COG, NWTs, IRS) and define commonly utilized phase III protocols.
- Demonstrate the ability to work with a multidisciplinary team;
- Demonstrate an ability to speak with patients who have chronic disease and their families regarding diagnosis, treatment options and the presentation of informed consent;
- Demonstrate the ability to correctly write chemotherapy orders and follow protocol guidelines.
- Identify research opportunities in the field, at UNMC/Nebraska Medicine/CHMC, and elsewhere.
- Discuss patient presentation and management in tumor boards and board review courses, including in preparation of presentations;

The first year fellows will observe attendings leading a multidisciplinary team (including residents, medical students, nurses, nurse practitioners, social worker, psychologist, teacher, pharmacist, recreational therapy, clergy, psychology, nutritionists) serving patients with cancer and hematologic disorders and utilizing other disciplines to aid in the care of patients. By the end of the second of the 4 months on the inpatient general hematology oncology and transplantation services, fellows should be able to direct the multidisciplinary team themselves with the guidance of and under direct observation by the attending physician. By the 4th month on service, fellows should be able to direct rounds independently with indirect supervision by the attending. This will include performing daily examinations of all patients, communicating with patients/families, writing chemotherapy orders, and with the help of the attending

physician making management decisions. The fellow's ability to deliver patient care will be reviewed with the fellow after each rotation, and with formal written evaluations by the attending physicians twice yearly.

The fellow initially will assess all inpatient hematology- oncology and transplant admissions while on the inpatient services, and new and follow up outpatient consults when in the outpatient clinic. The fellow will be expected to formulate a differential diagnosis and a plan for further evaluation and management. This will be reviewed with the attending physician who will co-sign orders and notes in the electronic record. The fellow will understand the role of the consulting physician in the care of these patients. The fellow's ability to perform new patient consultations will be reviewed with the fellow after each rotation, and with formal written evaluations by the attending physicians.

The fellow will contribute to providing continuity of care for patients with a range of diagnoses. This care will always be delivered in collaboration with a supervising attending physician who will evaluate the fellow after each rotation as part of ongoing evaluations.

Fellows will understand the indications for, the common complications of, and how to perform common procedures (Bone marrow aspiration and biopsy, lumbar puncture with/without administration of intrathecal chemotherapy) through a process of "see one, do one". Assessment of ability to perform above procedures will be reviewed with the fellow after each clinic session and documented in evaluations by supervising attending physicians and through maintenance of procedure logs.

Fellows will become comfortable with interpretation of basic laboratory tests, microscopy of peripheral blood and bone marrow specimens through discussion and through review with a multi-disciplinary team at tumor boards. Dedicated attention to microscopy will take place with the Hematopathology Division during the dedicated hematopathology rotation during the first year. Assessment of capability in these areas will be documented as part of evaluations by supervising attending physicians.

The fellow will understand the medical, psychological, and financial issues involved with dying patients, including pain control, advanced directives, psychosocial support of the patient/family, hospice care, and dealing with the feelings of care team members. The attending physicians, other members of the healthcare team, and the patients/families, will assess the fellow's progress in this area through formal evaluations.

Medical Knowledge

Goal: Fellows must demonstrate knowledge of biomedical, clinical, epidemiological, and behavioral sciences, as they relate to patient care. Each of the following objectives will be attained in a level-based manner. Specifically, during the first four months of the clinical year, the fellow will be instructed in the aspects of each objective to attain knowledge. During the second four months, the fellow will be expected to describe each aspect of these objectives to express comprehension. During the final four months and during years two and three the fellow will be expected to begin applying each aspect of these objectives independently.

Specific Objectives include:

- Apply basic scientific and clinical knowledge of pediatric hematology, oncology, and stem cell transplant.

- Demonstrate the ability to obtain a comprehensive history and pursue an appropriate diagnostic work-up relating to hematologic and oncologic issues, as well as formulate a differential diagnosis.

Fellows will be expected to attend a formal didactic lecture series (every week) that will cover pertinent topics of hematology/oncology. Attendance will be documented.

The fellow will learn to identify and manage disorders, as summarized by the sub-specialty board, and listed above (Patient Care 1).

The fellow will develop a basic understanding of pharmacology of common and newer chemotherapies and will become proficient at chemotherapy order writing. Progress will be assessed by evaluations by the attending physicians during rounds in the in- and out-patient settings and by in-service examinations.

The fellow will develop a basic understanding of supportive care including transfusion therapy, management of infectious complications in immunocompromised patients, nutritional support, pain control, psychosocial support, palliative and hospice care. Progress will be assessed by evaluations completed by the attending physicians during rounds in the in- and out-patient settings and by in-service examinations.

Practice- Based Learning and Improvement

Goal: Fellows must demonstrate the ability to read about and synthesize literature relating to the care of patients, and to continuously improve patient care based on ongoing self-evaluation and lifelong learning.

Specific Objectives include:

- Assess gaps in knowledge and skills to develop an individual learning plan which will be updated yearly
- Critically review journal articles and other medical literature for journal club and tumor boards
- Appraise research articles by critically reviewing study design and research methodologies
- Analyze the fellow's own practice experience and participate in practice-based improvement activities
- Educate patients, families, students, residents and other health professionals,
 - as documented by evaluations of a fellow's teaching abilities by faculty and/or learners

The fellow will participate in providing bedside teaching to residents and medical students during inpatient rounds. The fellows' teaching ability will be reviewed with the fellow after each rotation and formally documented in evaluations by the faculty and pediatric residents.

The fellow will lead clinical management meetings such as the weekly sign out at CHMC and Nebraska Medicine.

Systems Based Practice

Goal: Fellow must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

Specific Objectives include:

- Analyze how different organizations within the healthcare system affect one another (e.g., insurance providers, advocacy groups, research organizations, government agencies, etc.).
- Identify systems errors and implement potential systems solutions.
- Understand cost-effective health care and resource allocation without compromising care.
- Assess quality care and assist patients in navigating the health care system.

The fellow will function as a member of a multidisciplinary team and should appreciate the different perspectives offered by various team members and will be evaluated through 360° evaluations by faculty, nursing staff and family evaluations.

The fellow will participate in at least one multi-disciplinary quality improvement project each year. This can be the same carried over multiple years or several projects. The fellow's performance working on this project will be reviewed with the fellow at least twice yearly by the CQI committee mentor, and evaluations.

The fellow will develop an understanding of the role of clinical trials in hematology/oncology practice. The fellow's performance in this area will be evaluated through review by the faculty of notes, chemotherapy orders, patient and clinical conferences, and COG on-line certifications.

Professionalism

Goal: Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.

Specific Objectives include:

- Compassion, integrity, and respect for others.
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.
- A commitment to excel in clinical care and ongoing professional development.

- A full understanding of issues pertaining to confidentiality in patient care, informed consent, and business practices.
- A commitment to ethical principles pertaining to provision or withholding of clinical care.

The fellow will communicate in a professional manner, after consultation with the attending physician, with families daily in regards to the plan of care and with primary care providers at the time of initial diagnosis and then at regular intervals thereafter. Professionalism will be formally assessed through written 360° evaluations from patients/families and by regular review of written communication with the primary care physicians.

The fellow will understand the issues surrounding the informed consent process for patients/families considering participation in clinical trials and will effectively manage informed consent talks with families. The fellows' understanding and ability to lead such discussions will be evaluated formally by 360° evaluations by families and patients, and by reviews by the supervising attending physicians.

Interpersonal and Communication Skills

Goal: Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information with other healthcare providers, patients and their families.

Specific Objectives include:

- Communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds
- Communicate effectively with consultants, referring physicians, and other healthcare professionals.
- Maintain comprehensive, timely, and legible medical records
- Demonstrate effective listening skills to elicit information, non-verbal skills, explanatory questioning and writing skills
- Perform effective transfers of care to oncoming team members

The fellow will clearly communicate with patients/families daily in regard to concerns, and plan of care. Such communication initially will be directly observed by the supervising attending physician and will be reviewed with the fellow at least after each rotation, as well as through written evaluations by attending staff, other healthcare team members, and patients/families.

The fellow will clearly communicate with the other members of the multidisciplinary healthcare team in regard to the treatment plan for the patients on the hematology/oncology and transplant services. Such communication will be directly observed by the supervising attending physician and will be formally evaluated through written evaluations by attending staff and other healthcare team members.

The fellow must effectively communicate with primary care providers at the time of initial diagnosis and at regular intervals thereafter. The fellow's daily notes, letters to primary care physicians and clinic charts will be reviewed by the attending staff and will be formally evaluated in faculty evaluations.

Teaching Methods

- Continuous interaction with hematology/oncology and transplant faculty during case presentations, rounds and decision making;
- In-formal teaching during clinic encounters
- Formal didactic lecture series
- Tumor boards and bone marrow transplant conference
- Reviewing peripheral blood smear and bone marrow slides
- Instruction in procedures

Assessment Method

Program Evaluation

- In-service exam scores
- Board scores and pass rates
- Fellow evaluations of program
- Procedure Log
- Internal and ACGME reviews
- ACGME surveys
- Program Evaluation Committee meetings twice yearly

Fellow Evaluation

- Direct observation
- Confidential written evaluations by supervising physicians
- 360 evaluations by patient/ family, and other healthcare team members.
- In-service exam scores.
- Twice yearly meetings and written evaluations by the program director, as a composite of all of the above

Level of Supervision

All clinical activities initially will be directly supervised by an attending physician. Direct supervision of clinical performance will decrease commensurate with the fellow's comfort and skill level, however the attending will always be available for indirect supervision. Procedures will take place under direct supervision throughout the 3 years of training.

Educational Resources

- Health Sciences Library with internet access including multiple subspecialty journals and e-books
- Access to internet and COG website
- ASPHO lecture series and PREP subspecialty review
- Current textbooks

Fellowship Goals & Objectives Bone Marrow Transplantation Rotation at Nebraska Medicine

Pediatric Hematology/Oncology

November 10, 2016

Rotation Goals

- To understand the principles of peripheral stem cell, bone marrow, and umbilical cord blood transplantation
- To develop proficiency with basic transplantation techniques and complications
- To explore opportunities for clinical or basic research in transplantation

Rotation Objectives

Each of the following objectives will be attained in a level-based manner. Specifically, during the first four months of the clinical year, the fellow will be instructed in the aspects of each objective to attain knowledge. During the second four months, the fellow will be expected to describe each aspect of these objectives to express comprehension. During the final four months and during years two and three the fellow will be expected to begin applying each aspect of these objectives independently.

Competencies

Patient Care Objectives

- Employ management skills for the inpatient care of the following disorders as outlined by the pediatric hematology-oncology subboard, including: leukemias, lymphomas; solid tumors; aplastic anemia; non-malignant hematologic and immunodeficiency disorders, post-transplant lymphoproliferative disease; GVHD, acute and late complications of transplantation, and donor selection

Evaluation Tools

- Review of EPIC & One Chart notes;
- 360° evaluations, online evaluations;
- Participation in management conferences;
- Procedures including marrow harvests

Medical Knowledge

Objectives

- Gain specific expertise in inpatient and outpatient management as required by the pediatric hematology-oncology sub-board, including: leukemias, lymphomas; solid tumors; aplastic anemia; non-malignant hematologic and immunodeficiency disorders, post-transplant lymphoproliferative disease; GVHD, acute and late complications of transplantation, and donor selection
- Identify the various indications for stem cell transplant
- Analyze specific donor stem cell sources and their impact on engraftment and GVHD.
- Analyze the HLA typing of both recipient and potential donors to identify appropriate stem cell sources.
- Demonstrate the ability to obtain a comprehensive history, pursue an appropriate diagnostic work-up, and formulate a differential diagnosis.
- Explain the purpose of the preparative regimen and immunosuppressive therapy
- Define the most common infectious complications of stem cell transplant and their management.

Evaluation Tools

- Presentations on rounds, at tumor board, management conferences
- Informal oral quizzes on rounds, and during rotations with each of the above disciplines
- Review of EPIC notes and orders
- In-service exam progress

Interpersonal/Communication Skills

Objectives

- Demonstrate the ability to communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds
- Demonstrate the ability to communicate effectively with consultants, referring physicians, and other healthcare professionals.
- Demonstrate the ability to maintain comprehensive, timely medical records
- Demonstrate effective listening skills to elicit information, non-verbal skills, explanatory questioning and writing skills

Evaluation Tools

- Presentations on rounds, at tumor board, and management conferences
- Contributions during family conferences;
- 360° evaluations, online evaluations
- Manuscript or grant development

Professionalism

Objectives

- Demonstrate compassion, integrity, and respect for others

- Demonstrate sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation
- Demonstrate a commitment to excel in clinical care and ongoing professional development
- Demonstrate an understanding of issues pertaining to confidentiality in patient care, informed consent, and business practices.
- Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care.
- Recognize the role of FACT accreditation for stem cell transplantation

Evaluation Tools

- Presentations on rounds, at tumor board, and management conferences
- 360 ° evaluations, online evaluations

Practice-Based Learning

Objectives

- Synthesize literature to continuously improve patient care based on ongoing self-evaluation and lifelong learning.
- Critically review journal articles and other medical literature
- Educate patients, families, students, residents and other health professionals, as documented by evaluations of the fellow's teaching ability by faculty and / or learners
- Role of CQI in patient safety

Evaluation Tools

- Individual learning plan and personal statement updated yearly
- Direct observation and 360° reviews of participation in family conferences
- Participation in CQI project(s)

Systems-Based Learning

Objectives

- Analyze how different organizations within the healthcare system affect one another (e.g., insurance providers, advocacy groups, research organizations, government agencies, etc.).
- Identify systems errors and implement potential systems solutions.
- Analyze cost-effective health care and resource allocation without compromising care.

Evaluation Tools

- Participation at multidisciplinary rounds and conferences
- Participation in CQI projects
- COG, NMDP, other organizational online certifications

Fellowship Goals & Objectives Inpatient Rotation

Pediatric Hematology/Oncology

November 10, 2016

Rotation Goals

- To develop expertise in the fundamentals of clinical diagnosis and treatment in the inpatient setting of pediatric hematologic and oncologic diagnoses with emphasis on history taking, physical exam, and evaluation of basic radiographic and core laboratory tests.
- To develop an individualized approach to the emotional issues of dealing with chronically ill hematology and oncology patients.
- To explore clinical research in hematology or oncology.

Rotation Objectives

Each of the following objectives will be attained in a level-based manner. Specifically, during the first four months of the clinical year, the fellow will be instructed in the aspects of each objective to attain knowledge. During the second four months, the fellow will be expected to describe each aspect of these objectives to express comprehension. During the final four months and during years two and three the fellow will be expected to begin applying each aspect of these objectives independently.

Competencies

Patient Care Objectives

- Employ management skills for the inpatient care of the following disorders as outlined by the pediatric hematology-oncology subboard, including: leukemias, lymphomas; solid tumors; aplastic anemia; hematologic disorders of the newborn; hemoglobinopathies; red cell membrane and metabolism disorders; autoimmune disorders; nutritional anemia; inherited and acquired disorders of white blood cells; hemophilia and other inherited and acquired coagulopathies; ITP and other platelet disorders; congenital and acquired thrombotic disorders; congenital and acquired immunodeficiencies, post transplant lymphoproliferative disease

Evaluation Tools

- Review of EPIC & One Chart notes;
- 360° evaluations, online evaluations;
- Participation in management conferences;
- Procedure logs

Medical Knowledge

Objectives

- Employ management skills for the inpatient care of the following disorders as outlined by the pediatric hematology-oncology subboard, including: leukemias, lymphomas; solid tumors; aplastic anemia; hematologic disorders of the newborn; hemoglobinopathies; red cell membrane and metabolism disorders; autoimmune disorders; nutritional anemia; inherited and acquired disorders of white blood cells; hemophilia and other inherited and acquired coagulopathies; ITP and other platelet disorders; congenital and acquired thrombotic disorders; congenital and acquired immunodeficiencies, post-transplant lymphoproliferative disease
- Demonstrate the ability to obtain a comprehensive history, pursue an appropriate diagnostic work-up, and formulate a differential diagnosis.

Evaluation Tools

- Presentations on rounds, at tumor board, management conferences
- Informal oral quizzes on rounds, and during rotations with each of the above disciplines
- Review of EPIC notes and orders
- In-service exam progress

Interpersonal/Communication Skills

Objectives

- Demonstrate the ability to communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds
- Demonstrate the ability to communicate effectively with consultants, referring physicians, and other healthcare professionals.
- Demonstrate the ability to maintain comprehensive, timely medical records
- Demonstrate effective listening skills to elicit information, non-verbal skills, explanatory questioning and writing skills

Evaluation Tools

- Presentations on rounds, at tumor board, and management conferences
- Contributions during family conferences;
- 360° evaluations, on line evaluations
- Presentations at SOC meetings, journal clubs/lecture series
- Manuscripts/grant development
- Participation in CQI projects

Professionalism

Objectives

- Demonstrate compassion, integrity, and respect for others
- Demonstrate sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation

3 | Goals & Objectives for Inpatient Rotation, PHO Fellowship

- Demonstrate a commitment to excel in clinical care and ongoing professional development
- Demonstrate an understanding of issues pertaining to confidentiality in patient care, informed consent, and business practices.
- Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care.

Evaluation Tools

- Presentations on rounds, at tumor board, and management conferences
- 360 ° evaluations, online evaluations
- Certification by COG in HIPAA and consents

Practice-Based Learning

Objectives

- Synthesize literature to continuously improve patient care based on ongoing self-evaluation and lifelong learning.
- Critically review journal articles and other medical literature
- Educate patients, families, students, residents and other health professionals, as documented by evaluations of the fellow's teaching ability by faculty and / or learners

Evaluation Tools

- Individual learning plan and personal statement updated yearly
- Journal club presentations
- Participate in core curricula
- Direct observation and 360° reviews of participation in family conferences
- Participation in CQI project(s)
- Publications

Systems-Based Learning

Objectives

- Analyze how different organizations within the healthcare system affect one another (e.g., insurance providers, advocacy groups, research organizations, government agencies, etc.).
- Identify systems errors and implement potential systems solutions.
- Analyze cost-effective health care and resource allocation without compromising care.

Evaluation Tools

- Participation at multidisciplinary rounds and conferences
- Participation in CQI projects
- COG online certifications

Fellowship Goals & Objectives Elective Rotations

Pediatric Hematology/Oncology

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The goal of an elective rotation is to develop expertise in the fundamentals of hematopathology, transfusion medicine, coagulation laboratory medicine, radiation oncology, hospice, and palliative care. Fellows must be competent in the proper use of the laboratory techniques for diagnosis, with recognition of the limitations of the various methods and the pitfalls in interpretation of laboratory results. Lab rotations should include the normal variations in laboratory data that occur at different ages, as well as the influence of medications, toxins, and systemic disease on hematologic test results

Fellows must be competent to perform and interpret:

- Bone marrow aspiration and biopsy
- Lumbar puncture with evaluation of cerebrospinal fluid
- Microscopic interpretation of peripheral blood films and
- Hematologic laboratory diagnostic tests

Fellows should develop the skills needed to review and interpret peripheral smear, bone marrow aspiration, and biopsy.

Fellows should keep a personal log of bone marrow biopsies and lumbar punctures and should make an attempt to review the bone marrows whenever possible.

Rotation Objectives:

Hematopathology

- Explain the basics of light microscopy;
- Define the microscopic findings of peripheral blood smears in common hematologic and oncologic entities including the microcytic, macrocytic, and hemolytic anemias, leukemias;
- List the microscopic findings of bone marrow aspirations and biopsies of leukemias and solid tumors, aplastic anemia, red cell aplasias, neutropenias, ITP, and common storage diseases;
- Describe the basic techniques of flow cytometry and immunophenotyping of leukemias.

Transfusion Medicine

- Describe the principles of transfusing red cells, platelets, granulocytes, plasma, and coagulation factors;
- List the indications and methods for pheresing donors for routine blood products and for peripheral blood stem cells;

- Pheresis experience-- Understand the indications and methods of pheresing donors for routine blood products and for peripheral blood stem cells
- Understand the risks of transfusions and approaches to minimizing risks
- Participate in transfusion medicine didactics with other students / hem/onc fellows

Coagulation Laboratory

- Explain the techniques to complete such laboratory tests such as PT, PTT, PFA, and factor and inhibitor analysis.
- Define possible sources of error in the completion and analysis of basic coagulation test

Radiation Oncology

- Explain the basic principles of radiation oncology including types of radiation (x-ray, ortho-, megavoltage, cobalt therapies, brachytherapy, external beam/intraoperative RT), dose rates and fractionation, construction of ports;
- Define the indications for and basic techniques of radiation in specific pediatric cancers;
- List the acute and long term side effects of radiation to different ports

Hospice and Palliative Care

- Define the issues that impact the successful institution and management of palliative care or hospice for pediatric hematology oncology patients.
- Analyze the available systems for the transition of pediatric oncology and hematology patients to palliative care or hospice.

Cytogenetics

- Become familiar with cytogenetic testing of bone patient samples: flow cytometry, molecular, and karyotype analysis

Competencies

Patient Care Objectives

- Employ expertise in each of the five rotations listed above.

Evaluation Tools

- 360° evaluations, on line evaluations by faculty from each of the above areas
- Participation in management, palliative care conferences;
- Direct observation by supervising faculty

Medical Knowledge Objectives

- Employ expertise in each of the five rotations listed above.

Evaluation Tools

- Presentations on rounds, at tumor board, management conferences
- Informal oral quizzes on rounds, and during rotations with each of the above disciplines
- Review of EPIC notes and orders
- In-service exam progress

Interpersonal/Communication Skills

Objectives

- Demonstrate the ability to communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds
- Demonstrate the ability to communicate effectively with consultants, referring physicians, and other healthcare professionals.
- Demonstrate the ability to maintain comprehensive, timely medical records
- Demonstrate effective listening skills to elicit information, non-verbal skills, explanatory questioning and writing skills

Evaluation Tools

- Presentations on rounds, at tumor board, and management conferences
- Contributions during family conferences;
- 360 ° evaluations, on line evaluations
- Participation in CQI projects

Professionalism

Objectives

- Demonstrate compassion, integrity, and respect for others
- Demonstrate sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation
- Demonstrate a commitment to excel in clinical care and ongoing professional development
- Demonstrate an understanding of issues pertaining to confidentiality in patient care, informed consent, and business practices.
- Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care.

Evaluation Tools

- Presentations on rounds, at tumor board, and management conferences
- 360 ° evaluations, on line evaluations

Practice-Based Learning

Objectives

- Synthesize literature to continuously improve patient care based on ongoing self-evaluation and lifelong learning.
- Critically review journal articles and other medical literature
- Educate patients, families, students, residents and other health professionals, as documented by evaluations of the fellow's teaching ability by faculty and / or learners
- Role of CQI in patient safety

Evaluation Tools

- Individual learning plan and personal statement updated yearly
- Direct observation and 360° reviews of participation in family conferences
- Participation in CQI project(s)

Systems-Based Practice

Objectives

- Recognize the role of the different divisions and services including TNMC's hospice and palliative care consultation service, rad onc, transfusion medicine, and the laboratory aspects of hem-path, coagulation and transfusion medicine

Evaluation Tools

- Participation at multidisciplinary rounds and conferences
- Participation in CQI projects