



University of Kansas Medical Center

**Department of Pathology and
Laboratory Medicine**

Resident Manual

(2012-2013)




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Addendum A – Sample Evaluation Forms

MISSION, GOALS AND PHILOSOPHY

The mission of the Department of Pathology and Laboratory Medicine at the University Of Kansas School of Medicine is to provide excellent teaching, research, patient care, and community service to meet the health needs of Kansas and the community at large. Our aim is to provide a supportive work environment in which each individual can excel and pursue avenues that lead to national and international recognition. We will accomplish this by developing mechanisms that make optimal use of our human and financial resources.

Within this context the overall goals of our residency training program are to develop a pathologist with the following characteristics:

- A pathologist capable of communicating as a medical consultant to other clinicians and to patients, as well as being capable of optimally directing the management of anatomic and clinical laboratory enterprises. The pathologist understands the science and technology of laboratory medicine and assures the quality, clinical appropriateness, and usefulness of the data produced by that laboratory. The pathologist is a clinician first and foremost.
- A pathologist who has the skills to recognize, interpret, and communicate pathologic processes in the clinical practice of anatomic pathology.
- A pathologist who understands and consults on methods of diagnostic test development, test utilization in the context of both generally applicable as well as patient-specific clinical settings, and assay interpretation in the acute and chronic clinical management of patients. These activities include the pathologist's role in the development and implementation of integrated medical informatics that optimize patient care.
- A pathologist who has the skills to consult in these areas at the broader systems level, and in the various extant healthcare delivery models.
- A pathologist who understands the role of research, in its broadest definition, in clinical decision-making, test development, knowledge generation, and continuing education.

To accomplish these goals, our program offers a flexible but educationally intensive training program in Anatomic Pathology (AP) and Clinical Pathology (CP, Laboratory Medicine) in order to prepare each of our residents for certification by the American Board of Pathology. A core program provides training that will lead to basic competence in general pathology. Elective opportunities are offered to permit the development of specialty excellence in particular subspecialty fields within Pathology such as Surgical Pathology and Hematopathology. Research activity is encouraged for our residents.

Values that we feel are important are that the program will be a balanced one in AP and CP and we will practice and teach state-of-the-art diagnostic pathology together with a strong foundation in pathogenesis and the molecular basis of disease. We encourage a strong and collegial relationship between faculty residents and all members of the department. We believe when our residents finish this program they should have outstanding skills and knowledge and we will help them obtain the fellowship, faculty or hospital position that they choose.

EDUCATIONAL PROGRAM

OVERALL EDUCATIONAL GOALS

Competencies that are common to all rotations are outlined below. Competencies that are specific to individual rotations are included with each sub-discipline. Residents will be given graduated responsibilities and will be evaluated at two general skill levels. Specific goals and learning objectives (Skill Levels) are described under each sub-discipline.

Legend for Learning Activities for Residents	
Didactic lecture	DL
Faculty sign-out	FSO
Journal club	JC
Directly supervised procedure	DSP
Role modeling	RM
Lab inspections	LI
Interdisciplinary conference	IC
Online tools	OT
Unknown slide conferences	USC
Project	P

Legend for Evaluation Methods for Residents	
Report review	RR
Direct observation	DO
Checklist	CL
Global rating/faculty evaluation	GR/FE
Standardized exam	SE
Practical slide exam	PSE
In-house written exam	IWE
360 multisource rating	360
Portfolios	PF
Procedures and case logs	PCL

CORE COMPETENCY: PATIENT CARE		
Goal: <i>Residents must demonstrate a satisfactory level of diagnostic competence and the ability to provide appropriate and effective consultation in the context of pathology services</i>		
Objectives:	Learning Activities	Evaluation Activities
Gather essential and accurate information about patients using all relevant available modalities.	FSO, DSP, RM, IC	RR, DO, CL, GR/FE, PF

Act as a skilled consultant to other clinicians to develop a diagnostic plan based on specific clinical questions and relevant clinical and pathologic information. This should be accomplished both in the patient-specific setting and the broader context of developing appropriate clinical pathway algorithms for diagnosis.	DL, FSO, DSP, RM, IC	RR, DO, GR/FE, SE, IWE
Gain knowledge and technical skills to recognize, interpret, and explain pathologic processes in the clinical practice of anatomic and clinical pathology.	DL, FSO, JC, DSP, RM, OT, USC	RR, DO, CL, GR/FE, SE, PSE, IWE, PF, PCL
Consult as part of a multidisciplinary healthcare team in developing a therapeutic plan that includes laboratory monitoring of efficacy and toxicity. Where clinically appropriate, consult on the use of laboratory-based therapeutics such as blood transfusion and other forms of cellular therapy.	DL, FSO, JC, DSP, RM, IC, OT	RR, DO, GR/FE, SE, IWE, PF, PCL
Provide expert consultation on the interpretation and follow-up of unusual or unexpected test results.	DL, FSO, JC, DSP, RM, IC, OT	DO, GR/FE, SE, IWE, PCL
Consult as a clinical expert in laboratory medicine at multidisciplinary conferences.	DL, FSO, JC, RM, IC, OT	DO, GR/FE, PCL
Note: The American Board of Pathology requires the following for board eligibility: a minimum of 50 autopsies, 2,000 surgical specimens, 1,500 cytology specimens and 200 intraoperative consultations.		
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Demonstrate knowledge about established and evolving biomedical, clinical and cognitive (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to pathology</i>		
Objectives:	Learning Activities	Evaluation Activities
Be able to use all relevant information resources to acquire and evaluate evidence-based information. Demonstrate proficiency in evaluating and presenting findings from appropriate peer-reviewed journals.	DL, FSO, JC, DSP, RM, IC, OT, USC, P	RR, DO, CL, GR/FE, SE, PSE, IWE
Develop and maintain a knowledge base in the basic and clinical sciences necessary for effective consultation in laboratory medicine.	DL, FSO, JC, DSP, IC, OT, USC	RR, DO, CL, GR/FE, SE, PSE, IWE, PF, PCL
Demonstrate sufficient knowledge to determine clinically optimal yet cost-effective testing and laboratory-based therapeutic strategies, including issues of turnaround time, test menu construction, and in-house referral diagnostic testing.	DL, FSO, JC, RM, IC, OT	RR, DO, GR/FE, SE, IWE, PCL
Employ mathematics and statistics as appropriate to laboratory testing; understand and implement quality control (QC) and quality assurance procedures as required.	DL, JC, RM, LI, OT, P	DO, CL, GR/FE, SE, IWE, 360
Recognize the unique aspects of laboratory medicine practice as modified by patient age and other patient population characteristics, especially aspects of pediatric and geriatric practice.	DL, FSO, JC, DSP, RM, IC, OT, USC	RR, DO, GR/FE, SE, IWE, PF, PCL

Demonstrate awareness and understanding of general and test-specific standards for method development and evaluation, such as those promulgated by the Clinical Laboratory Standards Institute (CLSI; formerly NCCLS), CAP, and similar organizations.	DL, RM, LI, OT, P	DO, GR/FE, SE, IWE, 360
Demonstrate awareness and understanding of proficiency programs, such as those provided by CAP and similar organizations.	DL, RM, LI, OT	DO, GR/FE, SE, IWE
Demonstrate knowledge of the principles of clinical research design, implementation, and interpretation. Understand the various levels of evidence in medicine and their translation into evidence-based practice.	JC, DSP, RM, P	DO, GR/FE, SE, IWE
Be able to design a study that can be used to validate methodologies and parameters of clinical utility for the implementation and continuing use of new evidence-based analytes in the local setting.	DL, JC, DSP, RM, LI, P	DO, GR/FE, SE, IWE, 360
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise and assimilate scientific evidence and improve their patient care practices.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to critically assess the scientific literature.	JC, RM, OT, P	DO, GR/FE
Demonstrate knowledge of evidence-based medicine and apply its principles in practice.	FSO, JC, RM, OT, P	DO, CL, GR/FE
Use multiple sources, including information technology, to optimize lifelong learning and support patient care decisions.	JC, RM, OT	DO, GR/FE
Develop personally effective strategies for the identification and remediation of gaps in medical knowledge needed for effective practice.	DSP, RM, USC	RR, DO, GR/FE, SE, PSE, IWE, 360
Use laboratory problems and clinical inquiries to identify process improvements to increase patient safety.	FSO, RM, IC	DO, GR/FE, 360, PF
Demonstrate knowledge of how to establish continuing competency assessment for pathologists as well as for laboratory personnel.	FSO, RM, LI	DO, GR/FE, 360
Use proficiency programs to improve laboratory practices.	RM, LI, OT, P	DO, GR/FE, 360
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with other health care providers, patients and patients' families.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to write articulate, legible, and comprehensive yet concise reports and consultation notes. Provide a clear and informative report, including a precise diagnosis whenever possible, a differential diagnosis when appropriate, and recommended follow-up or	FSO, DSP, RM	RR, DO, CL, GR/FE, PF

additional studies as appropriate.		
Demonstrate the ability to provide direct communication to the referring physician or appropriate clinical personnel when interpretation of a laboratory assay reveals an urgent, critical, or unexpected finding and document this communication in an appropriate fashion.	FSO, DSP, RM	RR, DO, GR/FE, 360
Conduct both individual consultations and presentations at multidisciplinary conferences that are focused, clear, and concise.	RM, IC, USC	DO, GR/FE, PSE
Demonstrate the ability to communicate the vision of the anatomic pathology and clinical pathology service role to other clinicians as well as to other healthcare personnel and administrators to develop clinically advantageous and cost-effective strategies.	FSO, RM, IC	DO, GR/FE, PSE, 360
Choose effective modes of communication (listening, nonverbal, explanatory, questioning) and mechanisms of communication (face-to-face, telephone, e-mail, written), as appropriate.	FSO, RM, IC, USC	RR, DO, GR/FE, PSE, 360
Demonstrate skills in obtaining informed consent, including effective communication to patients about procedures, alternative approaches, and possible complications of laboratory-based patient care diagnostic and therapeutic activities, such as those related to transfusion medicine.	DSP, RM	DO, GR/FE
Demonstrate skills in educating colleagues and other healthcare professionals: (1) demonstrate the ability to help other residents obtain proficiency in laboratory medicine; (2) demonstrate the ability to work well with technologists and to present laboratory medicine concepts to them effectively in continuing education settings and in the day-to-day laboratory environment; (3) demonstrate the ability to educate non-pathology clinicians and other healthcare workers, including pharmacists, nurses, residents, medical students, and others, about topics such as the fundamental principles of pathophysiology underlying test design/ interpretation and the approach to choosing and interpreting laboratory tests; (4) demonstrate an understanding of the principles one must follow when educating other practicing pathologists through publications or seminars on new testing and therapeutic strategies, research discoveries, and other cutting-edge professional knowledge.	FSO, JC, RM, IC, USC	DO, GR/FE, PSE, 360
CORE COMPETENCY: PROFESSIONALISM		
Goal: <i>Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate compassion: be understanding and respectful of patients, their families, and the staff and physicians caring for them.	FSO, DSP, RM, IC	DO, GR/FE, 360
Interact with others without discriminating on the basis of religious, ethnic, sexual, or educational differences.	FSO, DSP, RM, IC	DO, GR/FE, 360
Demonstrate positive work habits, including punctuality, dependability,	FSO, RM	DO, GR/FE,

and professional appearance.		360
Demonstrate a responsiveness to the needs of patients and society that supersedes self-interest.	FSO, DSP, RM	DO, GR/FE, 360
Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.	DL, FSO, DSP, RM, IC	DO, GR/FE, 360
Demonstrate knowledge of regulatory issues pertaining to the use of human subjects in research.	DL, OT	GR/FE, SE
Demonstrate a commitment to excellence and ongoing professional development.	RM	DO, GR/FE
Demonstrate interpersonal skills in functioning as a member of a multidisciplinary healthcare team	FSO, DSP, RM, IC	DO, GR/FE, 360
CORE COMPETENCY: SYSTEM-BASED PRACTICE		
Goal: <i>Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide pathology services that are of optimal value</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate understanding of the role of the clinical laboratory in the healthcare system.	DL, FSO, LI, IC	DO, GR/FE
Demonstrate the ability to design resource-effective diagnostic plans based on knowledge of best practices in collaboration with other clinicians.	FSO, RM	RR, DO, GR/FE, SE, IWE, 360, PF
Demonstrate knowledge of basic healthcare reimbursement methods.	DL	DO, GR/FE, SE, IWE
Demonstrate knowledge of the laboratory regulatory environment, including licensing authorities; federal, state, and local public health rules and regulations; regulatory agencies such as the Centers for Medicare and Medicaid Services and the US Food and Drug Administration; and accrediting agencies such as The Joint Commission (TJC), CAP, and the ACGME.	DL, FSO, LI, OT	DO, CL, GR/FE, SE, IWE
Understand and implement policies to continually improve patient safety as they relate to anatomic and clinical pathology at all levels.	FSO, RM, LI, P	DO, GR/FE

PROGRAM STRUCTURE

Overview of Training

The Pathology training program offers 16 positions for residents on service-based rotations. Approximately 4 residents enter the program each year. In addition, there are 1-3 cytopathology fellows, 1-2 Surgical Pathology Fellows, and 1-3 post-sophomore fellows. We offer a four-year combined Anatomic Pathology/Clinical Pathology (AP/CP) program or a three-year program in either AP or CP only. The AP/CP program consists of a 42 month minimum core program consisting of 23 months of AP, 19 months of CP in a total of 48 months. The faculty works with the residents to design an elective program that will provide a sound educational experience in the resident’s chosen area of concentration, as well as to flexibly adapt to the resident’s level of expertise and career goals. During the elective time residents are encouraged to spend time carrying out basic or applied research and/or time pursuing subspecialty training. We encourage residents to elect a combined program in AP/CP because we feel that there is a considerable overlap between many of the traditional areas of anatomic pathology and laboratory medicine.

PROGRAM OUTLINE

<i>Core Anatomic Pathology (25 Months)</i>	<i>Core Laboratory Medicine (19 months)</i>	<i>Electives (4 months)</i>
Surgical Pathology* (15) Autopsy Pathology** (3) Forensic Pathology (1) Cytopathology (4) Dermopath/Neuropath (1) Pediatric Pathology (1)	Hematopathology (3) Microbiology/Immunology/Virology (3) Transfusion Medicine (3) Chemistry (2) Cytogenetics (1) Molecular Pathology (1) Flow Cytometry/Wet Heme (2) Lab Management/Informatics (1) VACP Integrated Clinical Pathology (3) [Hematopathology, Chemistry, Lab Management]	Surgical Pathology Subspecialty Clinical Pathology Subspecialty Research

*Estimated number of months on Surgical Pathology; additional months of Surgical Pathology may be required; **additional months of autopsy may be required as determined by Resident Education Committee.

GENERAL PROGRAM OUTLINE

Rotation	Required	PGY1	PGY2	PGY3	PGY4	Total
Surgical Pathology	KU 9 months	2	2	3	2	9
	VA 6 months	3	2	1		6
Autopsy Pathology	3 months	2		1		3
Forensic Pathology	1 month		1			1
Cytopathology	4 months	1	1	1	1	4
Dermpath/Neuropath	1 month				1	1
Pediatric Pathology	1 month				1	1
Total Anatomic	25 months	8	6	6	5	25
Rotation	Required	PGY1	PGY2	PGY3	PGY4	Total
Hematopathology	3 months	1	1	1		3
Microbiology/Immunology/Virology	3 months	1		1	1	3
Transfusion Medicine	2 months	1			1	2
Community Blood Center	1 month		1			1
Chemistry	2 months	1		1		2
Cytogenetics	1 month		1			1
Flow Cytometry/Wet Heme	2 months		1	1		2
VACP #	3 months		1	1	1	3
Lab Management/Informatics	1 month				1	1
Molecular	1 month				1	1
Total Clinical	19 months	4	5	5	5	19
Electives	4 months		1	1	2	4
Total Months		12	12	12	12	48
<i># VACP (Integrated Clinical Pathology - hematopathology, chemistry, lab management)</i> One week will be arranged each year for PGY4s to attend MTN for histocompatibility testing training						

PGY-SPECIFIC GOALS

Definition

- ACGME Common Program Requirements IV.A.2 states the following: “Competency-based goals and objectives for each assignment at each educational level, which the program must distribute to residents and faculty annually in either written or electronic form. These should be reviewed by the resident at the start of each rotation.”

Purpose

- Each rotation has specific competency-based goals and objectives. In addition, the following list of year-specific goals defines specific goals either in skills, knowledge, or professionalism that are appropriate for each year of training. Residents must strive to achieve these goals as well as the overall educational goals described in the previous pages. Goals may vary somewhat between levels depending on individual rotation schedules.

PGY 1 GOALS: Anatomic Pathology

Autopsy - By the end of the first year:

- The resident has completed their first three autopsies under direct supervision
- The resident demonstrates a strong knowledge in gross and microscopic anatomy
- The resident understands and applies the seven components of the autopsy, as appropriate, required by ACGME for participation credit
- The resident demonstrates the ability to review and extract appropriate information from the clinical history prior to the autopsy
- The resident recognizes indications for performing an autopsy and recognizes settings where the Coroner should be contacted
- The resident can independently perform a full autopsy, including removal of the brain and spinal cord, and be able to correlate gross and microscopic findings with clinical history

Surgical Pathology - By the end of the first year:

- The resident has documented direct supervision of grossing the first three specimens in the majority of specimens on the organ-based list of specimens
- The resident can dictate informative gross dictations with proper cassette summaries and cut appropriate sections without direct supervision on all biopsies and simple routine specimens and most common cancer cases
- The resident becomes efficient in managing cases, such that an appropriate around time is observed
- The resident can independently perform frozen section procedures and can report frozen section results following joint faculty/resident interpretation of frozen sections

Cytopathology –

- Not taken during first year, as residents must have a solid foundation in gross and microscopic anatomy and basic surgical pathology prior to cytology rotations

PGY 1 GOALS: Clinical Pathology

Transfusion Medicine - By the end of the first year:

- The resident should achieve competency in Skill Level 1

Chemistry - By the end of the first year:

- The resident should achieve competency in Skill Level 1

Laboratory Hematology/Flow Cytometry - By the end of the first year:

- The resident demonstrates the ability to work up properly a bone marrow biopsy. This includes correct identification of cells with appropriate cell count, write up and differential diagnosis
- Demonstrates basic skills in hematologic correlation through special coagulation test consulting
- Demonstrate basic skills with interpretation of ancillary data (flow cytometry, cytogenetics, molecular genetics, immunohistochemistry)

Microbiology/Immunology and Molecular Pathology - By the end of the first year:

- The resident should achieve competency in Skill Level 1

Laboratory Management and Informatics - By the end of the first year:

- The resident should achieve competency in Skill Level 1

PGY 2 GOALS: Anatomic Pathology

Autopsy - By the end of the second year:

- The resident should be able to perform autopsies independently and efficiently with minimal correction by the attending
- The resident should be able to prepare and discuss the autopsy findings at morbidity and mortality conferences, including preparation of gross and microscopic photographs
- The resident can properly dissect the brain and spinal cord for gross examination independently, identify the majority of gross and microscopic neuropathology
- The resident is ready to start supervising (in third year) junior residents in autopsy procedures

Surgical Pathology - By the end of the second year:

- The resident has documented direct supervision of grossing the first three specimens for all specimens on the organ-based list of specimens
- The resident demonstrates the ability to work up cases properly, including ordering appropriate histochemical and immunohistochemical stains
- The resident demonstrates efficiency and professionalism in the handling of cases (turn around time is kept to 48 hours, special stains, immunostains are ordered when the attending staff requests them, the resident does the follow-up on stains when they do not arrive when anticipated)
- The resident demonstrates an economy of sections that are adequate to provide all the necessary information, and minimizes the need to submit additional wet tissue
- The resident demonstrates the ability to communicate appropriately to clinical colleagues, including impromptu drop-by visits and in CPC-type conferences
- The resident is ready to start supervising (in the third year) junior residents in surgical pathology procedures

Cytopathology - By the end of the second year:

- The resident demonstrates competency in recognizing inflammatory reactive repair, LGSIL, HGSIL and carcinoma on Pap smears and is able to report them out with the Bethesda System 2001
- The resident demonstrates an improvement in medical knowledge in cytology at sign-out
- The resident is ready to start supervising (in the third year) junior residents in cytology

PGY 2 GOALS: Clinical Pathology

Transfusion Medicine - By the end of the second year:

- The resident should achieve competency in Skill Levels 1 and some 2
- The resident should have worked up patients for autologous donor and pheresis in a competent manner
- The resident should have completed the rotation at the Community Blood Center

Chemistry - By the end of the second year:

- The resident must achieve competency in Chemistry Skill Level 1 and most of 2
- Residents should demonstrate the ability to do method validation, reference intervals and test utilization
- Residents should be able to demonstrate the ability to perform laboratory accreditation and prepare the laboratory for accreditation.

Laboratory Hematology/Flow Cytometry - By the end of the second year:

- Same skills as Year 1, but be competent in some Skill Level 2 hematology
- The resident should have familiarity with the clinical presentation and work-up of patients with coagulation problems
- The resident should demonstrate the ability to synthesize flow cytometry, cytogenetics, and molecular studies with hematology findings
- The resident should develop competency for Skill Level 1 in Flow Cytometry

Microbiology/Immunology and Molecular Pathology - By the end of the second year:

- The resident should achieve competency in Skill Level 1 and some of Level 2

Laboratory Management and Informatics - By the end of the second year:

- The resident should achieve competency in Skill Level 1 and some of Level 2

PGY 3 GOALS: Anatomic Pathology

Surgical Pathology - By the end of the third year:

- The resident must be able to compose a gross and microscopic Surgical Pathology report which is ready for electronic signature, with minimal if any correction
- The resident should be comfortable performing independent intraoperative consultations

Autopsy - By the end of the third year:

- The resident should have completed a rotation at Jackson County Medical Examiners Office and be competent in general forensic autopsy skills
- The resident should have case logs of a minimum of 50 autopsies, of which all 50 autopsies can be shared with one other resident. All seven elements must be documented, except forensic cases where microscopics are taken only when deemed necessary

Cytopathology - By the end of the third year:

- Residents should be reviewing and signing out all types of cytopathology with minimal correction by the attending staff
- The resident should be able to perform most fine needle aspirations without direct supervision, and produce diagnostic aspirations that are well-preserved, well-stained and with adequate cell button for ancillary studies
- The resident must develop professionalism and interpersonal and communication skills that are respectful and compassionate toward patients, demonstrating cultural competence

PGY 3 GOALS: Clinical Pathology

Transfusion Medicine - By the end of the third year:

- The resident must achieve competency in Skill Level 1

Chemistry - By the end of the third year:

- The resident should achieve competency in Skill Level 1

Laboratory Hematology/Flow Cytometry - By the end of the third year:

- The resident demonstrates the ability to work up properly a bone marrow biopsy and aspirate, including correct identification of cells, appropriate cell count, write up and differential diagnosis
- Demonstrates basic skills in hematologic correlation through special coagulation test consulting.
- Demonstrates basic skills with interpretation of ancillary data (flow cytometry, cytogenetics, molecular genetics, immunohistochemistry)

Microbiology/Immunology and Molecular Pathology - By the end of the third year:

- The resident should achieve competency in Skill Level 1 and most of Level 2

Laboratory Management and Informatics - By the end of the third year:

- The resident should achieve competency in Skill Level 1 and most of Level 2

PGY 4 GOALS: Anatomic Pathology

Surgical Pathology -

- The resident should be able to supervise junior residents in all aspects of the practice of surgical pathology
- The resident should have demonstrated increased medical knowledge through performance on study set examinations, conferences and conducting clinical conferences
- The resident is practice ready for billing, Medicare compliance and accreditation issues
- The resident should have completed subspecialty related rotations including Dermatopathology and Pediatric Pathology at CMH
- The resident must document minimally 200 intraoperative consultations/frozen sections
- The resident must have reviewed minimally 2,000 surgical pathology cases that they have reviewed and signed out
- The resident should be competent in all Surgical Pathology Skill Levels 1 and 2

Cytopathology -

- The resident must have reviewed a minimum of 1,500 cytologies (Pap smears, nongynecologic exfoliatives and fine needle aspirations)
- The resident should be able to supervise junior residents in all aspects of cytopathology
- The resident is practice ready for billing, Medicare compliance and accreditation issues
- The resident should have received training and be certified in ThinPrep
- The resident should be competent in all Cytology Skill Levels 1 and 2

Autopsy -

- The resident should have completed all autopsy training, including the Medical Examiner's rotation
- The resident should have minimally fifty (50) autopsies with gross and microscopic examination (see Year 3 goals; microscopics are taken as indicated on forensic cases)
- The resident should be competent in all Autopsy Skill Levels 1 and 2

PGY 4 GOALS: Clinical Pathology

Transfusion Medicine –

- The resident should be competent in all Transfusion Skill Levels 1 and 2

Chemistry –

- The resident should be competent in all Chemistry Skill Levels 1 and 2

Laboratory Hematology/Flow Cytometry –

- The resident should be competent in all Hematology and Flow Cytometry Skill Levels 1 and 2

Microbiology/Immunology and Molecular Pathology -

- The resident should be competent in all microbiology, immunology, cytogenetics and molecular Skill Levels 1 and 2

Laboratory Management and Informatics –

- The resident should be competent in all Skill Levels 1 and 2 for laboratory management and informatics

GENERAL - Throughout the entire duration of residency training the resident must also demonstrate the specific skills listed below in addition to obtaining competences as described in the previous pages for overall educational goals:

Professionalism:

- The resident has demonstrated professional conduct with regard to interpersonal interaction with peers (pathologist and clinicians), with clerical staff, histotechnologists, medical technologists (CLS), Laboratory Assistants, Autopsy Technicians, Program Coordinator, Laboratory Administration and all other employees
- The resident must have learned to assume responsibility over their cases. The resident must demonstrate a prioritization of educational mission, with the willingness and appreciation of teaching from attending staff, fellows and senior residents and other para-health professionals.
- Part of professionalism is checking their e-mail daily and responding in a timely manner, entering duty hours and completing documents in a timely manner, performance of surveys in a timely manner and checking and emptying their mail box
- Residents should keep their ACGME Case Log updated
- Residents must attend required lectures and conferences
- Residents keep certifications (e.g. BLS, ACLS, as required) and licensure (as applicable) current and renewed, without lapses
- Residents should have taken and passed USMLE Step 3 by December of the PGY2 year

Practice-Based Learning and Improvement:

- The resident must demonstrate self-motivation in the desire to critically review their work to continually find ways of improving their clinical and diagnostic skills
- This includes demonstration of adequate and appropriate review of the literature, the ability to use a library or internet to investigate topics
- The resident must submit a manuscript for publication or present an abstract a meeting prior to the completion of the program
- Residents must participate in Patient Safety Conferences

- While on CP rotations, residents must attend and participate in the Laboratory Quality Assurance monthly meeting
- Each resident must complete a minimum of one PBLI project prior to graduation

Interpersonal and Communication Skills:

- The resident must demonstrate growth in areas of interacting with peers and with attending staff. They should demonstrate understanding in what is told to them by appropriate and timely follow-up on assigned duties.
- Residents should be able to clearly communicate in a manner that is professional to clinicians, that is, to communicate reports from written reports, rather than from guessing from memory, and to ask them to read-back the report.
- To seek help from attending staff when it is appropriate.

Systems-Based Practice:

- Residents must take the CAP inspector on-line training program
- The resident must participate in CAP self-inspections and mock inspections at KUMC
- When possible they should also participate in external inspections
- Residents must participate in level appropriate interdisciplinary conferences

DIDACTIC SESSIONS AND CONFERENCES

Core lectures in Anatomic Pathology and Clinical Pathology are given every Tuesday and Wednesday morning from 8:00 – 9:00. Attendance is required for all residents, except for those residents on vacation or on a rotation outside of Kansas City. Residents will be excused from all clinical duties during the core lectures.

A list of required conferences will be distributed each month. Depending upon the conference, attendance is required at 80% of the conferences depending upon the resident rotation. Residents must be present prior to or within 10 minutes after the beginning of each conference or lecture in order to fulfill the attendance requirement. Conference attendance will be recorded by the Chief Residents and reviewed on a quarterly basis by the Program Director. Failure to achieve the required attendance level will result in disciplinary action including loss of educational funds for the next academic year.

RESIDENT SCHOLARLY ACTIVITY

Residents are encouraged to participate in scholarly activities including method development, clinical or basic research, or literature reviews. Publishing a peer-reviewed article is considered as important educational experience and all residents are expected to publish a minimum of one manuscript during their training or present at least one abstract at a national meeting.

Resident Travel Funds Each resident may apply for funding to attend up to two regional/national scientific meetings during the four-year residency program contingent upon availability of funds as determined by the Chair of the Department of Pathology. Funding will be contingent upon the resident being in good standing by the Program Director. The following guidelines must be met for funding consideration:

- The resident must be the presenting author of a poster or talk related to work performed within the Departments of Pathology at UKMC or the Kansas City VA.
- Funding will be provided for travel expense, lodging, food, and meeting registration, not to exceed \$1,500/meeting (receipts are required for reimbursement).
- The resident must arrange for time off of the scheduled rotation during the time of the meeting. If the resident is on a rotation that requires resident service, it is the responsibility of the resident to find coverage for the service (as approved by the Chief Residents and Program Director).
- Funding for more than two meetings during the duration of the residency program will be considered on an individual basis. In such cases, the strength of the scientific project will be reviewed by the Department of Pathology Research Committee or Resident Education Committee and final approval will be determined by the Department Chair based upon availability of funds.
- Funding does not apply for expenses occurring after completion of the residency program.

Resident Educational Funds Each academic year each resident will be allocated \$750 for educational development. Expenses charged to this fund may include books, study guides, and USMLE Step 3 examination expenses. Additionally, these funds may be applied to cover expenses related to attending pre-approved medical conferences and workshops. American Board of Pathology application fees and permanent license fees are not covered. Funds do not carry over to the following year. Funding will be contingent upon the resident being in good standing (including adequate conference attendance) as deemed by the Program Director. During the year that a resident serves as Chief Resident, the allocation is increased to \$1,250.

Funding will also be provided for travel expense, lodging, food, and meeting registration, not to exceed \$1,200 (receipts are required for reimbursement) for each resident to attend a board review course during either the third or fourth year of the residency program. These funds are restricted to board review course use only.

USMLE STEP 3 POLICY

Residents must show evidence of successful completion of USMLE Step 3 by January 1 of their PGY2 year. Residents will not be eligible for appointment beyond PGY2 without completion of USMLE Step 3. Residents are strongly encouraged to take the exam as early as possible.

Contracts of residents who are unsuccessful in passing USMLE Step 3 by January 1 of their PGY2 year will not be renewed. Such residents may petition the residency education committee for consideration of extension of contract to allow them time to take the examination again. The petition will be evaluated on an individual basis considering the resident's performance in the program. If the petition is approved, the resident will be offered a temporary contract (at the same PGY level) to allow one more examination attempt. If the resident is successful in passing the examination, he/she will be promoted to the next PGY level; if unsuccessful, the appointment will be terminated.

PROFESSIONALISM

The resident will demonstrate a commitment to carrying out professional responsibilities as follows:

- a) Licensing, certification, examinations, credentialing - Completes and passes Step 3 of USMLE prior to December of PGY2; performs at expected level on in-service and other objective examinations; maintains an up to date portfolio.
- b) Honesty, integrity, and ethical behavior - Behaves truthfully and understand the concepts of ethical behavior; seeks counsel when unethical behavior is suspected; is truthful, acknowledges personal near misses and errors and puts the needs of patients first; engages in ethical behavior.
- c) Humanistic behaviors of respect, compassion, and empathy - Understands the concepts of respect, compassion, and empathy; demonstrates respect, compassion and empathy; models respect, compassion and empathy, in complex situations.
- d) Responsibility and follow through on tasks - Dependably completes assigned tasks in a timely manner, e.g., logging of duty hours; assists team members when requested; respects assigned schedules; anticipates team needs and takes leadership role to independently implement solutions.
- e) Giving and receiving feedback – Accepts feedback constructively and modifies practice in response to feedback; able to provide constructive feedback; exemplifies giving and receiving constructive feedback; encourages and actively seeks feedback to improve performance.
- f) Responsiveness to each patient's unique characteristics and needs - Respects diversity, vulnerable populations, and patient autonomy; embraces diversity and respects vulnerable populations; aware of potential for bias to affect clinical care; demonstrates cultural competency; identifies and avoids biases affecting clinical care.
- g) Personal responsibility to maintain emotional, physical, and mental health - aware of importance of emotional, physical, and mental health and issues related to fatigue/sleep deprivation; exhibits basic professional responsibilities such as timely reporting for duty rested, ready to work, and appropriately dressed; manages emotional, physical, and mental health and issues related to fatigue/sleep deprivation; manages emotional, physical, and mental health and issues related to fatigue/sleep deprivation, especially in stressful conditions; recognizes signs of impairment in self and others and facilitates seeking appropriate help when needed.

ELIGIBILITY AND SELECTION OF RESIDENTS

Please see the policy outlined below regarding selection procedures for the appointment of residency to the program.

Initial Application Screening

The initial screening of applicants is done by the residency program coordinator or program directors. As applications are received, the following are outlined for review:

1. **USMLE or COMLEX Scores.** First attempt pass rate and scores greater than 200 are preferred.
2. **Year of Graduation.** If greater than 10 years, the type of work the candidate has been engaged in since graduation from medical school is noted.
3. **Experience following graduation.** Experience, either by education or work experience, in the field of pathology is noted.
4. **Personal Statement.** The program directors read the applicant's personal statement and evaluate it based on the following:
 - Command of the English language
 - Stated genuine interest in Pathology
 - Overall quality of the statement
 - Dean's Letter
 - Medical Transcripts
 - Letters of reference
 - Any potential items for concern

Additional Screening

If the program director is unable after the secondary screening to make a decision on whether or not to invite a candidate, the application will be sent to one of the other program director or another member of the Resident Education Committee for their review. After receiving feedback from the committee reviewer, the program director will decide whether or not to extend an invitation to the candidate.

Each candidate that is selected for interview will be invited via email by the residency program coordinator. Once the applicant is schedule, they will be sent an email with an interview confirmation and instructions for the interview day.

Interview Process

Six to 8 interview dates are selected and up to 8 candidates may be interviewed per interview day. At the beginning of each interview day an overview of the institution and program is presented. Five faculty members, including the two program directors and one chief resident interview the applicants. Each interviewer is given all application materials for each applicant to be interviewed in their scheduled day. Each interviewer is asked to complete a resident candidate evaluation form and also an individual ranking

form for each candidate they interview. Interviewers are asked to assign them a quartile based on every applicant they have ever interviewed. In February an annual ranking meeting is held with all faculty and resident interviewers and any other faculty who wish to attend. Each applicant is discussed in detail. After initial grouping into 'Upper, Middle, or Lower Thirds', the final rank list determined by the committee.

EVALUATIONS

See examples of E*Value Evaluations in Addendum A

Residents Evaluations

Near the end of each month an evaluation form is sent electronically (E*Value) to each faculty member for each resident with whom they have had educational interactions during the month and select technologists, pathology assistants and morticians (multi-source evaluations). Evaluations are based on the ACGME six competencies. A list of faculty members who will evaluate residents on each rotation has been developed and a tracking mechanism is used to insure that all evaluations have been obtained. Faculty members are encouraged to give immediate feedback to the residents.

Evaluation forms are placed in the resident's file and are open for examination by the resident at any time. Resident evaluations are reviewed by the Program Director and are summarized for the Resident Education Committee Meeting and at least annually at a meeting attended by all clinical faculty members. If a problem with performance is identified for any resident, the Program Director or designee immediately meets with the resident to discuss the issues and develop a plan of action. If there are no problems with the performance, the residents review and sign their evaluations at the time of evaluation release or at the six-month review meeting with the Program Director.

The Resident Education Committee determines if remediation is required. Clinical faculty members meet at the end of the academic year to decide on promotion for each resident. All evaluations, performance on exams, attendance at conferences and overall performance are discussed with each resident at the 6-month evaluation meetings with the Program Director. At that time, residents are asked to write a self-assessment and goals for the following 6 months. Each resident is asked at every 6 month evaluation to provide suggestions for program improvement.

The Program Director completes a summative evaluation for each resident finishing the program. The final evaluation summarizes all aspects of the resident's education and training, verifies that the resident is competent in the six general competencies and confirms that the resident has the ability to practice without direct supervision. The final evaluation letter is maintained in the resident's file.

Faculty Evaluations

Near the end of each month each resident receives electronically a rotation and a faculty evaluation form. Names of residents submitting such evaluations are suppressed. If problems are identified, they are discussed immediately with the appropriate faculty member. Faculty evaluations are reviewed by the Program Director at the end of the year. Faculty members are given an overall assessment including the following:

- clinical teaching
- commitment to educational program
- clinical knowledge
- professionalism
- scholarly activity

The annual assessment is signed by the Department Chair and a copy is sent to the faculty member. The assessment is used by the Department Chair for annual faculty evaluations.

Program Evaluations

A formal resident training quality improvement program addresses individual resident performance improvement, faculty development and overall training program improvement as described below.

Overall Goals of Resident Training Quality Improvement Program

The Pathology Resident Training Quality Improvement Program provides a process for individual resident performance improvement as well as overall program improvement. Measurement tools are used to identify individual residents in need of remediation early in the program. A general remediation program has been developed and is tailored for the individual needs of each resident. In addition, several measurement tools are used to monitor and identify areas of potential improvement within the overall training program. The Resident Education Committee, consisting of six faculty members, the two Chief Residents, and the Program Director, is responsible for ensuring the quality of resident education in Anatomic and Clinical Pathology.

Individual Resident Performance Improvement

Individual resident performance is evaluated by several measurement tools including, but not limited, to the following:

- *Monthly Evaluations by Faculty* – Online evaluations based on the ACGME six competencies are completed monthly by all faculty supervisors.
- *360° evaluations* – Online evaluation by select medical technology supervisors, pathology assistants, or other technical personnel that work directly with residents focus on professionalism, system-based learning, patient care and interpersonal and communication skills.

- *National Resident In-Service Exam (RISE)* – performance is compared to peers at the national level in different subspecialty areas of anatomic and clinical pathology.
- *Departmental In-Service Exam* – a departmental developed annual written exam covers subspecialty areas similar to the RISE.
- *Annual Practical Exam* – oral exam for histological description, differential diagnosis and final diagnosis for unknown slides.
- *CAP Inspections* – residents are evaluated by supervisors and faculty on performance of CAP self-inspection and mock inspections
- *AP/CP Presentation Performance* – presentation given by residents at this departmental conference are evaluated by all faculty at the end of the conference. The resident with the highest evaluation for an AP presentation and a CP presentation are given an award at the end of each year.
- *Interdisciplinary Conference Presentations* – presentations made by residents at interdisciplinary conferences, including but not limited to, hematology conference, tumor board, ENT conference, breast conference, CPC and Morbidity and Mortality conferences are evaluated by attending faculty.
- *Journal Club Presentations* – resident presentation and critical evaluation of current journal articles are evaluated by attending faculty.
- *Performance at Unknown Slide Conferences* – participation in unknown slide conferences including Surgical Pathology, Hematology, Dermatopathology and Neuropathology conferences are evaluated by attending faculty.
- *Conference Attendance* – attendance at the required level for specific conferences is monitored. Failure to attend at the required level is considered a problem with competency in professionalism.

Specific areas of weakness identified by any of the above performance tools may result in repeating a rotation. More global unsatisfactory performance areas may result in placement on remediation. Criteria for placement on remediation is performance of < 25th percentile on the RISE (based on correlation between RISE and Pathology Boards) AND below peer performance on Departmental In-Service Exam, OR performance of < 25th percentile on the RISE for two consecutive years, OR any combination of unsatisfactory evaluations and less than satisfactory scores on exams as determined by the Resident Education Committee.

Faculty Development

- Assessment:
 - Resident evaluation of faculty
 - Resident evaluation of rotations
 - RISE results for specific areas of training
 - Annual evaluation by Program Director for clinical teaching abilities, commitment to the educational program, clinical knowledge, professionalism, and scholarly activities.
- Faculty development improvement methods:
 - Annual discussion of use of evaluations
 - Feedback on Resident evaluation of Faculty
 - Feedback on Resident evaluation of rotations they teach
 - Feedback on RISE results in their area

Overall Training Program Quality Improvement Based on Outcome Measurements

- The Resident Education Committee continuously monitors the quality of resident training in Pathology. Examples of quality monitors and outcome measurement tools used to evaluate the quality of the training program include the following:
- *American Board of Pathology Specialty Exam* – Outcome data over a 5 year period for different areas of pathology broken down into different areas of pathology are provided to the program annually. For each category the board reports if residents from the individual program performed in the upper, middle or lower third compared to all residents taking the boards. In addition, the overall pass/fail rate over the past 5 years is provided for the program and compared to the national rate. This information is used to determine if the program may have specific areas of weakness in training. Program improvements will be investigated for area in which the residents performed in the lower third.
- *National Resident In-Service Exam (RISE)* – RISE results are provided for several different areas of Anatomic and Clinical Pathology. The overall program percentile performance compared to the national performance is used to identify areas of training in need of improvement.
- *Annual Program Evaluations by Residents and Faculty* – Anonymous electronic evaluations of the residency program by residents and by faculty are performed annually.
- *Departmental In-Service Exam* – Each year the Pathology Department composes a multiple choice exam made up of 100 questions from the same subspecialty areas as the national RISE. This provides the department two large objective exams for evaluation of residents. Performance variation within specific areas by the overall group of residents is used to identify potential areas for training improvement.
- *ACGME Survey Results* – the resident responses to strengths and weaknesses within the program are used to identify areas in need of improvement.
- *Senior Exit Program Evaluations* – Graduating residents are required to submit an evaluation of the training program prior to leaving the program. The evaluations are completely anonymous and are reviewed in detail by the Resident Education Committee.
- *Monthly Rotation Evaluations* – Each resident evaluates their monthly rotation online. These evaluations are initially reviewed by the Program Director on a biannual basis and then a summary is presented to the Resident Education Committee for use in program improvement.
- *Monthly Faculty Evaluations* – Each resident evaluates online every faculty that they are in contact with each month. The evaluations are reviewed by the Program Director and if any problem is identified it is reported to the Departmental Chair. The Departmental Chair also receives a copy of all evaluations and uses them for annual faculty review.
- *Six-month Meetings with Program Director* – As part of the six-month evaluation process, each resident is asked if they have any suggestions for program improvements.
- *Annual Curriculum Review* – In addition to monthly program review, a formal curriculum review is performed annually by the Resident Education Committee. An announcement is made to all faculty members that program improvement suggestions are welcomed.
- *Resident Monthly Meeting* – at each monthly Resident meeting, the Chief residents lead discussions on any program issues. Recommendations from the residents meeting are then taken to the Resident Education Committee.

- *Ad Hoc Projects and Task Forces* – Depending upon need, ad hoc task forces or subcommittees are formed to address specific program improvement questions.
- An annual Program Review is performed over two to three Resident Education Committee meeting in the spring of each year. The annual review examines and summarizes any needs for improvement in program quality, resident performance, faculty development, or graduate performance.

PROMOTION

Residents are evaluated by their attending staff and at the end of each rotation. Evaluations are available for review on line when they are completed. Residents being evaluated will receive an email notification when an evaluation has been completed. Residents are also evaluated by technologists, pathology assistants and autopsy assistants. These evaluations are to insure that residents are progressing satisfactorily from rotation to rotation and that deficiencies relative to promotion to the next PGY level, if present, can be addressed as soon as possible. In addition to rotation evaluations, information from other sources will be considered. These include attendance records for required academic sessions, results of written examinations, and informal reports. Residents are reviewed as to performance by the Residency Director at least twice yearly. Residents are also reviewed by the Clinical faculty at an annual meeting. Please refer to the Housestaff Policies and Procedure Manual for details of the recommended institutional guidelines pertaining to progress and promotions.

REMEDICATION, PROBATION, CORRECTIVE ACTION

Concerns regarding any aspects of a resident's performance are brought before The Departmental RRC. One or two low satisfactory grades will result in informal counseling. A poor grade or unsatisfactory rotation evaluation will result in formal counseling, which may include development of a remediation plan, repetition of the rotation or probation. Consistently poor performance may suggest a need for adverse action. Very specific guidelines from the School of Medicine govern remediation, probation, and due process/grievance procedures pertaining to any such actions. Please refer to the appropriate section in the Housestaff Policy and Procedure Manual for details.

Whenever the Residency Director is informed of significant concern regarding a resident's performance, the resident involved will be contacted and given the opportunity to provide a response. The resident may provide this response by any or all of the following: in the form of a written document, through verbal communication with the residency director, or by personal appearance before the departmental Residency Review Committee. The RRC will subsequently review the facts and make a decision as to whether this information should be included in the resident's permanent file. If a decision is made to place the material in the resident's file, both criticism and response will be included. Supervising faculty may include, in correspondence regarding concerns about resident's performance, a proviso that same not be placed in the resident's file if difficulties are corrected within a given time frame.

GRIEVANCE PROCEDURE

Grievance matters are those relating to the interpretation of, application of, or compliance with the provisions of the Resident Agreement, the policies and procedures governing graduate medical education, and the general policies and procedures of the University of Kansas Medical Center. Questions of capricious, arbitrary, punitive or retaliatory actions or interpretations of the policies governing graduate medical education on the part of any faculty member or officer of the Pathology Residency Program are subject to the grievance process. Complaints of illegal discrimination, including failure to provide reasonable accommodations and sexual harassment, are processed in accordance with the Medical Center policies and procedures that are administered through the Equal Opportunity Office. Should a house officer in the Department of Pathology have a grievance or be dissatisfied with any aspect of the program, he/she is encouraged to initially discuss the issue with his/her attending or the Chief Residents. If this is felt by the resident to be inappropriate or the issue is not satisfactorily resolved, timely discussion with the Program Director is highly recommended. Documentation of the issues and a statement of dissatisfaction by the aggrieved resident may be helpful, and is also encouraged, particularly when making an appeal to the Department's Resident Education Committee. In general, the resident will first discuss any grievance with the Chief Residents. If this fails to provide adequate closure to the grievance, then he/she is directed to speak with one of the Program Director. Issues can best be resolved at this stage and every effort should be made to achieve a mutually agreeable solution. If the grievance is not resolved to the satisfaction of the resident after discussion with the Program Director, the resident has the option to present the grievance, in writing, to the Office of Graduate Medical Education. In situations where the grievance relates to the Chair or Program Director, or where the resident believes that a fair resolution cannot be attained by presenting the grievance to those individuals, he/she may present the grievance in writing directly to the Office of Graduate Medical Education. The Associate Dean for Graduate Medical Education will meet with the resident, the Program Director, the Chair and one or more of the program's Chief Residents to determine the cause and validity of the complaint and to determine the means of redress. Should the meeting with the Associate Dean fail to resolve the grievance to the satisfaction of the resident, the resident may request that he/she be heard by the Executive Dean. Any action(s) taken in good faith by the Executive Dean addressing the grievance will be final.

WORK ENVIRONMENT AND DUTY HOURS

LEARNING AND WORKING ENVIRONMENT

The Program and institution are committed to promoting patient safety and resident well-being in a supportive educational environment. An appropriate ratio of education to service is ensured by providing a blend of supervised patient care responsibilities, clinical teaching, and didactic education. The Program provides an educational and working environment in which residents may address concerns in a confidential and protected manner. Residents are integrated and actively participate in interdisciplinary clinical quality improvement and patient safety programs. A culture of professionalism supports patient safety and personal responsibility. Appropriate educational resources are provided including medical information access, faculty supervision, and a wide variety and volume of both anatomic and clinical pathology cases. Residents are exposed to and encouraged to participate in scholastic activities. Graded and progressive clinical responsibility within the supportive educational environment assures resident development of sufficient competence to enter practice without direct supervision upon completion of the program.

The Pathology Residency Program and the institution will

- a) provide a stipend and benefits to the resident as stipulated in the applicable Resident Agreement;
- b) use its best efforts, within the limits of available resources, to provide an educational training program that meets the ACGME's accreditation standards;
- c) use its best efforts, within the limits of available resources, to provide the resident with adequate and appropriate support staff and facilities in accordance with federal, state, local, and ACGME requirements;
- d) orient the resident to the facilities, philosophies, rules, regulations, procedures and policies of the Medical Center, School, Department and Program and to the ACGME's and RRC's Institutional and Program Requirements;
- e) provide the resident with appropriate and adequate faculty and Medical Staff supervision and guidance for all educational and clinical activities commensurate with an individual resident's level of advancement and responsibility;
- f) allow the resident to participate fully in the educational and scholarly activities of the Program and Medical Center and in any appropriate institutional medical staff activities, councils and committees, particularly those that affect Graduate Medical Education and the role of the resident staff in patient care subject to these policies and procedures;
- g) through the officers of the program and the attending medical staff, clearly communicate to the resident any expectations, instructions and directions regarding patient management and the resident's participation therein;

- h) maintain an environment conducive to the health and well-being of the resident;
- i) within limits of available resources, provide:
 - i. adequate and appropriate food service and sleeping quarters to the resident while on-call or otherwise engaged in clinical activities requiring the resident to remain in the Medical Center overnight;
 - ii. personal protective equipment including gloves, face/mouth/eye protection in the form of masks and eye shields, and gowns. The Occupational Safety and Health Administration (OSHA) and the Centers for Disease Control (CDC) assume that all direct contacts with a patient's blood or other body substances are infectious. Therefore, the use of protective equipment to prevent parenteral, mucous membrane and non-intact skin exposures to a healthcare provider is recommended;
 - iii. patient and information support services;
 - iv. security; and
 - v. uniform items, limited to scrub suits and white clinical jacket;
- j) through the Program Director and Program faculty, evaluate the educational and professional progress and achievement of the resident on a regular and periodic basis. The Program Director shall present to and discuss with the resident a written summary of the evaluations at least semi-annually;
- k) provide a fair and consistent method for review of the resident's concerns and/or grievances, without the fear of reprisal;
- l) provide residents with an educational and work environment in which residents may raise and resolve issues without fear of intimidation or retaliation including the following mechanisms:
 - i. The GME office ensures that all programs provide their residents with regular, protected opportunities to communicate and exchange information on their educational and work environment, their programs, and other resident issues, with/without the involvement of faculty or attending. Such opportunities include, but are not limited to, confidential discussion with the chief residents, program director, program chair, core program director, and/or core program chair. Other intradepartmental avenues to confidentially discuss any resident concern or issue occur during the Annual Program Evaluations completed by each resident and/or through discussion with the resident representative during the required Annual Program Review (Annual Program Outcomes Assessment and Action Plan Report);
 - ii. The internal review process, during which residents in each program are afforded the opportunity to discuss their concerns about their programs with a resident from another program and have them presented confidentially to the GMEC;
 - iii. An ombudsman, the Assistant Dean for GME Administration, or any other member of the GME staff, including the Executive Vice Chancellor, Senior Associate Dean and the Associate Dean,

- who are available for the residents to bring any issues raised in these protected resident meetings, or any other issues a resident may need to address;
- iv. Peer leadership and membership of the University of Kansas School of Medicine Resident's Council, who are available to confidentially receive any resident concern and present their concerns to the Graduate Medical Education Committee and GME Staff;
 - v. E*Value "On-The-Fly" praise and concern comments can be sent through E*Value directly and confidentially to those program directors that offer this service. In addition, "On-The-Fly" comments can be confidentially sent to the DIO. This can be accessed through any resident's E*Value user menu.
 - vi. ACGME Resident Survey, administered directly to all residents in ACGME-accredited Programs. This survey provides summary and anonymous feedback to Program and GME Leadership. For programs with less than four residents the GME Resident Survey, which is a confidential, anonymous survey organized by the GME office, is administered annually;
 - vii. a grievance process, as outlined in section 13 of this Manual, which provides the resident with a formal mechanism for addressing serious concerns within their programs;
 - viii. ACGME Department of Resident Services at residentservices@acgme.org or by phone (312) 755-7498 is available if the above described avenues have not satisfactorily addressed a specific resident issue. The ACGME Resident Services representative will work with the DIO to resolve issues surrounding concerns. Valid complaints are processed by Resident Services and will require a response from the program director and attestation to the response by the DIO, and review by the relevant review committee.
- m) upon satisfactory completion of the Program and satisfaction of the Program's requirements and the resident's responsibilities delineated herein, furnish to the resident a Certificate of Completion of the Program;
 - n) annually review and approve the number of residents and funding sources for each program and discuss these quotas and sources of funding with the chairs and Program Directors in a timely fashion so as to facilitate the recruitment and retention of residents;
 - o) provide the agreed upon levels of financial support, subject to the terms of the resident contract; and
 - p) exercise all rights and responsibilities expressed and implied by the "Institutional Requirements" of the ACGME.

SUPERVISION OF RESIDENTS

All work performed by residents is performed under supervision of attending faculty. All procedures performed in autopsy, surgical pathology and clinical laboratory medicine are performed under either direct or indirect supervision of an attending faculty member. All at-home call is supervised by faculty members. Resident responsibilities and progression of responsibility is described in each rotation description. More

advanced residents are given increased responsibility which will include more time on each procedure or task being indirectly supervised (immediate availability) by the faculty member.

Supervision of Residents

- In the clinical learning environment, each patient must have an identifiable, appropriately-credentialed and privileged attending physician (or licensed independent practitioner as approved by each Review Committee) who is ultimately responsible for that patient's care.
- This information should be available to residents, faculty members, and patients.
 - **Inpatient:** Patient information sheet included in the admission packet and listed on the "white board" in each patient room
 - **Outpatient:** Provided during introduction verbally by residents and/or faculty
- Residents and faculty members should inform patients of their respective roles in each patient's care.
- The program must demonstrate that the appropriate level of supervision is in place for all residents who care for patients.

Methods of Supervision.

- Some activities require the physical presence of the supervising faculty member.
- For many aspects of patient care, the supervising physician may be a more advanced resident or fellow.
- Other portions of care provided by the resident can be adequately supervised by the immediate availability of the supervising faculty member or resident physician in his/her "final years of training", either in the institution, or by means of telephonic and/or electronic modalities.
- In some circumstances, supervision may include post-hoc review of resident delivered care with feedback as to the appropriateness of that care.
- The privilege of progressive authority and responsibility, conditional independence, and a supervisory role in patient care delegated to each resident must be assigned by the program director and faculty members.
- The program director must evaluate each resident's abilities based on the following specific criteria and when available should be guided by specific national standards-based criteria.
- Faculty members functioning as supervising physicians should delegate portions of care to residents, based on the needs of the patient and the skills of the residents
- "Residents in their final years of training" or fellows should serve in a supervisory role of PGY 1 and "intermediate residents" in recognition of their progress toward independence, based on the needs of each patient and the skills of the individual resident or fellow

Levels of Supervision Defined

To ensure oversight of resident supervision and graded authority and responsibility, the program must use the following classification of supervision established by the ACGME.

- **Direct Supervision:**
 - This means the supervising physician is physically present with the resident and patient.
- **Indirect Supervision A (with direct supervision immediately available):**
 - This means the supervising physician is physically within the hospital or other site of patient care, and is immediately available to provide ***Direct Supervision***.

- **Indirect Supervision B (with direct supervision available):**
 - This means the supervising physician is not physically present within the hospital or other site of patient care, but is immediately available by means of telephonic and/or electronic modalities, and is available to provide **Direct Supervision**.
- **Oversight:**
 - This means the supervising physician is available to provide review of procedures/encounters with feedback provided after care is delivered.

Per Program Specific RRC Requirements	RRC APPROVED LICENSED INDEPENDENT PRACTITIONER SUPERVISOR (PR VI.D.1)
	Although pathology assistants are not licensed independent practitioners, they may be authorized by a department to provide supervision or oversight of dissection of surgical specimens and autopsies. The ultimate responsibility for a patient's care, however, lies with the attending physician, and cannot belong to a pathology assistant.
	OPTIMAL CLINICAL WORKLOAD (PR VI.E.)
	The clinical responsibilities for each resident must be based on PGY-level, patient safety, resident education, severity and complexity of patient illness/condition and available support services.
	MEMBERS OF THE INTERPROFESSIONAL TEAM (PR VI.F.)
	Residents must care for patients in an environment that maximizes effective communication. This must include the opportunity to work as a member of effective inter-professional teams that are appropriate to the delivery of care in the specialty.
	COMPETENCIES TO ALLOW PGY1 RESIDENTS TO PROGRESS TO INDIRECT SUPERVISION (PR VI.D.5.a).(1))
	<p>Each PGY-1 resident must be directly supervised during performance of, at least, his or her three initial procedures in the following areas:</p> <ul style="list-style-type: none"> - autopsies (complete or limited) - gross dissection of surgical pathology specimens by organ system - frozen sections - apheresis - fine needle aspirations and interpretation of the aspirate <p>A PGY-3 or PGY-4 resident, pathology assistant or attending pathologist may directly supervise the gross dissection of surgical pathology specimens and/or autopsies. Blood banking/transfusion medicine fellows, PGY-3 or PGY-4 residents, or attending pathologists may directly supervise apheresis.</p>
DEFINING RESIDENT LEVELS “INTERMEDIATE LEVEL” & “FINAL YEARS OF TRAINING” For establishing the minimum rest period between duty periods (PR VI.G.5.b&c)	

PGY-2 residents are considered to be at the intermediate level.

Residents in the final two years of the program (PGY-3 and PGY-4) are considered to be in the final years of education.

CIRCUMSTANANCES WHEN RESIDENTS IN THEIR FINAL YEARS OF EDUCATION MAY REMAIN OR RETURN IN < 8 HOURS (PR VI.G.5.c).(1))

The Review Committee defines such circumstances as: required continuity of care for a severely ill or unstable patient, or a complex patient with whom the resident has been involved; events of exceptional educational value; or, humanistic attention to the needs of a patient or family. Intermediate residents and residents in the final years of education may stay on duty or return to the hospital to perform intra-operative consultations, apheresis, emergent autopsies (e.g., when a patient's religion requires rapid burial), fine needle aspirations, immediate evaluation of cytology, transfusion medicine/blood banking emergencies, and hematologic emergencies.

DEFINED MAXIMUM NUMBER OF CONSECUTIVE WEEKS AND MAXIMUM NUMBER OF MONTHS PER YEAR OF IN-HOUSE NIGHT FLOAT (PR VI.G.6.)

Not Applicable

Program-specific guidelines for circumstances and events in which residents must communicate with appropriate supervising faculty (PR VI.D.5)

Not Applicable

Source of specific criteria and/or specific national standards-based criteria used to evaluate each resident's abilities (PR VI.D.4.a)

Not Applicable

PGY 1

LEVEL of SUPERVISION	ACTIVITIES /PROCEDURES (as defined by RRC & Program)
DIRECT	Three initial procedures in the following areas: <ul style="list-style-type: none"> - autopsies (complete or limited) - gross dissection of surgical pathology specimens by organ system - frozen sections - apheresis - fine needle aspirations and interpretation of the aspirate

INDIRECT A (with direct supervision immediately available)	
INDIRECT B (with direct supervision available-as determined by program specific RRC guidelines PR VI.D.5.a).(1))	All other procedures
INTERMEDIATE LEVEL RESIDENTS (PGY 2)	
LEVEL of SUPERVISION	ACTIVITIES /PROCEDURES (as defined by RRC & Program)
DIRECT	
INDIRECT A (with direct supervision immediately available)	
INDIRECT B (with direct supervision available)	All procedures
OVERSIGHT (with direct supervision available)	
RESIDENTS IN FINALYEARS OF TRAINING (PGY 3 and 4)	
LEVEL of SUPERVISION	ACTIVITIES /PROCEDURES (as defined by RRC & Program)
DIRECT	
INDIRECT A (with direct supervision immediately available)	
INDIRECT B (with direct supervision available)	All procedures
OVERSIGHT (with direct supervision available)	

Monthly schedules are posted online and provided to all residents and faculty members indicating all residents and faculty working in each anatomic and clinical pathology area. Likewise, on call residents and faculty are posted online and distributed to all residents and faculty each month.

Informing patient of resident role: When residents have direct contact with patients (e.g. fine needle aspiration procedures or apheresis procedures) they must verbally introduce themselves to the patients, identify themselves as pathology residents, and describe their role in the procedure.

TRANSFER OF CARE (HANDOFF PROTOCOL)

To provide safe and effective patient care in pathology, transitions of care (anatomic and clinical pathology specimens/cases) will use effective and structured hand-off procedures.

To minimize patient care transition, residents are assigned to month long rotations in which they manage individual cases from beginning to end. In certain circumstances, such as end of the month transition in surgical pathology, or when residents are contacted during at-home on call, the following Handoff policies must be followed.

End of Month Handoff in Surgical Pathology

- Departing and arriving residents **MUST** meet face to face to discuss incomplete cases and what each case needs to be signed out.
- The leaving Day 1 resident **MUST** correct the gross description on all cases prior to hand over.
- The status of each incomplete case **MUST** be indicated on the paperwork for the case (ex awaiting immunos or special stains, needs Q/A, history etc).
- Day 2 and 3 leaving residents: All incomplete cases **MUST** have corrected gross descriptions, topography, final diagnosis and tumor checklists entered as much as **HUMANLY** possible.
- The departing residents are to make themselves available for questions as needed during the first week of the next month. If they are at KU and on a light rotation, they are **HIGHLY** encouraged to finish up their incomplete cases themselves. Remember, no one knows the case as well as you!

For on call residents, if the resident is called in during the night:

- Write the details regarding the call (e.g. patient information, physician information, results) on the “call details” white board located in the surgical pathology grossing room.
- and
- Send an e-mail (prior to 8:30 am) with the call details to the pertinent resident and attending, both chief residents, and the pathology assistant (Brooke).

For on call residents, if the resident receives a phone call not requiring coming in:

- Send an email (prior to 8:30 am) with the call details to the pertinent resident and attending, both chief residents, and Brooke.
- For clinical pathology calls, fill out the transfusion medicine call form the following day with the appropriate details

In any situation **when clinical care exceeds a resident’s ability (knowledge or volume)**, the resident should immediately contact the supervising faculty member and the chief resident. The faculty member will advise the chief resident if another resident needs to be immediately sought to help with the clinical tasks or if such duties may be delayed until additional resident help is available. All such incidents need to be recorded by the chief resident and reported to the Program Director. The circumstances leading to the event will be investigated by the Program Director. Need for intervention with the resident or for process changes with the clinical rotation will be evaluated.

DUTY HOURS AND CALL SCHEDULES

The Pathology Residency Program policy is that resident duty hours will be in compliance with the guidelines established by the Accreditation Council for Graduate Medical Education (ACGME). Please refer to the online Graduate Medical Education Policy and Procedure Manual @ <http://www.kumc.edu/som/gme/gmepolicyandproceduremanual.pdf>.

Duty Hour Restrictions

Duty hours are defined as all clinical and academic activities related to the residency program; i.e., patient care, administrative duties relative to patient care, the provision for transfer of patient care, time spent in-house during call activities, and scheduled activities such as conferences. Duty hours do *not* include reading and preparation time spent away from the duty site.

Duty hours must be limited to 80 hours per week, averaged over a four week period, inclusive of all in-house call activities and all moonlighting.

Duty periods of PGY-1 residents must not exceed 16 hours in duration.

Residents must be provided with 1 day in 7 free from all educational and clinical responsibilities, averaged over a 4-week period, inclusive of call. One day is defined as 1 continuous 24-hour period free from all clinical, educational, and administrative duties.

Adequate time for rest and personal activities must be provided. This should consist of a 10-hour time and **MUST** have an 8-hour time period provided between all daily duty periods for PGY-1 and intermediate-level (PGY2) residents. At-home call (or pager call): The frequency of at-home call is not subject to the 8 hours between duty periods rule. However at-home call must not be so frequent as to preclude rest and reasonable personal time for each resident.

Intermediate residents (PGY2) and residents in the final years of education (PGY3 and 4) may stay on duty or return to the hospital to perform intra-operative consultations, apheresis, emergent autopsies (e.g., when a patient's religion requires rapid burial), fine needle aspirations, immediate evaluation of cytology, transfusion medicine/blood banking emergencies, and hematologic emergencies. In cases where residents return to work in less than 8 hours, the resident will be asked to verify the reason for the extended duty hours by filling out the "Extended Duty Hours" form.

The resident is expected to be rested and alert during duty hours, and the resident and resident's attending medical staff are collectively responsible for determining whether the resident is able to safely and effectively perform his/her duties.

If a scheduled duty assignment is inconsistent with the Resident Agreement or the Institutional Duty Hours and Call Policies, the involved resident shall bring that inconsistency first to the attention of the Program Director for reconciliation or correction. If the Program Director does not reconcile or correct the inconsistency, it shall be the obligation of the resident to notify the Department Chair or Associate Dean for Graduate Medical Education, who shall take the necessary steps to reconcile or correct the raised inconsistency.

On-Call and Resident Time Record Reporting

At-home call (or pager call) is defined as a call taken from outside the assigned institution.

The frequency of at-home call is not subject to the every-third night or “24+4” limitations. At-home call, however, must not be so frequent as to preclude rest and reasonable personal time for each resident. Residents taking at-home call must be provided with 1 day in 7 completely free from all educational and clinical responsibilities, averaged over a 4-week period.

When residents are called into the hospital from home, the hours residents spend in-house are counted toward the 80-hour limit. Resident call backs to the hospital while on home-call do not initiate a new off-duty period (i.e., are not subject to the 8 hour between duty periods restrictions).

The program director and the faculty monitor the demands of at-home call, and make scheduling adjustments as necessary to mitigate excessive service demands and/or fatigue.

The call schedule and schedule of duty assignments will be published and made available for review by the residents on a monthly basis.

Duty hours are monitored weekly by the Program Coordinator. Any duty hour violation is immediately reported to the Program Director who then contacts the resident to investigate the violation. The Program Director reviews duty hour documentation every six months.

The Program Director will submit to the Office of Graduate Medical Education, in partnership with the Budget, Reimbursement, Cost Accounting, and Revenue Cycle Office, duty hour reports for each resident in the program.

The corrected call schedules and resident time records will be used to verify compliance with the duty and call policies, for invoicing affiliate institutions for resident services, and for documentation of the residents’ activity reports that must be submitted to the Centers for Medicare and Medicaid Services.

OUTSIDE ROTATIONS AND MOONLIGHTING

Several opportunities for education and work outside of the KUMC campus are available. In some instances these are encouraged for the education of our residents. At other times the residents receive remuneration for professional services rendered (moonlighting and locum tenens). All of these instances must be requested, approved and authorized by the administration of both the Department and of KUMC. For these reasons, the following guidelines must be met:

Moonlighting - Departmental residents working for pay on their off hours at institutions or physicians’ offices outside of KUMC.

- PGY1 residents are not eligible for moonlighting.
- All moonlighting must be approved, prior to the onset, by the Chair of the Department, Program Director and the Executive Dean of the School of Medicine.

- The description of the moonlighting functions must be on record in the office of the Chair of the Department.
- Moonlighting is restricted to more senior residents functioning in the specialty of pathology in areas of resident competence.
- It is the resident's professional responsibility to appear for regular duty hours rested and fit. The practice must, in no way, compromise the educational time or function of the resident in the program of the Department. It must be during "off" hours. If the resident's performance is compromised, the Program Director and/or Department Chair can suspend the resident's moonlighting privileges. (Graduate Medical Education Policy and Procedure Manual)
- The KUMC has no malpractice liability responsibility for activities covered under this section. Therefore, it is mandatory that the resident maintain personal malpractice coverage, at a level no less than that provided by the State of Kansas for activities related to our resident program. The carrier and policy number must be recorded on the approval form.
- The resident must have a permanent license to practice medicine in the state in which the moonlighting is to take place.
- The hours spent moonlighting will be counted towards the 80 hour work week limit.

Locum tenens. Department residents working for pay at another institution or office covering for a practicing pathologist in that pathologist's absence from the site of practice on a temporary basis.

- All *locum tenens* arrangements must be approved, prior to the onset, by the Chair of the Department, Executive Dean of the School of Medicine, and Executive Vice Chancellor. This approval must be obtained on a special form available from the Program Director or Chair.
- A description of the functions must be on record in the office of the Chair of the Department.
- *Locum tenens* are generally restricted to the practice of pathology and are undertaken by a senior resident considered by the staff to be nearly ready to practice pathology.
- The number of days allowable is limited to a total of two weeks for any one resident for any one year.
- The *locum tenens* must not, in any way, deduct from required rotational time of the resident in obtaining time necessary for eligibility for the AP/CP boards of the American Board of Pathology.
- The resident must have a permanent license to practice within the State of the *locum tenens*.
- Professional liability insurance, for *locum tenens* within the State of Kansas is available under KSA 40-3401 et. seq. if the *locum tenens* is approved by the Executive Dean and the EVC. Any *locum tenens* arrangement not falling under this statute must be accompanied by adequate, personal, professional liability insurance coverage.

Educational rotations outside of KUMC. Departmental residents involved in either elective, or required (other than KCVAH) rotations outside of KUMC.

- All such rotations must be approved, prior to their onset, by the Chair of the Department and the Program Director, the Executive Dean, the EVC, and the associate general counsel. Approval must be obtained using a special form available from the Program Director or Chair. This form must be submitted a minimum of three (3) months in advance.

- A description of this experience must be on record in the residency program curriculum book in the Office of the Chair.
- Such programs, whether elective or required, should be beneficial to the education of the specific resident who requests the program.
- Terms of agreement include designation of the outside facility (university, hospital, etc.), effective period of the rotation, fiscal considerations, licensure, malpractice coverage, supervision and evaluation of the resident's performance.
- Licensure. The state and license number must be placed upon the application.
- Malpractice. Professional liability insurance coverage is provided by the University's self-insurance program.
- Supervision and evaluation. The resident must provide evidence that he/she will be fully supervised on this education experience, that the supervising staff agrees to be responsible for the supervision of the resident in all patient care, and that an evaluation of the resident's performance be forwarded to the Program Coordinator upon completion of the rotation.

RESIDENT FATIGUE

All new residents must complete the Fatigue Training Module in Angel during the institutional orientation. All faculty members are also educated to recognize the signs of fatigue and sleep deprivation and must adopt and apply the following institutional policy to prevent and counteract its potential negative effects on patient care and learning.

Purpose

Symptoms of fatigue and/or stress are normal and expected to occur periodically with the resident population, just as it would in other professional settings. Not unexpectedly, residents may on occasion, experience some effects of inadequate sleep and/or stress. As an institution, the University of Kansas Medical School has adopted the following policy to address resident fatigue and/or stress:

Recognition of Resident Excess Fatigue and/or Stress

Signs and symptoms of resident fatigue and/or stress may include but are not limited to the following:

- Inattentiveness to details
- Forgetfulness
- Emotional lability
- Mood swings
- Increased conflicts with others
- Lack of attention to proper attire or hygiene
- Difficulty with novel tasks and multitasking
- Awareness is impaired (fall back on rote memory)
- Lack of insight into impairment

Response

The demonstration of resident excess fatigue and/or stress may occur in patient care settings or in non-patient care settings such as lectures and conferences. In patient care settings, patient safety, as well as the

personal safety and well-being of the resident, mandates implementation of an immediate and a proper response sequence. In non-patient care settings, responses may vary depending on the severity of and the demeanor of the resident's appearance and perceived condition. The following is intended as a general guideline for those recognizing or observing excessive resident fatigue and/or stress in either setting.

Patient Care Settings

Attending Faculty:

1. In the interest of patient and resident safety, the recognition that a resident is demonstrating evidence for excess fatigue and/or stress requires the attending faculty or supervising resident to consider immediate release of the resident from any further patient care responsibilities at the time of recognition.
2. The attending faculty or supervising resident should privately discuss his/her opinion with the resident, attempt to identify the reason for excess fatigue and/or stress, and estimate the amount of rest that will be required to alleviate the situation.
3. The attending faculty must attempt, in all circumstances without exception, to notify the chief/supervising resident on-call, program director and/or department chair, respectively, depending on the ability to contact these individuals, of the decision to release the resident from further patient care responsibilities at that time.
4. If excess fatigue is the issue, the attending faculty must advise the resident to rest for a period that is adequate to relieve the fatigue before operating a motorized vehicle. This may mean that the resident should first go to the on-call room for a sleep interval lasting no less than 30 minutes. The resident may also be advised to consider calling someone to provide transportation home.
5. If stress is the issue, the attending faculty upon privately counseling the resident, may opt to take immediate action to alleviate the stress. If, in the opinion of the attending faculty, the resident stress has the potential to negatively affect patient safety, the attending faculty must immediately release the resident from further patient care responsibilities at that time. In the event of a decision to release the resident from further patient care activity; notification of program and administrative personnel shall include the chief/supervising resident on-call, program director and department chair, respectively, depending on the ability to contact these individuals.
6. A resident who has been released from further immediate patient care because of excess fatigue and/or stress cannot appeal the decision to the responding attending faculty.
7. A resident who has been released from patient care cannot resume patient care duties without permission of the program director or chair when applicable.

Residents:

1. Residents who perceive that they are manifesting excess fatigue and/or stress have the professional responsibility to immediately notify the attending faculty, the chief resident, and/or the program director without fear of reprisal.
2. Residents recognizing resident fatigue and/or stress in fellow residents should report their observations and concerns immediately to the attending faculty, the chief resident, and/or the program director.

Program Director:

1. Following removal of a resident from duty, in association with the chief resident, determine the need for an immediate adjustment in duty assignments for remaining residents in the program.
2. Subsequently, the program director will review the resident's call schedules, work hours, extent of patient care responsibilities, any known personal problems, and stresses contributing to this for the resident.
3. The program director will notify the departmental chair and/or program director of the rotation in question to discuss methods to reduce resident fatigue.
4. In matters of resident stress, the program director will meet with the resident personally as soon as can be arranged. If counseling by the program director is judged to be insufficient, the program director will refer the resident to the following possible services depending on the severity of the issue through contact with the GME Office (913-588-7293).
 - a. Student Counseling and Educational Support (913-588-6580) offers psychological and education services at no cost to students, residents, and fellows.
 - b. Lawrence campus: University of Kansas Counseling and Psychological Services (785-864-CAPS (2277) or Psychological Clinic Counseling (785) 864-4121
 - c. Department of Psychiatry (913-588-6400) offers a full range of inpatient, outpatient, and emergency services for the diagnosis and treatment of personal problems.
 - d. State Lifeline, 24-hour, toll-free assistance line (1-800-284-7575) If referred through the Lifeline, the first four counseling sessions are paid by the State. All contacts are kept in strict confidence.
5. If the problem is recurrent or not resolved in a timely and satisfactory manner according to program leadership and the GME office, the program director will have the authority to release the resident from patient care and educational duties pending evaluation according to the leave and probation terms as stated in the KUMC Graduate Medical Education and Policy Procedure Manual Section 11.
6. The program director will release the resident to resume patient care duties only after the resident has demonstrated no further impairment with fatigue or stress issues.
7. Training must be made up to meet RRC training guidelines.

Non-Patient Care Settings

If residents are observed to show signs of fatigue and/or stress in non-patient care settings, the program director should follow the program director procedure outline above for the patient care setting.

In cases where the resident feels too fatigued to drive home safely following a nighttime on call assignment, two options are available. A swing room is available for sleeping and a voucher system is available for taxi transportation home and back to work the following day (residency coordinator has vouchers).

VACATIONS

Each resident is entitled to a fifteen days of vacation annually. The vacation period is to be scheduled through the attending staff of the rotation, Program Director and Chief Resident, and must be acceptable to the resident's scheduled service. This vacation must be used in the fiscal year (July thru June) in which it is earned. Because of the many problems relating to the influx of new residents and termination of training of old residents on or around July 1, the following vacation policy pertains: In general, no vacation will be permitted for any resident from June 15 to July 15. When leaving town for any reason, whether on scheduled vacation or holiday or to attend a meeting, leave your complete temporary address in the departmental office and notify the Chief Residents of any necessary or anticipated change in call schedule. This requirement is largely for your benefit so that in the event of personal emergency you can be reached.

- Allotted time off during monthly rotations – Only one week per month may be taken off (vacation, sick leave, coverage for another resident, or other) on any given rotation. Additional time off will have to be made up during elective time. Until the excess time off has been made up, the resident will not receive credit for that rotation.
- Scheduling of vacation is restricted to certain rotations. Vacation times are scheduled by the Chief resident prior to the start of the academic year. Any changes in the vacation schedule after the start of the year must be approved by the Chief resident and the Program Director.

Reporting of Absences Unscheduled absences must be reported to Resident Coordinator as early as possible on the day of absence. The resident must also contact the service to which they are assigned.

OTHER POLICIES

Medical Student Teaching Responsibilities Members of the resident staff participate in the teaching program as junior instructors. You will be involved with teaching medical student histopathology labs in years R2-4. This is a valuable part of your experience, and most residents enjoy the association with students. Your teaching responsibilities will also include: (1) the performance of autopsies with medical students and (2) substituting for senior staff in small group problem-based learning sessions. Occasionally, a resident may be asked to give a lecture, if they have developed a special area of expertise, or express a desire to lecture.

Pagers The Department will purchase a pager for each resident. If the pager is lost or damaged, the resident is responsible for the cost of the replacement.

Procedures and Logbooks The ACGME requires Pathology residents to list the following procedures on the ACGME web-based logbook: autopsies, bone marrow aspirates/biopsies and fine needle aspirates. It is the responsibility of each resident to maintain updated ACGME logs.

Hospital and Departmental Services Consult the Chief Residents or Residency Coordinator regarding uniforms, laundry, and necessary keys. Keys, protocols, slides, sections, and blocks must be obtained from

and returned to the appropriate departmental offices. Assignment of individual offices, microscopes, and other equipment will be made by through the Chief Residents. Outgoing long distance telephone calls concerning official business are to be made with the Division Director's or departmental chair's consent and are to be placed on record with a departmental secretary. Non-work related phone calls are allowed during work hours only if they do not interfere with the resident's work and are not disruptive to people within the work area.

Full day attendance for off-site rotations (VA and Children's Mercy Hospital) is required. Exceptions include returning to KU for mandatory conferences and meetings (Core conferences and AP/CP conference). Any other absence must be approved by the VA or Children's Mercy Hospital Faculty.

All other policies including addition details for selection and appointment of residents, resident agreements, resident code of professional and personal conduct, resident standing, promotion, and program completion, remediation and probation, corrective actions, dismissals, appeal and fair hearing, grievances, other forms of severance of the resident agreement, policy on prevention of illegal drug and alcohol use, policy on resident assistance and access to counseling, resident clinical duty hours and call policies, policies regarding vacation, personal leave (including maternity leave), and leave of absence, professional liability and risk management policies and procedures, policy on resident stipends and supplements, equal opportunity and harassment policies, policies related to loan deferment and financial counseling, policies regarding residents with disabilities, physical examination, immunization and post-exposure prophylaxis policies, policies relating to DEA registration, policy on resident transfers, and policies regarding overseas travel are all located within the GRADUATE MEDICAL EDUCATION POLICY AND PROCEDURE MANUAL (GME Manual) that is distributed to each resident during orientation. The GME manual is also located online at <http://www.kumc.edu/som/gme/gmepolicyandproceduremanual.pdf>.

Please Note: The Graduate Medical Education Policies and Procedures manual represents the institutional guidelines, policies and procedures governing the residents at the University of Kansas School of Medicine and Medical Center. Should material conflict between the institutional policies outlined in the Graduate Medical Education Policies and Procedures manual and those adopted by a program, i.e. the Department of Pathology and Laboratory Medicine Resident Manual, the Graduate Medical Education Policies and Procedures Manual will take precedence.

Core Competency Teaching and Assessment Matrix																				
Core Competency	TEACHING METHODS								EVALUATION METHODS											
	Didactic lecture	Faculty signout	Journal Club	Direct Supervised proc	Role Modeling	Lab inspections	Interdisc conf	Online tools	Unknown conferences	Project	Report Review	Direct Observation	Checklist	Global Rating	Standardized Exam (RISE)	Practical Slide Exam	360° MultiSource Rating	Portfolios	In-house Written Exam	Procedures or Case Logs
PATIENT CARE																				
Demonstrate diagnostic competenc	✓	✓	✓	✓	✓			✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓
Provide effective consultation	✓	✓			✓		✓		✓		✓	✓		✓		✓	✓			
Demonstrate technical skills	✓	✓		✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓
MEDICAL KNOWLEDGE																				
Knowledge of evolving biomedical/clinical science	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Demonstrates an application of this knowledge to patient care	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PRACTICE-BASED LEARNING & IMPROVEMENT																				
Analyze own practice for needed improvements	✓	✓	✓		✓	✓		✓		✓		✓		✓	✓		✓	✓	✓	
Application of research & statistical methods	✓		✓		✓		✓	✓		✓		✓		✓	✓		✓	✓	✓	
Use of information technology	✓	✓	✓	✓	✓	✓	✓	✓		✓										
Facilitate learning of others	✓		✓		✓		✓	✓				✓		✓			✓	✓		
INTERPERSONAL & COMMUNICATION SKILLS																				
Effective in information exchange		✓	✓	✓	✓		✓		✓		✓	✓		✓		✓	✓			
Works well within a team		✓			✓	✓	✓		✓			✓		✓		✓				
Listening skills	✓	✓		✓	✓							✓		✓		✓				
PROFESSIONALISM																				
Respectful, altruistic	✓	✓			✓		✓	✓				✓		✓		✓				
Ethically sound practice	✓	✓			✓		✓	✓				✓		✓		✓				
Sensitive to cultural, age, gender, disability issues	✓	✓			✓		✓	✓				✓		✓						
SYSTEMS-BASED PRACTICE																				
Understand interaction of their practices with the larger system	✓	✓	✓		✓	✓	✓	✓		✓		✓		✓	✓		✓		✓	
Knowledge of practice and delivery systems	✓	✓	✓		✓	✓	✓	✓				✓		✓	✓		✓		✓	
Practice cost-effective care	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓		✓	✓	✓	
Advocate for patients within the health system	✓	✓			✓		✓	✓				✓		✓		✓				

ROTATION-SPECIFIC GOALS AND LEARNING OBJECTIVES

SUPERVISION REQUIREMENTS

As indicated in the policy section of the resident manual, all work performed by residents is performed under supervision of attending faculty. The supervision policies are reiterated in this section to emphasize the importance that all residents understand and follow the supervision requirements.

All procedures performed in autopsy, surgical pathology and clinical laboratory medicine are performed under either direct or indirect supervision of an attending faculty member. All at-home call is supervised by faculty members. Resident responsibilities and progression of responsibility is described in each rotation description. More advanced residents are given increased responsibility which will include more time on each procedure or task being indirectly supervised (immediate availability) by the faculty member.

Supervision of Residents

- In the clinical learning environment, each patient must have an identifiable, appropriately-credentialed and privileged attending physician (or licensed independent practitioner as approved by each Review Committee) who is ultimately responsible for that patient's care.
- This information should be available to residents, faculty members, and patients.
 - Inpatient: Patient information sheet included in the admission packet and listed on the "white board" in each patient room
 - Outpatient: Provided during introduction verbally by residents and/or faculty
- Residents and faculty members should inform patients of their respective roles in each patient's care.
- The program must demonstrate that the appropriate level of supervision is in place for all residents who care for patients.

Methods of Supervision

- Some activities require the physical presence of the supervising faculty member.
- For many aspects of patient care, the supervising physician may be a more advanced resident or fellow.
- Other portions of care provided by the resident can be adequately supervised by the immediate availability of the supervising faculty member or resident physician in his/her "final years of training", either in the institution, or by means of telephonic and/or electronic modalities.
- In some circumstances, supervision may include post-hoc review of resident delivered care with feedback as to the appropriateness of that care.
- The privilege of progressive authority and responsibility, conditional independence, and a supervisory role in patient care delegated to each resident must be assigned by the program director and faculty members.
- The program director must evaluate each resident's abilities based on the following specific criteria and when available should be guided by specific national standards-based criteria.
- Faculty members functioning as supervising physicians should delegate portions of care to residents, based on the needs of the patient and the skills of the residents

- “Residents in their final years of training” or fellows should serve in a supervisory role of PGY 1 and “intermediate residents” in recognition of their progress toward independence, based on the needs of each patient and the skills of the individual resident or fellow

Levels of Supervision Defined

To ensure oversight of resident supervision and graded authority and responsibility, the program must use the following classification of supervision established by the ACGME.

Direct Supervision: This means the supervising physician is physically present with the resident and patient.

Indirect Supervision A (with direct supervision immediately available): This means the supervising physician is physically within the hospital or other site of patient care, and is immediately available to provide **Direct Supervision**.

Indirect Supervision B (with direct supervision available): This means the supervising physician is not physically present within the hospital or other site of patient care, but is immediately available by means of telephonic and/or electronic modalities, and is available to provide **Direct Supervision**.

Oversight: This means the supervising physician is available to provide review of procedures/encounters with feedback provided after care is delivered.

Following are the ACGME Pathology-specific supervision requirements:

Per Program Specific RRC Requirements	RRC APPROVED LICENSED INDEPENDENT PRACTITIONER SUPERVISOR (PR VI.D.1)
	Although pathology assistants are not licensed independent practitioners, they may be authorized by a department to provide supervision or oversight of dissection of surgical specimens and autopsies. The ultimate responsibility for a patient’s care, however, lies with the attending physician, and cannot belong to a pathology assistant.
	OPTIMAL CLINICAL WORKLOAD (PR VI.E.)
	The clinical responsibilities for each resident must be based on PGY-level, patient safety, resident education, severity and complexity of patient illness/condition and available support services.
	MEMBERS OF THE INTERPROFESSIONAL TEAM (PR VI.F.)
	Residents must care for patients in an environment that maximizes effective communication. This must include the opportunity to work as a member of effective inter-professional teams that are appropriate to the delivery of care in the specialty.
COMPETENCIES TO ALLOW PGY1 RESIDENTS TO PROGRESS TO INDIRECT SUPERVISION (PR VI.D.5.a).(1))	
Each PGY-1 resident must be directly supervised during performance of, at least, his or her three initial procedures in the following areas:	

- autopsies (complete or limited)
- gross dissection of surgical pathology specimens by organ system
- frozen sections
- apheresis
- fine needle aspirations and interpretation of the aspirate

A PGY-3 or PGY-4 resident, pathology assistant or attending pathologist may directly supervise the gross dissection of surgical pathology specimens and/or autopsies. Blood banking/transfusion medicine fellows, PGY-3 or PGY-4 residents, or attending pathologists may directly supervise apheresis.

DEFINING RESIDENT LEVELS “INTERMEDIATE LEVEL” & “FINAL YEARS OF TRAINING” For establishing the minimum rest period between duty periods (PR VI.G.5.b&c)

PGY-2 residents are considered to be at the intermediate level.

Residents in the final two years of the program (PGY-3 and PGY-4) are considered to be in the final years of education.

CIRCUMSTANANCES WHEN RESIDENTS IN THEIR FINAL YEARS OF EDUCATION MAY REMAIN OR RETURN IN < 8 HOURS (PR VI.G.5.c).(1))

The Review Committee defines such circumstances as: required continuity of care for a severely ill or unstable patient, or a complex patient with whom the resident has been involved; events of exceptional educational value; or, humanistic attention to the needs of a patient or family. Intermediate residents and residents in the final years of education may stay on duty or return to the hospital to perform intra-operative consultations, apheresis, emergent autopsies (e.g., when a patient’s religion requires rapid burial), fine needle aspirations, immediate evaluation of cytology, transfusion medicine/blood banking emergencies, and hematologic emergencies.

DEFINED MAXIMUM NUMBER OF CONSECUTIVE WEEKS AND MAXIMUM NUMBER OF MONTHS PER YEAR OF IN-HOUSE NIGHT FLOAT (PR VI.G.6.)

Not Applicable

Program-specific guidelines for circumstances and events in which residents must communicate with appropriate supervising faculty (PR VI.D.5)

Not Applicable

Source of specific criteria and/or specific national standards-based criteria used to evaluate each resident’s abilities (PR VI.D.4.a)

Not Applicable

PGY 1	
LEVEL of SUPERVISION	ACTIVITIES /PROCEDURES (as defined by RRC & Program)
DIRECT	Three initial procedures in the following areas: <ul style="list-style-type: none"> - autopsies (complete or limited) - gross dissection of surgical pathology specimens by organ system - frozen sections - apheresis - fine needle aspirations and interpretation of the aspirate
INDIRECT A (with direct supervision immediately available)	
INDIRECT B (with direct supervision available-as determined by program specific RRC guidelines PR VI.D.5.a).(1))	All other procedures

INTERMEDIATE LEVEL RESIDENTS (PGY 2)	
LEVEL of SUPERVISION	ACTIVITIES /PROCEDURES (as defined by RRC & Program)
DIRECT	
INDIRECT A (with direct supervision immediately available)	
INDIRECT B (with direct supervision available)	All procedures
OVERSIGHT (with direct supervision available)	

RESIDENTS IN FINAL YEARS OF TRAINING (PGY 3 and 4)	
LEVEL of SUPERVISION	ACTIVITIES /PROCEDURES (as defined by RRC & Program)
DIRECT	
INDIRECT A (with direct supervision immediately available)	
INDIRECT B (with direct supervision available)	All procedures
OVERSIGHT (with direct supervision available)	

SURGICAL PATHOLOGY - KUMC

STAFF MEMBERS

Ossama Tawfik, MD, PhD	Professor, Director of Anatomic and Surgical Pathology
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Patricia Thomas, MD	Professor, Cytopathology and Surgical Pathology
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Kathy Newell, MD	Associate Professor, Neuropathology
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Garth Fraga, MD	Assistant Professor, Dermatopathology
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Maura O'Neil, MD	Assistant Professor, Surgical Pathology and Cytopathology
Da Zhang, MD	Associate Professor, Surgical Pathology/Renal Pathology and Hematopathology

GOALS AND OBJECTIVES

The ultimate goal of the rotation in Surgical Pathology is that the resident becomes competent in the interpretation of surgical pathology material and to learn communicative and consultative skills that will aid the clinicians in the correct diagnosis and treatment of the patients. Goals are based on skill level I and II.

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal:		
<i>Skill Level I: Residents must demonstrate competence in processing of basic types of patient specimens and evaluation of clinicopathological aspects of Surgical Pathology</i>		
<i>Skill Level II: Residents must demonstrate competence in processing all types of patient specimens, performing and interpreting frozen sections, utilizing ancillary studies, and generating clinically relevant diagnostic reports</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate competence in basic specimen processing skills (I)	DL, FSO, DSP	RR, DO, CL, GR/FE, SE, IWE, 360, PF
Demonstrate competence in selecting representative tissue samples for intraoperative frozen sections, preparing the same, and staining the sections (I)	FSO, DSP, RM	RR, DO, GR/FE
Demonstrate proficiency in interpreting & reporting frozen sections within 20 minutes of receiving a specimen for that purpose in the pathology laboratory. (II)	FSO, DSP, RM	RR, DO, GR/FE
Demonstrate the techniques for preparing intraoperative cytology smears. (II)	FSO, DSP, RM	RR, DO, GR/FE
Be able to independently report the histopathologic aspects of routine and complex cases, including cases prepared by junior residents and/or pathology assistants, with attention to organization of diagnostic	DL, FSO, DSP, RM, USC	RR, DO, CL, GR/FE, SE, PSE, IWE, PF

format, development of differential diagnosis, and ordering of necessary special stains and other ancillary techniques. (II)		
Demonstrate proficiency in digital imaging techniques. (II)	DSP, RM	DO, GR/FE
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Skill Level I: Residents must be able to evaluate normal histology and basic pathologic processes</i> <i>Skill Level II: Residents must demonstrate competence in histopathological diagnosis, grading and staging of tumors, and interpretation of ancillary studies</i>		
Objectives:	Learning Activities	Evaluation Activities
Determine when a microscopic description and/or interpretation is necessary, and provide such information. (I)	FSO, RM, USC	RR, DO, GR/FE, PF
Be able to evaluate margins of tumor resection specimens using frozen sections and touch preparations. (I)	FSO, DSP, RM	RR, DO, CL, GR/FE
Demonstrate knowledge of the common situations requiring expedited processing of a pathology specimen, and those that do not. (II)	FSO, RM	DO, GR/FE
Demonstrate knowledge of the common indications for an intraoperative consultation. (II)	FSO, DSP, RM	DO, GR/FE
Enumerate the indications and the limitations pertaining to intraoperative frozen section examinations. (II)	FSO, DSP, RM	DO, GR/FE
Demonstrate knowledge of the common grading and staging systems applied to malignant neoplasms. (II)	DL, FSO, DSP, IC, OT, USC	RR, DO, CL, GR/FE, SE, IWE
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Skill Level I: Residents must be familiar with laboratory workflow, Surgical Pathology section of the Resident Manual, and laboratory safety practices</i> <i>Skill Level II: Residents must be consistently fast and competent at signing out cases, including ordering of deeper sections, recuts, special stains, immunostains, generation of microscopic descriptions, and notification of clinicians</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to properly assign CPT codes to all specimens in anatomic pathology (I)	FSO, DSP, RM	RR, DO, GR/FE
Submit appropriate forms for billing pertaining to specimens (I)	FSO, DSP, RM	RR, DO
Know the procedures for the reporting of untoward incidents in the laboratory. (I)	DSP, RM, LI	DO, GR/FE
Demonstrate knowledge of how and when to obtain external consultations in anatomic pathology and document the results appropriately. (II)	FSO, DSP, RM	RR, DO, GR/FE
Demonstrate an ability to manage workflow in the gross room, assist junior residents with gross dissection, provide accurate gross descriptions of routine and complex specimens, use the local anatomic pathology laboratory information system, and practice safety in the pathology laboratory. (II)	FSO, DSP, RM	RR, DO, GR/FE, 360, PF
Demonstrate knowledge of available procedures for locating a missing	FSO, DSP,	DO, GR/FE

specimen and resolving questions of specimen identity. (II)	RM	
Demonstrate knowledge of quality control pertaining to histologic sections and special stains, including trouble-shooting of mistakes in accessioning, labeling, & misidentification of specimens. (II)	FSO, DSP, RM	DO, GR/FE
Review consultation slides on referral cases with attention to pertinent clinical information, requests for additional slides or blocks if needed, and formatting of the final consultative report. (II)	FSO, DSP, RM	RR, DO, GR/FE
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
<p>Goal: <i>Skill Level I: Residents must be familiar with the elements of a Surgical Pathology report and the information it conveys</i> <i>Skill Level II: Residents must be competent in constructing a comprehensive Surgical Pathology report and in written and verbal communication with other healthcare providers</i></p>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate knowledge of the common and basic elements of the surgical pathology report, including: (I) <ul style="list-style-type: none"> • Identifiers (patient and institution) • Input from the responsible pathologist • Input from the responsible clinician • Necessary dates and times that must be in the report • Necessary clinical information • Documentation of the specimens that were submitted • Thorough and accurate gross description 	FSO, DSP, RM	RR, DO, GR/FE
Demonstrate the ability to effectively construct a complex surgical pathology report. (II)	FSO, DSP, RM	RR, DO, CL, GR/FE, PF
Be able to properly prepare synoptic surgical pathology reports for common malignancies. (II)	FSO, DSP, RM	RR, DO, CL, GR/FE, PF
Demonstrate the ability to dictate necessary amendments and/or addenda for surgical pathology reports. (II)	FSO, DSP, RM	RR, DO, GR/FE
Demonstrate the steps for preparation of consultation reports on outside slides and/or paraffin blocks, and transmittal of those reports to responsible clinicians and/or referring pathologists. (II)	FSO, DSP, RM	RR, DO, GR/FE
CORE COMPETENCY: PROFESSIONALISM		
<p>Goal: <i>Skill Levels I and II: Residents must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to diverse populations within the healthcare environment.</i></p>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate compassion: be understanding and respectful of patients, their families, and the staff and physicians caring for them.	FSO, DSP, RM, IC	DO, GR/FE, 360
Interact with others without discriminating on the basis of religious, ethnic, sexual, or educational differences.	FSO, DSP, RM, IC	DO, GR/FE, 360
Demonstrate positive work habits, including punctuality, dependability, and professional appearance.	FSO, RM	DO, GR/FE, 360
Demonstrate a responsiveness to the needs of patients and society that	FSO, DSP,	DO, GR/FE,

supersedes self-interest.	RM	360
Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.	DL, FSO, DSP, RM, IC	DO, GR/FE, 360
Demonstrate knowledge of regulatory issues pertaining to the use of human subjects in research.	DL, OT	GR/FE, SE
Demonstrate a commitment to excellence and ongoing professional development.	RM	DO, GR/FE
Demonstrate interpersonal skills in functioning as a member of a multidisciplinary healthcare team	FSO, DSP, RM, IC	DO, GR/FE, 360
CORE COMPETENCY: SYSTEM-BASED PRACTICE		
Goal: <i>Skill Levels I and II: Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide pathology services that are of optimal value</i>		
Objectives:	Learning Activities	Evaluation Activities
Show a working knowledge of the basic principles of quality assurance, quality control, continuous quality improvement, and outcomes analysis, as they apply to anatomic pathology	FSO, RM, LI	DO, GR/FE
Demonstrate knowledge of the standards (TJC, CAP) required for submitting surgical pathology specimens.	RM, LI, OT	DO, GR/FE, SE, IWE
Demonstrate knowledge of the basic recommendations/requirements (TJC, CAP, regional legal requirements) pertaining to retention of pathology specimens and records.	RM, LI, OT	DO, GR/FE, SE, IWE
Demonstrate knowledge of the basic principles of informatics in anatomic pathology, and ability to effectively utilize the local computer network.	RM, OT	DO, GR/FE
Understand Federal and State regulations with special application to anatomic pathology, and the general requirements for compliance in the reporting of professional activities for billing purposes	FSO, RM, LI, OT	DO, GR/FE, SE, IWE
Demonstrate knowledge of web-based or organization (CAP, ASCP, USCAP, etc.)-related learning and CME tools in anatomic pathology.	RM, OT	DO
Demonstrate a familiarity with standards set forth by the CAP and TJC for laboratory certification in anatomic pathology, and participate in at least one internal (“mock”) inspection of the institutional anatomic pathology laboratory	RM, LI, OT	DO, GR/FE, SE, IWE
Understand the principles applying to evaluation of the cost-effectiveness of laboratory procedures in anatomic pathology	FSO, RM	DO, GR/FE
Demonstrate an ability to organize, perform, and analyze a quality control review project in surgical pathology for presentation to faculty.	P	RR, DO, PF
Demonstrate knowledge of how to utilize risk-management resources in cases involving medicolegal liability	DL, RM	DO, GR/FE
Understand the basic legal aspects of medical malpractice lawsuits, and the potential roles of pathologists as defendants and consultants in such actions	DL, RM	DO, GR/FE

PGY SPECIFIC GOALS

PGY 1 GOALS: By the end of the first year:

- The resident has documented direct supervision of grossing the first three specimens in the majority of specimens on the organ-based list of specimens
- The resident can dictate informative gross dictations with proper cassette summaries and cut appropriate sections without direct supervision on all biopsies and simple routine specimens and most common cancer cases
- The resident becomes efficient in managing cases, such that an appropriate around time is observed
- The resident can independently perform frozen section procedures and can report frozen section results following joint faculty/resident interpretation of frozen sections

PGY 2 GOALS: By the end of the second year:

- The resident has documented direct supervision of grossing the first three specimens for all specimens on the organ-based list of specimens
- The resident demonstrates the ability to work up cases properly, including ordering appropriate histochemical and immunohistochemical stains
- The resident demonstrates efficiency and professionalism in the handling of cases (turn around time is kept to 48 hours, special stains, immunostains are ordered when the attending staff requests them, the resident does the follow-up on stains when they do not arrive when anticipated)
- The resident demonstrates an economy of sections that are adequate to provide all the necessary information, and minimizes the need to submit additional wet tissue
- The resident demonstrates the ability to communicate appropriately to clinical colleagues, including impromptu drop-by visits and in CPC-type conferences
- The resident is ready to start supervising (in the third year) junior residents in surgical pathology procedures

PGY 3 GOALS: By the end of the third year:

- The resident must be able to compose a gross and microscopic Surgical Pathology report which is ready for electronic signature, with minimal if any correction
- The resident should be comfortable performing independent intraoperative consultations

PGY 4 GOALS:

- The resident should be able to supervise junior residents in all aspects of the practice of surgical pathology
- The resident should have demonstrated increased medical knowledge through performance on study set examinations, conferences and conducting clinical conferences
- The resident is practice ready for billing, Medicare compliance and accreditation issues
- The resident should have completed subspecialty related rotations including Dermatopathology and Pediatric Pathology at CMH
- The resident must document minimally 200 intraoperative consultations/frozen sections
- The resident must have reviewed minimally 2,000 surgical pathology cases that they have reviewed and signed out
- The resident should be competent in all Surgical Pathology Skill Levels 1 and 2

GENERAL - Throughout the entire duration of residency training the resident must also demonstrate the specific skills for Professionalism, Practice--Based Learning and Improvement, Interpersonal and Communication Skills and System-Based Learning as listed on pages 16 and 17.

GENERAL ORGANIZATION

The division of surgical pathology primarily deals with tissues obtained while patients are in the University of Kansas Hospital, or are to be admitted to the hospital. Whether tissues have been excised for diagnosis or for therapy, surgical pathology is of direct relevance to both patients and treating physicians.

The proper histopathologic documentation of the lesion constitutes an essential element in the work-up of the patient. The subsequent management of the patient is greatly influenced by the opinion expressed by the surgical pathologist.

Approximately 19,000 cases are accessioned annually in the Division of Surgical pathology.

The required time for training in surgical pathology is 11 months. This rotation is divided into monthly segments but residents can be scheduled for several consecutive segments. Since this rotation requires resident (or fellow) coverage *at all times*, all absence must be excused by the director of anatomic pathology, the director of surgical pathology and the residency program director. It also requires pre-notification of the pertinent attending pathologists and arrangement of resident/fellow cross-coverage, if necessary.

Punctuality and good attendance are critical in surgical pathology and reflect the professionalism and seriousness of the resident on this rotation.

Residents who are assigned to the rotation are expected to take an active role with the senior staff in completing the daily cases in a reasonable time. The residents are not only learning surgical pathology “on the job” but they are practicing physicians and members of a team collaborating closely with other physicians, often during performance of operations. This requires on the part of the residents a considerable degree of alertness, thoroughness, neatness, attention to details, as well as an understanding of clinical and surgical problems. Therefore, the residents should have the sense of urgency in completing their daily assigned work with the senior staff members. They are also in an enviable position to utilize some of the material available to them in sophisticated studies involving tissue culture, immunology, electron microscopy, fluorescent microscopy, image analysis, nuclear morphometry, flow cytometry, chemical analysis, histochemistry, immuno-histochemistry and molecular biology.

SCHEDULING

DAY 1 Resident:

- Gross all big and small specimens all day (PA grosses biopsies and assists with placentas if needed).

- Perform all frozen sections (with assistance from PA and faculty) and the big specimens following the frozen sections (whether they come the same day or the next day).
- New cases accessioned after 4:30 PM are assigned to the resident who is Day 1 on the next day. (PA does biopsies and placentas)
- On call for after hours frozen section specimens and STAT cytology specimens.

DAY 2 Resident:

- Read slides for big specimens for sign-out and order all necessary special stains after consulting the assigned faculty.
- Sign out big specimens.
- Finish cutting in additional specimen parts that are from cases logged during Day 1.

DAY 3 Resident:

- Sign-out biopsy specimens with biopsy attending after reviewing the slides.
- Work-up and sign out all remaining cases.
- Emergency backup for frozen sections.
- Sign-out big specimens with frozen/big specimen attending at 9:30 AM
- Work-up cases and catch up on all sign-out
- Emergency backup for frozen sections

Junior Residents Responsibilities

- Frozen Section
- Review Operating room schedule before frozen section duty with senior resident/fellow and/or attending staff
- Perform, under supervision, frozen sections, including description, cutting sections, staining and microscopic study.
- Arrange for all special procedures, saving tissue for special studies (*e.g.* electron microscopy, flow cytometry, microbiology, touch imprints, photography, immuno-histochemistry, *etc.*)
- Complete all paperwork
- Keep the area clean and ready for work
- Grossing Specimens
 - Read section on surgical pathology in the Residents' Manual
 - Read gross manual in Rosai's Textbook on Surgical Pathology
 - Learn how to use CoPath for specimen accession and gross dictation
 - Call attending, senior resident/fellow, or pathology assistant for help and advice whenever needed
 - Work smoothly with histotechnologists, pathology assistant and transcriptionists
- Microscopic Sign Out
 - Collate and order all slides and paperwork
 - Obtain appropriate clinical history prior to sign out
 - Write tentative diagnoses before review with the attending

- Sign out rush or STAT cases promptly with the attending
- Cooperate with the staff to sign out the cases as soon as possible
- Notify clinicians with the diagnoses, if necessary
- Return slides and paperwork promptly
- Learn fundamentals and specifics of tissue codes and billing
- Order and interpret special procedures when necessary, *e.g.*, special stains, EM, immuno-histochemistry
- Evaluate controls for special stains and immuno-histochemistry and understand the reasons for the appearance of commonly used special stains

Miscellaneous Duties

- Learn how to use the computer information systems (CoPath, SMS, etc) to check for previous reports on a patient, and status/results of specimens in cytopathology and clinical pathology, radiology, *etc.*
- Learn how to take gross photography
- Learn how to log cases for surgical pathology teaching files
- Prepare for interdepartmental conferences
- Attend appropriate conferences

Senior Residents Responsibilities (the above plus...)

- Write succinct diagnoses on all cases before review with the attending
- Write microscopic descriptions, comments, *etc.*, as needed
- Review outside slides with attending and write the reports
- Review relevant previous surgical and cytological material as needed for comparison
- Help in writing letters to outside consultants (if needed) to review difficult cases
- Assist medical students and junior residents

Recommended Reading List:

1. Lester SC. *Manual of Surgical Pathology*, Philadelphia:Elsevier/Saunders, 2010.
2. Rosai, J. *Rosai and Ackerman's Surgical Pathology*, 10th Ed, New York:Mosby, 2011.
3. Silverberg, S et al. *Principles and Practice of Surgical Pathology and Cytopathology*, 4th Ed, Churchill Livingstone, 2005.
4. Mills, SE. *Sternberg's Diagnostic Surgical Pathology*, 5th Ed, Philadelphia:Wolters Kluwer Health/Lippincott, Williams & Wilkins, 2010.
5. Weidner, N, et al. *Modern Surgical Pathology*. Philadelphia:Elsevier/Saunders. 2009
6. Fletcher, CDM. *Diagnostic Histopathology of Tumors*. 3rd Ed. Philadelphia:Elsevier/Churchill Livingstone, 2007.

DUTIES AND RESPONSIBILITIES OF RESIDENTS

Specimen Identification

- Proper identification of the specimen is of prime importance.

- Double check labels and requisition sheet to be certain the specimen and patient identification correspond. If there is doubt, call the clinician to identify the specimen before processing.
- Extreme care in labeling cassettes and meticulous work sheet records are essential to prevent serious mix-ups. Mislabeling is the most serious problem in dealing with small specimens.
- Continuously monitor slide labels and be certain that the slides belong to the case. Your records should help you determine how many slides and of what structure you should have. Mislabeling can occur in the Histology Laboratory; if there is the slightest doubt, check labels and blocks.
- If no specimen can be found in a container, call the requesting physician and your staff before discarding.

Clinical Data

Although the pre-operative and post-operative diagnosis and pertinent history are required on all specimens submitted, these are often lacking. If there is any doubt about the nature of the specimen or what information is needed by the clinicians, clarify these matters before processing. Some complicated specimens need to be oriented by the surgeon.

Before you are called to the OR for frozen sections as well as before the case is signed-out, be aware of all pertinent data. This may require inquiry of the clinicians, review of chart, looking at x-rays (get these for review by attending when appropriate, e.g. bone tumors) pulling previous slides and reports. Have all pertinent slides and reports on previous specimens ready at time of sign-out.

Specimen Processing

Processing involves more than gross dictation and submitted fixed tissue blocks. The best time for collecting tissue for special studies is the fresh specimen and for some studies this is the only time.

Except for tissue culture and culture for microorganisms, absolute sterility is not requisite. If these studies are needed, use sterile instruments and gloves.

Note: It is usually better for the surgeon to culture tissue for organisms in the Operating Room where sterile conditions prevail. All cultures should be obtained in the OR.

As soon as the specimen is received, consider the need for the following, some of which must be done on fresh tissue.

1. Cultures. Pathology will only obtain cultures if the surgeon has sent the specimen fresh and no other tissue is present in the OR. Any culture obtained in Pathology is not ideal and this should be understood by the Surgeon. Because of sterility requirements, get appropriate equipment before handling tissue. (Sterile, fresh tissue required).
2. Cytogenetics studies. (Fresh sterile tissue is required)
3. Extreme Drug Resistance Assay (Oncotech Studies). (Fresh sterile tissue is required)
4. Cell surface marker studies. (Fresh or fixed tissue acceptable)
5. Immunofluorescence. (Fresh tissue required)
6. Analysis for hormones or other chemical studies (Fresh frozen tissue may be required).
7. Photography. If in doubt, take a photograph before dissection. (See Photography section below).

8. X-ray. The Faxitron is particularly useful for identification of calcification. Better done before any dissection.
9. Electron microscopy. Best done on very fresh tissue fixed immediately in glutaraldehyde. (See Electron Microscopy below).

The handling of specimens requires individual judgment in each case. In some instances it is necessary or desirable to open or dissect the specimen immediately. In other circumstances, fixation before opening is preferable.

Gross Examination Only

With most specimens, microscopic examination is necessary to establish a diagnosis or provide adequate documentation. The microscopic slides and tissue blocks form a valuable, permanent record for patient care and investigation. However, microscopic study is likely to provide little information of value beyond what can be seen grossly in certain types of specimens. In these instances, adequate documentation can be provided by gross description. The following specimens may be examined grossly without microscopic study unless some unusual feature is present that warrants histologic examination.

- Foreign bodies (tissue around foreign bodies should be examined).
- Nasal cartilage for septal deviations.
- Cataracts.
- Products of Conception (POC) for therapeutic abortions unless tagged by clinical staff. All spontaneous abortion should be processed.

Note: Occasionally a clinician requests "Gross Only" for economy to a patient. Such requests may be considered within the guidelines noted above. The decision of whether sections should be submitted to establish a diagnosis rests with the Pathologist.

Fixation

Good fixation is essential for good histology. The most useful general fixative is formalin, and the most rapid and effect fixation is accomplished by use of very thin tissue section. Other fixatives than formalin are useful, even necessary in many situations.

Formalin. A buffered aqueous solution of formaldehyde. This fixative is relatively inexpensive, it penetrates tissues well, artifacts are minimal, and the tissue can remain in the fixative indefinitely. Nearly all special stains and immunoperoxidase studies can be done on formalin fixed tissue. Formalin penetrates slowly; hence the need for thin section for rapid overnight processing usually required for Surgical Pathology. Formalin is the only fixative than can be used for long term storage. Use Formalin for any specimen for which no special fixative is prescribed. (See individual sites for techniques of fixative with formalin.)

B-Plus FixTM. B-Plus contains formaldehyde and Zinc Salts and other buffers. No dilution of the solution is necessary. This fixative is rapid and provides superior nuclear detail. B-Plus is used for Lymph Node protocol cases (not node dissections), and other specimens to be studied for lymphoid and hematopoietic disorders. B5 is also good for testis biopsies, testicular neoplasms, and thymic lesions among others. Bone

marrow biopsies should be fixed for 2 hrs and other larger tissue like lymph nodes should be fixed at least 3-4 hrs before processing. Bone Marrow tissue must be submitted in a white cassette. No rinsing of the blocks is needed after fixation.

Important: Timing is critical, and tissues must be extremely thin. See Lymph Node for technique.

Zenker's. In addition to mercuric chloride Zenker's also contains potassium dichromate which gives the orange color. The only specific use for this fixative is to elicit the chromaffin reaction in pheochromocytomas and related lesions. Use same cautions as B5.

Bouin's. This fixative is based on picric acid and has a yellow color. It is excellent for renal and testicular biopsies and for certain special stain techniques especially granules of islet cell tumors and carcinoids. Since immunoperoxidase is now more specific and since B5plus can be substituted for testis, there is little need for Bouin's.

Hartmann's. The addition of acetic acid to formalin increases penetration. Useful for dense specimens especially uterus to improve penetration of fixative, but it makes tissues "brittle" and lyses blood elements. In addition, Hartmann's fixative destroys eosinophils and severely compromises electron microscopic analysis.

Glutaraldehyde. Used for electron microscopy, this solution is also an excellent general purpose fixative but is too expensive to use for this purpose routinely. Penetration is rather weak and tissue should be thin. For electron microscopy 1 mm cubes are used. (See special instructions for EM).

Absolute Alcohol. Used for immunohistochemical stains for sarcoma and gout. These specimens need to be processed separately. Talk with the histologist.

Dissection

- Dissection may need to be individualized to demonstrate the salient features. Refer to specific organs for the recommended techniques, but be prepared to modify these to meet individual circumstances.
- Weights and measurements should be taken before cutting into a specimen, since the fluid contents may escape.
- Gentle handling of tissue is also important to avoid destructive artifacts
- Avoid washing fresh tissue with tap water. Rinse bowel mucosa gently with formalin or saline.
- Use a sharp knife for big specimens, a sharp razor blade for small ones. Slice; don't chop. Change blades frequently. Scissors are useful for opening hollow viscera and removing sutures, but generally should be avoided for other cutting.
- Remove all sutures and clips from tissue. These can devastate microtome knives.
- Keep tissues wet at all times. Cover cut surfaces with a wet paper towel. Put sections into formalin quickly. Do not allow sections to dry by leaving tissues or cassettes out of fixative.
- Clean instruments well after each specimen and at the end of the day.

- Clean cutting station at the end of each day.

Decalcification

- Tissues needing decalcification must first be thoroughly fixed.
- Small specimens may be sent to the Histology Laboratory in cassettes. The worksheet must be labeled "DECAL", and the specimens separated from those put onto the processing machines. The cassettes should be labeled "Decal" on the side.
- Large specimens are better handled by the prosector, who may need to partially decalcify a bulky specimen, then take sections for histology and finally complete the decalcifying process.
- It is the responsibility of the resident to check and trim decal specimens daily.

Photography

Photographs documents specimens and are an invaluable resource for teaching and research. A photograph must be properly exposed, but more important, correctly composed.

The following guides are useful in specimen photography, but before taking pictures, check you planned composition with an Attending Pathologist or the Surgical Pathology fellow.

- All specimens should be labeled, the label typed and with a metric ruler. The label and ruler should be at the edge of the picture, never on top of the tissue or in the middle of the picture.
- The picture should fill the frame as much as possible, since background is uninteresting.
- Background must be clean. Use the glass whenever possible (rarely a specimen is too big or too small). The color should be neutral, light blue for dark specimens, black for others. A black background is easily obtained by placing black plastic or paper underneath the glass the specimen is on. This is known as darkfield illumination.
- Avoid reflection from overhead lights (turn them off) and highlights (adjust light source).
- Composition hints:
 - Use anatomic orientation whenever possible.
 - Show relationship of the lesion to normal tissue.
 - The cut surface of a tumor is nearly always more useful than the outside, unless the outside shows relationships to normal structures.
 - Avoid instruments, fingers, *etc.*, in the picture (*e.g.*, use a glass slide to hold larynx open).
 - Papillary tumors often are best demonstrated when taken underwater.
 - Partial (or complete) fixation may be useful in demonstrating some lesions.
 - A few minutes in 70% alcohol helps restore contrast and color in fixed specimens.
 - Digital photographs are archived on the hospital computer system in a secure server with relevant information including case number, patient's name and diagnosis.

Note: Call Pathology assistant, senior resident, surgical pathology fellow or Attending Staff for assistance with technical photography problems.

Submitting Tissue

The following guidelines should be observed in selecting and submitting tissue for microscopic study:

- Small biopsies that will fit in one cassette are generally totally submitted.
- Diagnostic biopsies of larger size may need to be entirely submitted, but there are exceptions. See specific organ instructions for sampling.
- Excisional biopsies containing a tumor should be blocked to show margins.
- India ink (or equivalent) can be used to mark margins. Be careful to assure that the ink doesn't spread elsewhere!
- By convention, sections will be cut from the **SIDE FACING DOWN** in the cassette. If there is any reason to orient the specimen another way put instructions on work sheet (i.e. "on edge").
- Tissues must be THIN (2-3 mm or less than the thickness of the cassette) and must not be crowded into the cassette. Thick or crowded tissue cannot be processed properly and bad sections will result, especially tissue containing fat, such as breast.
- In general, fix large specimens, especially (bowel resections, laryngectomies, lungs) before cutting. Thinner, better anatomically oriented section will result.

Assignment to Surgical Pathology

A schedule is provided for the residents who are assigned to the Division of Surgical Pathology. The rotation ensures exposure of each resident to specimens obtained from various services. The normal working hours are from 8 am to 5 pm, from Monday through Friday. It is important that at least one resident be available during the evening and night hours and on weekends. In the early part of the afternoon, daily, the residents are expected to complete their routine cases received on the preceding day with the attending pathologist. Specimens that arrive late Friday afternoon must be processed on Saturday morning. At that time rush cases and delayed cases should also be completed with the senior staff. It is imperative that this schedule be followed, otherwise significant delay in providing the reports to the physicians will occur.

Frozen Sections

Frozen sections are an important method for rapid diagnosis when a surgeon has the greatest need to know the exact nature of the lesion. A frozen section should be technically excellent and it should not take more than 10 minutes to perform.

A frozen section diagnosis must be worded as clearly as possible. Before communicating the frozen section diagnosis with the surgeons residents must request confirmation of the identity of the patient by utilizing 2 identifiers including medical record number and patient's name. The diagnosis must be written on the surgical pathology request form prior to reporting the diagnosis to the surgeon.

The frozen section area should be kept in a state of optimal performance. Before leaving the frozen section area, the area must be tidy, clear of all evidence of prior work in order to enable the next person to work in the same area with maximum efficiency.

It is mandatory that first year residents who start their rotation in autopsy service learn to cut frozen sections using the tissues from different organs of the autopsy material. The chief residents will instruct the first year residents of how to do the frozen sections. By the time the first year residents rotate through Surgical Pathology, they should be ready to do the frozen sections with good quality on the first day. Their ability to

do frozen sections on a variety of tissues from autopsy specimens will be evaluated by the chief resident prior to starting Surgical Pathology service.

Conferences

There is a Surgical Pathology conference from 8:30 am to 9:30 AM on Mondays, Thursdays and Fridays of each week. These are "working conferences" during which time all difficult and interesting cases are reviewed and discussed prior to final diagnosis. Participation in this conference by staff members assigned to these cases is mandatory. Residents are required to study these cases before coming to the conference. During the conference, each resident is asked about the diagnosis and the reason behind it. By the time a conclusion is reached, residents should be able to realize what they have missed. With the multiple headed microscopes, it is easy for the students to follow the changes we are talking about. On the first Monday, second Thursday, and third Friday, the routine Surgical Pathology Conferences will be replaced by Hematopathology, Organ specific, and Neuropathology conferences, respectively.

Senior residents from 2nd year up will take turns presenting at the Tumor Board Conference, which is held at 7:30 a.m. on Fridays. Residents will review the selected cases with the staff, take the pictures and read about the cases. The resident on Hematopathology (1st year and up) will present cases at the Heme conference (weekly on Thursdays at 8:20 AM). The monthly Morbidity and Mortality conferences will be presented by the resident (1st year and up) who signed out the case. Additionally 4th year and other senior residents actively participate and present the pathology portion of the weekly Breast and ENT working conferences.

Other subspecialty conferences that are held weekly include soft tissue and bone (weekly), dermatopathology (weekly), pulmonary (bi-weekly), liver and GI (weekly), GYN (bi-weekly), renal pathology (weekly), and cytology conferences. Those conferences are presented by pathology staff. Residents are encouraged to attend these conferences. The Clinico-Pathology Conference (monthly), which is presented by a faculty member, is a required conference for residents to attend.

Resident Evaluations:

At the conclusion of each rotation month, the resident will be evaluated by the surgical pathology staff to assess:

- Overall performance of duties
- Accomplishment of goals
- Progress in understanding pathology and the specifics of surgical pathology

To achieve an excellent rating, residents should strive for the following:

- High self-motivation
- Show unusually good understanding of gross and microscopic pathology and its relationship to clinical findings
- Literature review of difficult and interesting cases
- Excellent interpersonal relationships
- Conscientious, rapid, accurate conduct of duties with minimal supervision
- Involvement in investigative studies and case reports for publication
- Development of excellent teaching skills

SURGICAL PATHOLOGY - VAMC

The goal of the rotation in anatomic pathology at the Veteran’s Affairs Medical Center is for the resident to become competent in the basic practice and principles of diagnostic surgical pathology. Goals are based on skill level I and II.

GOALS AND OBJECTIVES

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal:		
<i>Skill Level I: Residents must demonstrate competence in processing of basic types of patient specimens and evaluation of clinicopathological aspects of Surgical Pathology</i>		
<i>Skill Level II: Residents must demonstrate competence in processing all types of patient specimens, frozen sections ,utilizing ancillary studies, and generating clinically relevant diagnostic reports</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate competence in basic specimen processing skills (I)	DL, FSO, DSP	RR, DO, CL, GR/FE, SE, IWE, 360, PF
Demonstrate competence in selecting representative tissue samples for intraoperative frozen sections (I)	FSO, DSP, RM	RR, DO, GR/FE
Demonstrate proficiency in interpreting & reporting frozen sections within 20 minutes of receiving a specimen for that purpose in the pathology laboratory. (II)	FSO, DSP, RM	RR, DO, GR/FE
Be able to independently report the histopathologic aspects of routine and complex cases with attention to organization of diagnostic format, development of differential diagnosis, and ordering of necessary special stains and other ancillary techniques. (II)	DL, FSO, DSP, RM, USC	RR, DO, CL, GR/FE, SE, PSE, IWE, PF
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal:		
<i>Skill Level I: Residents must be able to evaluate normal histology and basic pathologic processes</i>		
<i>Skill Level II: Residents must demonstrate competence in histopathological diagnosis, grading and staging of tumors, and interpretation of ancillary studies</i>		
Objectives:	Learning Activities	Evaluation Activities
Determine when a microscopic description and/or interpretation is necessary, and provide such information. (I)	FSO, RM, USC	RR, DO, GR/FE, PF
Be able to evaluate margins of tumor resection specimens using frozen sections. (I)	FSO, DSP, RM	RR, DO, CL, GR/FE
Demonstrate knowledge of the common situations requiring expedited processing of a pathology specimen, and those that do not. (II)	FSO, RM	DO, GR/FE
Demonstrate knowledge of the common indications for an intraoperative consultation. (II)	FSO, DSP, RM	DO, GR/FE
Enumerate the indications and the limitations pertaining to	FSO, DSP,	DO, GR/FE

intraoperative frozen section examinations. (II)	RM	
Demonstrate knowledge of the common grading and staging systems applied to malignant neoplasms. (II)	DL, FSO, DSP, IC, OT, USC	RR, DO, CL, GR/FE, SE, IWE
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Skill Level I: Residents must be familiar with laboratory workflow and laboratory safety practices</i> <i>Skill Level II: Residents must be consistently fast and competent at signing out cases, generation of microscopic descriptions, and notification of clinicians</i>		
Objectives:	Learning Activities	Evaluation Activities
Know the procedures for the reporting of untoward incidents in the laboratory. (I)	DSP, RM, LI	DO, GR/FE
Demonstrate knowledge of how and when to obtain external consultations in anatomic pathology and document the results appropriately. (II)	FSO, DSP, RM	RR, DO, GR/FE
Demonstrate an ability to manage workflow in the gross room, assist junior residents with gross dissection, provide accurate gross descriptions of routine and complex specimens, use the local anatomic pathology laboratory information system, and practice safety in the pathology laboratory. (II)	FSO, DSP, RM	RR, DO, GR/FE, 360, PF
Demonstrate knowledge of available procedures for locating a missing specimen and resolving questions of specimen identity. (II)	FSO, DSP, RM	DO, GR/FE
Demonstrate knowledge of quality control pertaining to histologic sections and special stains, including trouble-shooting of mistakes in accessioning, labeling, & misidentification of specimens. (II)	FSO, DSP, RM	DO, GR/FE
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Skill Level I: Residents must be familiar with the elements of a Surgical Pathology report and the information it conveys</i> <i>Skill Level II: Residents must be competent in constructing a comprehensive Surgical Pathology report and in written and verbal communication with other healthcare providers</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate knowledge of the common and basic elements of the surgical pathology report, including: (I) <ul style="list-style-type: none"> • Identifiers (patient and institution) • Input from the responsible pathologist • Input from the responsible clinician • Necessary dates and times that must be in the report • Necessary clinical information • Documentation of the specimens that were submitted • Thorough and accurate gross description 	FSO, DSP, RM	RR, DO, GR/FE
Demonstrate the ability to effectively construct a complex surgical pathology report. (II)	FSO, DSP, RM	RR, DO, CL, GR/FE, PF
Be able to properly prepare synoptic surgical pathology reports for common malignancies. (II)	FSO, DSP, RM	RR, DO, CL, GR/FE, PF

CORE COMPETENCY: PROFESSIONALISM		
Goal: <i>Skill Levels I and II: Residents must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to diverse populations within the healthcare environment.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate compassion: be understanding and respectful of patients, their families, and the staff and physicians caring for them.	FSO, DSP, RM, IC	DO, GR/FE, 360
Interact with others without discriminating on the basis of religious, ethnic, sexual, or educational differences.	FSO, DSP, RM, IC	DO, GR/FE, 360
Demonstrate positive work habits, including punctuality, dependability, and professional appearance.	FSO, RM	DO, GR/FE, 360
Demonstrate a responsiveness to the needs of patients and society that supersedes self-interest.	FSO, DSP, RM	DO, GR/FE, 360
Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.	DL, FSO, DSP, RM, IC	DO, GR/FE, 360
Demonstrate knowledge of regulatory issues pertaining to the use of human subjects in research.	DL, OT	GR/FE, SE
Demonstrate a commitment to excellence and ongoing professional development.	RM	DO, GR/FE
Demonstrate interpersonal skills in functioning as a member of a multidisciplinary healthcare team	FSO, DSP, RM, IC	DO, GR/FE, 360
CORE COMPETENCY: SYSTEM-BASED PRACTICE		
Goal: <i>Skill Levels I and II: Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide pathology services that are of optimal value</i>		
Objectives:	Learning Activities	Evaluation Activities
Show a working knowledge of the basic principles of quality assurance, quality control, continuous quality improvement, and outcomes analysis, as they apply to anatomic pathology	FSO, RM, LI	DO, GR/FE
Demonstrate knowledge of the standards (TJC, CAP) required for submitting surgical pathology specimens.	RM, LI, OT	DO, GR/FE, SE, IWE
Demonstrate knowledge of the basic recommendations/requirements (TJC, CAP, regional legal requirements) pertaining to retention of pathology specimens and records.	RM, LI, OT	DO, GR/FE, SE, IWE
Demonstrate knowledge of the basic principles of informatics in anatomic pathology, and ability to effectively utilize the local computer network.	RM, OT	DO, GR/FE
Understand Federal and State regulations with special application to anatomic pathology, and the general requirements for compliance in the reporting of professional activities for billing purposes	FSO, RM, LI, OT	DO, GR/FE, SE, IWE
Demonstrate knowledge of web-based or organization (CAP, ASCP, USCAP, etc.)-related learning and CME tools in anatomic pathology.	RM, OT	DO
Demonstrate a familiarity with standards set forth by the CAP and TJC for laboratory certification in anatomic pathology, and participate in at	RM, LI, OT	DO, GR/FE, SE, IWE

least one internal (“mock”) inspection of the institutional anatomic pathology laboratory		
Understand the principles applying to evaluation of the cost-effectiveness of laboratory procedures and activities in anatomic pathology	FSO, RM	DO, GR/FE

PGY SPECIFIC GOALS

PGY 1 GOALS: By the end of the first year:

- The resident has documented direct supervision of grossing the first three specimens in the majority of specimens on the organ-based list of specimens
- The resident can dictate informative gross dictations with proper cassette summaries and cut appropriate sections without direct supervision on all biopsies and simple routine specimens and most common cancer cases
- The resident becomes efficient in managing cases, such that an appropriate turnaround time is observed
- s

PGY 2 GOALS: By the end of the second year:

- The resident has documented direct supervision of grossing the first three specimens for all specimens on the organ-based list of specimens
- The resident demonstrates the ability to work up cases properly, including ordering appropriate histochemical and immunohistochemical stains
- The resident demonstrates efficiency and professionalism in the handling of cases (turn around time is kept to 48 hours, special stains, immunostains are ordered when the attending staff requests them, the resident does the follow-up on stains when they do not arrive when anticipated)
- The resident demonstrates an economy of sections that are adequate to provide all the necessary information, and minimizes the need to submit additional wet tissue
- The resident demonstrates the ability to communicate appropriately to clinical colleagues
- The resident is ready to start supervising (in the third year) junior residents in surgical pathology procedures

PGY 3 GOALS: By the end of the third year:

- The resident must be able to compose a gross and microscopic Surgical Pathology report which is ready for transcription, with minimal if any correction
- The resident should be comfortable interpreting intraoperative consultations

PGY 4 GOALS:

- The resident should be able to supervise junior residents in all aspects of the practice of surgical pathology
- The resident should have demonstrated increased medical knowledge through study set examinations, conferences and conducting clinical conferences
- The resident must have reviewed minimally 2,000 surgical pathology cases that they have reviewed and signed out
- The resident should be competent in all Surgical Pathology Skill Levels 1 and 2

GENERAL - Throughout the entire duration of residency training the resident must also demonstrate the specific skills for Professionalism, Practice--Based Learning and Improvement, Interpersonal and Communication Skills and System-Based Learning as listed on pages 16 and 17.

DUTIES AND RESPONSIBILITIES OF RESIDENTS

Surgical Pathology

- Frozen sections: Residents together with the staff perform the gross processing of all frozen sections, except when previously arranged with the staff. Residents should always be immediately available by page.
- Gross: Residents examine, dissect and dictate all gross surgical specimens, with direct or indirect (B) supervision by the staff . Residents are expected to notify staff of any questions regarding gross processing, including specimen orientation, sectioning, special studies and photographs.
- Microscopic: All specimens processed grossly by residents will be independently examined microscopically by the resident the following morning. They will proofread the previous day's gross dictation, thoroughly evaluate all histologic sections and write out their topographical statement and diagnostic evaluation. As arranged, the resident will then meet with the staff and sign out all cases.
- Self-study: The resident is expected to investigate the diagnostic possibilities and related areas of each case using the available resources (including textbooks, study set of prior surgical pathology cases, CAP-PIP cases, ASCP cytology cases, and online resources) .

Conferences

- Residents will attend VA pathology conferences and those KU pathology conferences that are required. Residents may attend other KU conferences if approved by VA staff. Presentation of VA surgical pathology cases at KU conferences is strongly encouraged. VA staff will assist in photographic preparations as needed.

Investigation

- Residents are encouraged to develop investigative studies and prepare case reports for publication together with the staff.

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5. Weidner, N, et al. *Modern Surgical Pathology*. Philadelphia:Elsevier/Saunders. 2009

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RESIDENT EVALUATION

- The resident should demonstrate the personal qualities of a mature and proficient pathologist, such as motivation, integrity, realistic self-assessment, and good communication skills.
- The resident should show improvement in knowledge and practice of surgical pathology.
- The resident must be reliable and responsible for working up pathology cases, and presenting them to others as indicated.

KANSAS CITY VAMC FACULTY

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PEDIATRIC SURGICAL PATHOLOGY

The goal of the rotation in pediatric surgical pathology at Children’s Mercy Hospital is for the resident to become competent in the basic practice and principles of diagnostic pediatric pathology, primarily surgical pathology.

GOALS AND OBJECTIVES

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal: <i>Residents must demonstrate a satisfactory level of diagnostic competence in pediatric pathology</i>		
Objectives:	Learning Activities	Evaluation Activities
Perform adequate gross processing and dissection of pediatric surgical specimens	FSO, DSP, RM	RR, DO, GR/FE, PF
Demonstrate competency in diagnosis of pediatric pathology histologic sections	FSO, DSP, RM	RR, DO, GR/FE, PF
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Demonstrate knowledge about established and evolving biomedical, clinical and cognitive sciences and the application of this knowledge to pediatric pathology</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate understanding of pediatric pathology disorders	FSO, DSP	RR, DO, CL, GR/FE, SE, PSE, IWE
Evaluate the significant clinicopathological aspects of pediatric surgical pathology cases.	FSO, DSP, IC	RR, DO, CL, GR/FE, SE, PSE, IWE
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise and assimilate scientific evidence and improve their patient care practices.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to critically assess the scientific literature.	JC, RM, OT, P	DO, GR/FE
Demonstrate knowledge of evidence-based medicine and apply its principles in practice.	FSO, JC, RM, OT, P	DO, CL, GR/FE
Develop personally effective strategies for the identification and remediation of gaps in medical knowledge needed for effective practice.	DSP, RM, USC	RR, DO, GR/FE, SE, PSE, IWE, 360
Use laboratory problems and clinical inquiries to identify process	FSO, RM, IC	DO, GR/FE,

improvements to increase patient safety.		360, PF
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with other health care providers, patients and patients' families.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to write articulate, legible, and comprehensive yet concise reports and consultation notes. Provide a clear and informative report, including a precise diagnosis whenever possible, a differential diagnosis when appropriate, and recommended follow-up or additional studies as appropriate.	FSO, DSP, RM	RR, DO, CL, GR/FE, PF
Demonstrate the ability to provide direct communication to the referring physician or appropriate clinical personnel when interpretation of a laboratory assay reveals an urgent, critical, or unexpected finding and document this communication in an appropriate fashion.	FSO, DSP, RM	RR, DO, GR/FE, 360
Choose effective modes of communication (listening, nonverbal, explanatory, questioning) and mechanisms of communication (face-to-face, telephone, e-mail, written), as appropriate.	FSO, RM, IC, USC	RR, DO, GR/FE, PSE, 360
Conduct both individual consultations and presentations at multidisciplinary conferences that are focused, clear, and concise.	RM, IC, USC	DO, GR/FE, PSE
CORE COMPETENCY: PROFESSIONALISM		
Goal: <i>Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate compassion: be understanding and respectful of patients, their families, and the staff and physicians caring for them.	FSO, DSP, RM, IC	DO, GR/FE, 360
Interact with others without discriminating on the basis of religious, ethnic, sexual, or educational differences.	FSO, DSP, RM, IC	DO, GR/FE, 360
Demonstrate positive work habits, including punctuality, dependability, and professional appearance.	FSO, RM	DO, GR/FE, 360
Demonstrate a responsiveness to the needs of patients and society that supersedes self-interest.	FSO, DSP, RM	DO, GR/FE, 360
Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.	DL, FSO, DSP, RM, IC	DO, GR/FE, 360
Demonstrate a commitment to excellence and ongoing professional development.	RM	DO, GR/FE
Demonstrate interpersonal skills in functioning as a member of a multidisciplinary healthcare team	FSO, DSP, RM, IC	DO, GR/FE, 360
CORE COMPETENCY: SYSTEM-BASED PRACTICE		
Goal: <i>Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide pathology services that are of optimal value</i>		

Objectives:	Learning Activities	Evaluation Activities
Demonstrate understanding of the role of the laboratory in the healthcare system.	DL, FSO, LI, IC	DO, GR/FE
Show a working knowledge of the basic principles of quality assurance, quality control, continuous quality improvement, and outcomes analysis, as they apply to pediatric pathology.	FSO, RM, LI	DO, GR/FE
Demonstrate a familiarity with standards set forth by the CAP and TJC for laboratory certification.	RM, LI, OT	DO, GR/FE, SE, IWE

DUTIES AND RESPONSIBILITIES OF RESIDENTS

- **Gross:** Residents examine, dissect and dictate all gross surgical specimens, with the staff always immediately available. Residents are expected to notify staff of any questions regarding gross processing, including specimen orientation, sectioning, special studies and photographs.
- **Microscopic:** All specimens processed grossly by residents will be independently examined microscopically by the resident the following morning (or when sections are available). They will proofread the previous day's gross dictation, thoroughly evaluate all histologic sections and write out their topographical statement and diagnostic evaluation. As arranged, the resident will meet with the staff and sign out all cases.
- **Self-study:** The resident is expected to investigate the diagnostic possibilities and related areas of each case using the available resources.

Conferences

Residents will attend CMH pathology conferences and those KU pathology conferences that are required.

The following is a listing of pediatric conditions that not uncommonly are biopsied or excised for pathologic evaluation. The resident should become familiar with these relatively common pediatric surgical specimens and their histologic features. The resident is expected to develop more in depth understanding and higher skill level assessing conditions that appear in upper case letters. Many of these conditions also occur in adults and may have similar or dissimilar features and manifestations in children. It is unlikely that the resident will see most of these specimens during a one month pediatric surgical rotation. However, they should supplement their exposure by reviewing the teaching collection and through readings and exposures to these conditions that occur on other surgical rotations as well.

Head and Neck:

- Cysts and developmental anomalies
- Mucocele
- Developmental
- Dermoid / epidermoid
- Branchial cleft derivatives
- Accessory tragi (auricles)
- Preauricular pits and skin tags
- Branchial cleft cysts and sinuses
- Odontogenic jaw (dentigerous, keratocysts)

- Fissural (nasopalatine and globulomaxillary)
- Nasal / paranasal encephalocele and nasal “glioma”
- Nasopharyngeal hairy polyp (hamartoma)
- Acquired conditions
- Allergic polyps, polyps associated with CF, Cholesteatoma
- Tumors
- Pyogenic granulomas,
- Hemangiomas
- Congenital epulis (granular cell tumor)
- Cystic hygroma
- Pigmented neuroectodermal tumor of infancy
- Neurofibromas
- Rhabdomyosarcoma
- RETINOBLASTOMA
- Olfactory neuroblastoma
- Lymphomas
- LANGERHANS CELL HISTIOCYTOSIS
- Congenital Fibrosarcoma
- Fibromatoses (fibromatosis coli) and myofibromatosis

Respiratory System:

- Upper
- laryngeal webs, granulation tissue and laryngotracheal malacia
- Juvenile laryngeal papillomas
- Hemangiomas
- Lower
- Cysts and developmental anomalies
- Bronchogenic cysts
- PULMONARY SEQUESTRATION (extra and intra lobar)
- Infantile lobar emphysema
- CONGENITAL CYSTIC ADENOMATOID MALFORMATION
- Acquired conditions
- Persistent Interstitial Pulmonary Emphysema
- Pulmonary hemosiderosis
- Pneumonias (opportunistic infections)
- Tumors
- Lung
- Inflammatory pseudotumor
- Pleuropulmonary blastoma
- Adenocarcinoma
- Metastatic tumors
- Chest wall

- PNET (Askin tumor)
- RMS associated with CCAM
- Chest Wall hamartoma (mesenchymoma of rib)

Mediastinum

- Anterior
- Thymic epithelial cysts
- Teratomas / YST / EC / Choriocarcinoma
- LYMPHOMAS (LB and HD)
- Middle
- Bronchogenic cysts
- Pericardial cysts
- Lymphoma
- Posterior
- Neuroblastoma
- Ganglioneuroma
- RMS
- Neurofibroma and neurolemmoma

GI tract

- Congenital
- Duplication cysts and diverticula
- Heterotopias (gastric, pancreatic)
- Atresia and Congenital webs (e.g. duodenal)
- HIRSCHSPRUNG'S DISEASE
- Cystic fibrosis (meconium ileus and equivalent)
- Microvillus inclusion disease
- Acquired
- NECROTIZING ENTEROCOLITIS (NEC)
- Reflux and allergic esophagitis
- Intussusception
- Volvulus
- Gastritis (Helicobacter pylori, Hypertrophic) and gastropathies
- Inflammatory bowel disease
- Celiac disease
- Allergic gastroenteritis
- Allergic proctitis
- Giardiasis
- Tumors
- POLYPS (juvenile, Peutz-Jeghers hamartomatous, adenomatous, lymphoid hyperplasias)
- B cell lymphomas (Burkitt's)
- Adenocarcinoma
- Anal Warts (HPV)

- Mesenteric lymphangiomas
- Hemangiomas

Liver and exocrine pancreas

- Congenital
- Annular pancreas
- Ectopic pancreas (stomach, duodenum, liver)
- BILIARY ATRESIA (extrahepatic and Intra hepatic)
- Choledochal Cysts
- Bile Duct Plate malformations
- Infantile AR Polycystic disease
- Congenital Hepatic Fibrosis
- Intrahepatic BD Cysts (Caroli's disease)
- METABOLIC DISEASES:
- Amino acids [tyrosinemia, Urea cycle defects, cystinosis]
- Bile Acids [PFIC, BA synthetic defects, Zellweger]
- Carbohydrates [GSD, galactosemia, DM]
- Glycoproteins [alpha-1-Antitrypsin deficiency]
- Minerals [Wilson's, Hemochromatosis, Indian Childhood cirrhosis]
- Lipids [MCAD, Gaucher's, Niemann Pick, abetalipoproteinemia, GM1 and GM2 gangliosidoses, others.
- Mucopolysaccharidoses {Hunter's and Hurler's disease }
- Others [Cystic fibrosis]
- Infection (CMV, Adenovirus, Herpes simplex, Toxo)
- TPN and drug-related
- Sepsis-related
- Hypothyroidism and Hypopituitarism
- Tumors
- Hemangiomas, hemangioendotheliomas
- Hepatoblastomas
- Undifferentiated Sarcoma
- Mesenchymal Hamartoma
- Teratoma
- Hepatocellular carcinoma
- Focal Nodular Hyperplasia
- Hepatic Adenomas
- Rhabdomyosarcoma
- Pancreatoblastoma
- Papillary cystic and solid tumor of pancreas

Urinary tract

- Congenital
- Renal ectopias (simple vs crossed)

- Fused horseshoe kidney
- Renal Agenesis (unilateral and bilateral (Potter's Sequence))
- Collection system duplications
- Obstructions (UPJ, PUV)
- RENAL DYSPLASIA (bilateral / unilateral, multicystic, segmental, hypoplastic variants)
- POLYCYSTIC KIDNEY DISEASE (AR, AD)
- Glomerulocystic Disease (AD and sporadic)
- Medullary cystic disease (Medullary sponge and familial nephronophthisis-MCD complex)
- Umbilical urachal remnants
- Renal nephrogenic rests (Wilms' tumor "seeds")
- Acquired
- Glomerulonephritis
- Nephrotic syndrome: MCD, FSGS, Diffuse Mesangial Sclerosis, Membranous Nephritis
- Hematuria with normal renal function: IgA (Bergers), HSP, Alports, TMB disease
- Nephritic syndrome, Post infectious GN, HSP, HUS, MPGN, Lupus
- Renal Transplantation
- Acute cellular and humoral rejection
- Chronic transplant nephropathy
- BK virus and other opportunistic infections
- Tumors
- WILMS"" (triphasic and anaplastic variants))
- Congenital Mesoblastic Nephroma (myofibroma-like)
- Clear Cell Sarcoma
- Rhabdoid
- Renal Cell CA
- Bladder / prostate Rhabdomyosarcoma

Female reproductive system

- Congenital
- Streak Ovary and ovotestis
- vaginal adenosis (DES exposure)
- Vaginal mesonephric duct remnants
- Acquired
- Ovarian Torsion
- Follicular and leuteinizing ovarian cysts
- Massive ovarian edema
- Lichen sclerosis et atrophicus
- Condylomata (genital warts)
- Tumors
- Germ cell tumors (EST, Mature and Immature Teratoma, gliomatosis peritonea, etc.)
- Gonadoblastoma
- Gonadal stromal tumors (GC and JGC tumor , Sertoli-Leydig cell, SCTAT, Lipoid , etc.)

- Lymphoma (Burkitt's)
- Hemangiomas, lymphangiomas and neurofibromas
- Inflammatory and benign fibroepithelial vaginal polyps
- Rhabdomyosarcoma, botryoid variant
- Vaginal mesonephric papilloma
- Perineal aggressive angiofibroma

Male reproductive system and intersex anomalies

- Congenital
- Ectopic Testis and Cryptorchidism
- Testicular regression syndrome. No increased risk of malignancy. (+ Vas / epididymis; siderocalcific fibrous nodule; no testis . +/- female/ambiguous/micro penis / normal male if bilateral or unilateral and depending on early, mid, or late fetal onset of infarction.
- Mixed gonadal dysgenesis (46,XY/45X mosaic) - variable feminization. Increased risk if malignancy
- Partial streak on one side having ovarian stroma with rudimentary cords and tubules and ipsilateral müllerian development (failed MDIF production)
- Cryptorchid testis with histologic disorganized tubules and suppressed müllerian development on opposite side
- Male pseudohermaphrodite: Genotypic male phenotypically feminized caused by: androgen insensitivity syndromes; gonadotropin abnormalities; Leydig cell abnormalities; testicular regression syndrome; testicular steroid enzyme deficiencies; 5 α reductase deficiency, 46,XY gonadal dysgenesis (SRY mutations)
- Failure to produce MDIF (early bilateral TRS [Swyer's syndrome])
- Persistent Müllerian Duct syndrome - Genotypic and phenotypic male with uterus and upper vagina and normal testes.
- Androgen receptor insensitivity (also called "Testicular Feminization Syndrome")
- Complete: Female phenotype with cryptorchid testes that is normal before puberty but becomes dysplastic thereafter. X-linked recessive or X-linked dominant. Accounts for 80% of TFS. High risk of malignancy (>30% by 30 years)
- Incomplete: Female genitalia with some masculinization with further virilization at puberty. Testis near normal with maturation arrest at primary spermatocyte stage and normal interstitial and Sertoli cells. No increased risk of neoplasia.
- Acquired
- Torsion
- Infarction (TRS -late)
- Meconium periorchitis
- Tumors
- Epidermoid Cysts
- Adrenal rests
- Gonadal Stromal tumors
- Leydig cell tumors
- Nodular Leydig cell hyperplasia

- Testicular tumor of Adrenogenital syndrome
- JGC tumor
- Germ Cell Tumors
- PARATESTICULAR RHABDOMYOSARCOMA

Exocrine System

- Congenital
- Ectopic adrenal cortical tissue
- Congenital Adrenal Hyperplasia
- Adrenoleukodystrophy
- Ectopic thyroid tissue
- thyroglossal duct remnants /cysts
- Ectopic parathyroid tissue
- Pancreatic nesidioblastosis
- Acquired
- Adrenal cortical hyperplasia
- Adrenal Medullary hyperplasia
- Dysmorphogenetic goiter
- Multinodular adenomatous thyroid hyperplasia
- Lymphocytic Thyroiditis
- Graves Disease
- Secondary hyperparathyroidism
- Primary hyperparathyroidism
- Tumors
- Pituitary adenomas
- Craniopharyngioma
- Langerhans cell histiocytosis
- Adrenal cortical adenoma
- Adrenal Cortical Carcinoma
- Pheochromocytoma
- NEUROBLASTOMA
- Papillary thyroid carcinoma
- True Follicular Thyroid carcinoma
- Medullary Thyroid carcinoma
- Pancreatic adenoma
- Hematopoietic system
- Congenital
- Ectopic thymus
- Diamond Blackfan Anemia vs TEC
- Kostmann's Agranulocytosis
- Severe Combined Immunodeficiency Disease
- Bruton's Agammaglobulinemia

- Thymic Aplasia / hypoplasia
- Acquired
- Infectious Lymph adenitis (granulomatous, cat scratch, toxo, EBV, etc.)
- Follicular hyperplasias
- Kikuchi disease
- Splenic changes in Hereditary Spherocytosis, ITP, Sickle cell anemia, Gaucher's, Sea Blue histiocytosis and Niemann Pick disease
- Thymic cysts
- Tumors
- ACUTE LEUKEMIA (ALL and AML and subtypes)
- Transient myeloproliferative Disorder of Down's Syndrome
- NON HODGKIN'S LYMPHOMAS (Burkitt, LB, Anaplastic LC)
- Hodgkin's Lymphoma including NLPHD
- Histiocytoses (LCH, JXG, VAHS, RD disease)
- Metastatic tumors (Neuroblastoma, RMS, Ewings, others)
- Splenic epidermoid cyst, hemangiomas
- Thymomas

Muscle

- Neurogenic atrophy
- Neuropathies
- Spinal Muscular Atrophy
- Hereditary motor and sensory neuropathies
- Charcot-Marie-Tooth disease
- Dejerine-Sottas disease
- Muscular dystrophies
- Duchenne's dystrophy
- Becker's Dystrophy
- Congenital muscular dystrophy
- Myotonic dystrophy
- Myopathies, slowly progressive
- Nemaline myopathy
- Myotubular (centronuclear) myopathy
- Central Core disease
- Metabolic Myopathies
- Glycogenosis types II, III, VI, V, VII
- Mitochondrial Myopathies
- MELAS
- MERRF

Bone and Soft tissue

- Soft tissues

- HEMANGIOMAS and variants (Common Infantile [CIH], Rapidly involuting congenital [RICH], Non involuting congenital [NICH], Cellular,
- Hemangiomatosis
- Lymphangioma
- Vascular malformations
- Fibrous Hamartoma of Infancy
- Infantile digital fibroma
- Fibromatosis coli,
- Infantile myofibromatosis
- Giant cell fibroblastoma
- Lipoblastoma and Lipoblastomatosis
- SACROCOCCYGEAL TERATOMA
- PERIPHERAL NEUROECTODERMAL TUMOR / EWINGS TUMOR FAMILY
- Bone
- Osteomyelitis
- Aneurysmal bone cyst
- Unicameral bone cyst
- Osteoid osteoma
- Eosinophilic granuloma
- Chondroblastoma
- Fibrous dysplasia
- Osteofibrous dysplasia
- Ewing sarcoma
- Osteosarcoma

REFERENCES

Pediatric Surgical Pathology. Elizabeth S. Gray and Nicholas M. Smith. Churchill Livingstone 1995
 Pediatric Pathology. J. Thomas Stocker and Louis P. Dehner. Lippincott Williams and Wilkins, 2010.

RESIDENT EVALUATION

- The resident should demonstrate the personal qualities of a mature and proficient pathologist, such as motivation, integrity, realistic self-assessment, and good communication skills.
- The resident should show improvement in knowledge and practice of surgical pathology.
- The resident must be reliable and responsible for working up pediatric pathology cases, and presenting them to others as indicated.

CHILDREN'S MERCY HOSPITAL SURGICAL PATHOLOGY FACULTY

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SURGICAL PATHOLOGY (PGY4 TRAINER ROTATION)

PGY4 residents will spend one month orienting and training a PGY1 resident during their first month on Surgical Pathology at KUMC.

GOALS AND OBJECTIVES

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal: <i>Senior residents will enhance their teaching skills by mentoring PGY1 residents on their first month of Surgical Pathology at KUMC.</i>		
Objectives:	Learning Activities	Evaluation Activities
Train a PGY1 resident the skills necessary to independently function in the grossing and sign out rooms	FSO, DSP, RM, IC	RR, DO, CL, GR/FE, PF
Obtain graduated responsibility by overseeing the work of a PGY1 resident	DL, FSO, DSP, RM, IC	RR, DO, GR/FE, SE, IWE
Enhance in-depth learning of a specific surgical pathology area during the second half of the month.	DL, FSO, JC, DSP, RM, OT, USC	RR, DO, CL, GR/FE, SE, PSE, IWE, PF, PCL
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Demonstrate knowledge about established surgical pathology procedures to enhance the training of a PGY1 during the first month of surgical pathology at KUMC; develop further in-depth knowledge of a surgical pathology topic during the second half of the month.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate knowledge of basic surgical pathology procedures for use in training of a PGY1 resident	DL, FSO, JC, DSP, RM, IC, OT, USC, P	RR, DO, CL, GR/FE, SE, PSE, IWE
As time allows, develop in-depth knowledge of a surgical pathology topic during the last part of the month.	DL, FSO, JC, DSP, IC, OT, USC	RR, DO, CL, GR/FE, SE, PSE, IWE, PF, PCL
Develop additional knowledge of teaching and mentoring methods and styles.	DL, FSO, JC, DSP, RM, IC, OT, USC	RR, DO, GR/FE, SE, IWE, PF, PCL
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise</i>		

<i>and assimilate scientific evidence and improve their patient care practices.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to mentor a PGY1 resident in how to critically assess the scientific literature.	JC, RM, OT, P	DO, GR/FE
Demonstrate knowledge of evidence-based medicine and apply its principles in practice while mentoring a PGY1 resident.	FSO, JC, RM, OT, P	DO, CL, GR/FE
Demonstrate to a PGY1 resident how to use multiple sources, including information technology, to optimize lifelong learning and support patient care decisions.	JC, RM, OT	DO, GR/FE
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with other health care providers, patients and patients' families.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to instruct a junior resident on performance of procedures in surgical pathology.	FSO, DSP, RM	RR, DO, CL, GR/FE, PF
Demonstrate the ability to provide focused, clear, and concise instructions.	FSO, DSP, RM	RR, DO, GR/FE, 360
Demonstrate the ability to communicate the vision of the anatomic pathology service role to junior residents to develop clinically advantageous and cost-effective strategies.	FSO, RM, IC	DO, GR/FE, PSE, 360
Choose effective modes of communication (listening, nonverbal, explanatory, questioning) and mechanisms of communication (face-to-face, telephone, e-mail, written), as appropriate.	FSO, RM, IC	RR, DO, GR/FE, PSE, 360
Demonstrate skills in educating colleagues and other healthcare professionals: demonstrate the ability to help other residents obtain proficiency in laboratory medicine	FSO, RM, IC	DO, GR/FE, PSE, 360
CORE COMPETENCY: PROFESSIONALISM		
Goal: <i>Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population.</i>		
Objectives:	Learning Activities	Evaluation Activities
Interact with others without discriminating on the basis of religious, ethnic, sexual, or educational differences.	FSO, DSP, RM, IC	DO, GR/FE, 360
Demonstrate positive work habits, including punctuality, dependability, and professional appearance.	FSO, RM	DO, GR/FE, 360
Demonstrate a responsiveness to the needs of patients and society that supersedes self-interest.	FSO, DSP, RM	DO, GR/FE, 360
Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.	DL, FSO, DSP, RM, IC	DO, GR/FE, 360
Demonstrate knowledge of regulatory issues pertaining to the use of human subjects in research.	DL, OT	GR/FE, SE
Demonstrate a commitment to excellence and ongoing professional development.	RM	DO, GR/FE

Demonstrate interpersonal skills in functioning as a member of a multidisciplinary healthcare team	FSO, DSP, RM, IC	DO, GR/FE, 360
CORE COMPETENCY: SYSTEM-BASED PRACTICE		
Goal: <i>Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide pathology services that are of optimal value</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate understanding of the role of the clinical laboratory in the healthcare system.	DL, FSO, LI, IC	DO, GR/FE
Demonstrate the ability to design resource-effective diagnostic plans based on knowledge of best practices in collaboration with other clinicians.	FSO, RM	RR, DO, GR/FE, SE, IWE, 360, PF
Demonstrate knowledge of basic healthcare reimbursement methods.	DL	DO, GR/FE, SE, IWE
Demonstrate knowledge of the laboratory regulatory environment, including licensing authorities; federal, state, and local public health rules and regulations; regulatory agencies such as the Centers for Medicare and Medicaid Services and the US Food and Drug Administration; and accrediting agencies such as The Joint Commission (TJC), CAP, and the ACGME.	DL, FSO, LI, OT	DO, CL, GR/FE, SE, IWE
Understand and implement policies to continually improve patient safety as they relate to surgical pathology	FSO, RM, LI, P	DO, GR/FE

TRAINER RESPONSIBILITIES

Quickly learning and becoming competent in the tasks necessary during the surgical pathology rotation is a daunting challenge for new residents. Not only are residents required to do the grossing work necessary to the rotation, and learn microscopic and diagnostic skills, but they are also required to work at a pace that facilitates appropriate turn-around time for cases, as well as adhering to work hour limitation requirements.

Adequate rotation specific training is an essential part of a first year resident's training, and this rotation aims to make that training more consistent. During the first month of a PGY1 resident's experience on KU surgical pathology, a senior resident will be assigned a concurrent training month to help PGY1 residents become independently competent during the rotation. This senior resident will be specifically paired with the PGY1 resident, and will be in addition to the three residents ordinarily assigned to the rotation.

The goal for the trainer resident is to teach the PGY1 resident the skills necessary to independently function in the grossing and sign out rooms; but it is also an opportunity for the trainer to take on graduated responsibility, to enhance their own learning, to add to their teaching skills, and to act more independently in preparation for their own post-graduation career work.

The PGY1 resident should obtain the skills to function independently gradually during the month. As the PGY1 resident becomes more independent during the middle, and especially in the last half of the month,

the trainer will spend time with a faculty member of choice working on an in-depth study of a specific area of surgical pathology or performing other scholarly activity.

EVALUATIONS: The trainer will be evaluated by the PGY1 resident assigned, the Pathology Assistant, the faculty gross room director (Dr. O'Neil), as well as the surgical pathology staff in general. The trainer will evaluate the surgical pathology staff and the rotation at the end of the month. The faculty mentor for the trainer's surgical pathology project for the last half of the month will also evaluate the trainer.

CONFERENCES: The trainer will attend surgical pathology conferences, tumor board and other monthly conferences required of AP residents. The trainer will lead at least one surgical pathology conference during the month with faculty approval. The trainer will also attend the first day of the month orientation meeting.

DUTIES: The trainer will be expected to be a daily presence in the workflow of the PGY1 resident and immediately available for questions and help. The ultimate goal is to provide assistance to the PGY1, including grossing supervision and working up cases, more heavily in the first two weeks, and eventually acting as an advisor in the last two weeks. The trainer will provide direct supervision of grossing of organ-specific cases that require direct supervision. The trainer will initial the PGY1 worksheet to verify the supervision of the required specimens. By the last week, the PGY1 resident should be doing the bulk of the work on their own, with the trainer available for questions.

SUPERVISION: The trainer will be under the direct supervision of the faculty gross room director (Dr. O'Neil). Questions or problems that arise during the month should be directed to the gross room director. The trainer and the PGY1 will each meet with the gross room director prior to the rotation to go over the rotation objectives and expectations. The trainer will also identify a surgical pathology faculty member to serve as a mentor for in-depth surgical pathology study or other scholarly activity (case report, clinical research study, etc.).

HOURS: Trainers will be expected to work concurrently with the PGY1 residents during the first part of the month.. For the first two weeks, trainers will be expected to arrive at 7:30 on grossing days, and stay until the grossing work is finished. During the last two weeks of grossing days, as the PGY1 is more independent, trainers may be approved to check out with the PGY1 resident and leave before the PGY1 with the approval of the faculty gross room director to work on the chosen surgical pathology project.

Prior to their first Day 1 rotation the trainer will:

TOUR: Show the PGY1 necessary items including but not limited to:

- Frozen stations/gross room
- Supplies/stainer/tools/EM/RPMI location
- Processor room/formalin
- Photography
- IHC/histology
- PA and histology supervisor office
- Cytogenetics

- Flow Cytometry
- Phone/pager lists/OR phone list
- Grossing templates on G drive
- Transcription
- Cytology lab-(For STAT BAL training to be done by cytology fellow)
- Location of cytology lab key and meal card
- Slide/block filing
- Paperwork filing
- Frozen section slide filing

Prior to their first Day 1 rotation the trainer will:

Go over the surgical pathology training checklist with the PGY1 and give a signed copy to the faculty gross room director. Give the PGY1 their SP notebook and point out additional books/manuals locations.

DAY 1:

Working in conjunction with the pathology assistant as necessary, the trainer will:

- Train the PGY1 on setting up a grossing station
- Train the PGY1 on frozen section cutting/sign out/calling results
- Train the PGY1 on the dictation system
- Assist in Grossing: The trainer will be expected to stand at the PGY1's side during grossing to assist with grossing and answer questions until the PGY1 is competent to gross each type of specimen independently. The trainer may assist in grossing as the workload requires.
- Explain the resident role in the tissue banking process
- Explain the resident role in Oncotech/Precision sampling
- Assist PGY1 and staff with reading frozen sections
- Eventually independently read frozen sections with staff approval.
- Train the PGY1 on accessioning/printing cassettes
- Train the PGY1 on cleaning/end of the day procedure/loading processor
- Help triage specimens with pathology assistant

First two weeks: Work with PGY1 on grossing days until grossing work is finished

Last two weeks: Check with PGY1 and faculty gross room director at the end of Day 1 to assess remaining workload/incoming frozens and answer any questions before leaving.

DAY 2:

Working with the approval of the staff, in assisting the PGY1 in signing out big cases, the trainer will:

- Train the PGY1 to organize slides and paperwork/gather pertinent clinical information
- Train the PGY1 to enter cases in the Copath system including but not limited to:
 - Gross description proofreading/editing
 - Final diagnosis and Comment sections
 - Clinical history section
 - Accurate checking of accessioning
 - Addendums

- Tumor checklists
- Ordering IHC/specials/etc.
- Ordering prognostic markers
- Train the PGY1 on critical values in surgical pathology
- Train the PGY1 on billing
- Train the PGY1 on filing slides and completed billing sheets
- Train the PGY1 on entering and filing histology/IHC QA sheets

Signing out: It is recommended that for the first 1-2 weeks the trainer sits with the PGY1 and looks at cases together, while the PGY1 enters information in copath. Once the PGY1 becomes competent in independent entering, the PGY1 will be encouraged to quickly look at slides first, enter as much in copath as possible, and then review them with the trainer before staff sign out if time permits. The trainer will not be required to sit with the staff and PGY1 for staff sign out unless requested by the staff.

The trainer will also:

- Order special stains before staff sign out as necessary
- QA new cancer cases with staff
- assist PGY1 in fielding clinical questions/phone calls on pending cases
- communicate with PA and PGY1 regarding grossing of leftover cases
- sign out cases with staff without the PGY1 present as necessary
- train the PGY1 on microscopic photography/scanning slides as necessary

DAY 3:

Working with approval of the staff, the trainer will (in addition to the general duties above, in Day 2):

- Assist the PGY1 in signing out biopsies (see above recommendations for sign out and copath training)
- Train the PGY1 on the policy of STAT cases (endomyocardial, liver etc)
Train the PGY1 on routinely ordered special stains (liver, gastric etc)
- Assist in preparing leftover Day 2 cases for staff sign out
- Train the PGY1 to prepare for Day 1 by:
 - Checking/printing the OR schedule
 - Looking up pertinent history in copath AND O2
 - Pulling relevant slides as necessary
 - Reviewing gross manuals as needed for anticipated specimens

WEEKS 3 – 4

- During the last two weeks of the month, the trainer should have a significant amount of free time. Prior to the beginning of the trainer month, the PGY4 resident should discuss and plan activities with a specific surgical pathology faculty. During this time, in-depth study of a surgical pathology area will take place with a faculty mentor. Or a special project may be done (case report, clinical research, etc) with the consent of a faculty member.

CYTOPATHOLOGY

Residents will spend three months on the cytology service during years 2 – 4.

GOALS AND OBJECTIVES

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal: <i>Residents will learn the utilization of cytopathology as a non-invasive modality of diagnosis. This will include hands-on experience of the collection of samples during fine needle aspirations of superficial masses and assistance during the sampling of deep lesions.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate knowledge of how to evaluate common cytopathology specimens comprehensively. (I)	DL, FSO, DSP	RR, DO, GR/FE, SE, IWE, PCL
Demonstrate knowledge of the application of ancillary techniques including image analysis, immunocytochemistry, flow cytometry, cytogenetics, electron microscopy, and molecular studies (FISH; PCR). (II)	DL, FSO, DSP, IC	RR, DO, GR/FE, SE, PSE, IWE, PCL
Demonstrate knowledge of how to rapidly evaluate common FNA biopsy specimens, including determination of specimen adequacy and the need for ancillary techniques, and the appropriate collection of materials for such techniques. (II)	DL, FSO, DSP, RM	RR, DO, GR/FE, SE, PSE, IWE, PCL
Demonstrate working familiarity with the instruments and materials needed to perform FNA biopsies. (II)	DL, FSO, DSP, RM	DO, GR/FE
Demonstrate correct performance of FNA, including preparation of smears and collection of diagnostic materials with proper handling for ancillary techniques, on appropriate specimens at the surgical pathology gross cutting area. (II)	DL, DSP	DO, GR/FE
Demonstrate competency under supervision of staff cytopathologists in the performance of clinical superficial FNA biopsy, appropriately taking history, correctly obtaining informed consent, competently examining the lesion to be biopsied, preparing the patient and biopsy instruments, physically procuring the specimen, and preparing and staining the smears, with preliminary interpretation of the smears and appropriate after-care of the patient. (II)	DL, DSP	RR, DO, GR/FE, PCL
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Pathology residents will gain proficiency in cytopathology as required to gain successful certification in Anatomic or Anatomic and Clinical Pathology.</i>		
Objectives:	Learning Activities	Evaluation Activities
Complete both a pre- and post program assessment test. Pre-test should be taken after the first month of the program and the post-test	DL, FSO, JC, DSP, RM	GR/FE, SE, IWE

performed after the third required month.		
Residents are required through graded increase of responsibility and participation in sign-out, supplemental learning materials, conferences, cytopathology research and Fine Needle Aspirations to achieve the goal of resident training in cytopathology.	DL, FSO, DSP, RM, IC, USC	RR, DO, CL, GR/FE, SE, PSE, IWE, 360, PF, PCL
Demonstrate knowledge of the current Bethesda System terminology for reporting on gynecologic cytopathology specimens, and of the principles and application of human papillomavirus probe analysis. (I)	DL, FSO, DSP	RR, DO, CL, GR/FE, SE, IWE, PCL
Demonstrate knowledge of the elements of adequacy and the current laboratory reporting system (such as negative, inflammatory/reactive, atypical/suspicious, neoplastic or malignant) for fine needle aspiration (FNA) biopsy and exfoliative non-gynecologic cytopathology specimens from the various commonly sampled body sites. (I)	DL, FSO, DSP	RR, DO, CL, GR/FE, SE, IWE, PCL
Demonstrate knowledge of the cytopathologic features of normal, reactive, infectious, dysplastic and neoplastic conditions as seen in common cytopathology specimens. (I)	DL, FSO, DSP, USC	RR, DO, GR/FE, SE, IWE, PCL
Demonstrate knowledge of how common cytopathology specimens are screened. (I)	DL, FSO, DSP	RR, DO, GR/FE, 360, PCL
Demonstrate knowledge of the content of training materials on correct performance of FNA biopsies. (II)	DL, FSO, DSP, RM	DO, GR/FE, PCL
Demonstrate familiarity with the principles of automated screening for gynecologic cytopathology specimens. (II)	DL, FSO	DO, GR/FE, 360
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Residents must gain awareness of laboratory management and knowledge of quality assurance measures and laboratory troubleshooting.</i>		
Objectives:	Learning Activities	Evaluation Activities
Be able to verify that cytopathology requisitions are completed correctly. (I)	FSO, DSP	RR, DO, GR/FE
Demonstrate familiarity with the methods of collection, cytopreparatory processing, and turnaround times for common cytopathology specimens, in order to be able to answer clinicians' questions concerning expected results from the cytopathology laboratory. (I)	DL, FSO, DSP, RM, IC	DO, GR/FE, 360
Demonstrate knowledge of how to perform quality assurance, including the correlation of gynecologic and non-gynecologic cytopathology with surgical pathology, both in aggregate for quality assurance purposes and on a case-by-case basis for diagnostic purposes. (II)	FSO, DSP, RM, LI, IC	DO, GR/FE, SE, IWE, 360
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with other health care providers, patients and patients' families.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate knowledge of how clearly, concisely, and completely to compose a cytopathology report for specimens from various commonly sampled body sites based upon the final diagnostic findings, and of how	FSO, DSP, RM	RR, DO, GR/FE, PCL

appropriately to recommend clinical follow-up. (II)		
CORE COMPETENCY: PROFESSIONALISM		
Goal: <i>Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population.</i>		
Objectives:	Learning Activities	Evaluation Activities
Observe patients' rights to consent, privacy and compassion.	DSP, RM	DO, GR/FE
Demonstrate respect, regard, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest; assume responsibility and act responsibly; and demonstrate a commitment to excellence and on-going professional development.	FSO, DSP, RM	DO, GR/FE, 360
Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.	DL, FSO, DSP, RM	DO, GR/FE, 360
Demonstrate sensitivity and responsiveness to diversity, including awareness of their own, their patients' and colleagues' ethnic, culture, age, gender, and disabilities.	FSO, DSP, RM	DO, GR/FE, 360
CORE COMPETENCY: SYSTEM-BASED PRACTICE		
Goal: <i>Residents must gain knowledge of the ethical, socioeconomic and medical-legal issues in the practice of cytopathology.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate knowledge of how to apply concepts of quality control, quality improvement, risk management, and of regulatory compliance including correct coding as these pertain to the practice of cytopathology. (II)	DL, FSO, DSP, RM, LI	DO, GR/FE, SE, IWE
Use system resources to provide care that is of optimal value.	FSO, DSP, RM	DO, GR/FE
Understand how their patient care and other professional practices affect not only patients, but also other health care professionals, the hospital, the medical center, University and the larger society, and how these organizational components of the system affect their own practice.	DSP, RM, LI	DO, GR/FE, 360
Know how medical practices and delivery systems differ from one another, including methods of controlling health care costs and allocating resources.	FSO, DSP	DO, GR/FE
Learn how to practice cost-effect, high quality health care and resource allocation.	FSO, DSP, RM	DO, GR/FE

PGY SPECIFIC GOALS

PGY 1 GOALS:

- Not taken during first year, as residents must have a solid foundation in gross and microscopic anatomy and basic surgical pathology prior to cytology rotations

PGY 2 GOALS: By the end of the second year:

- The resident demonstrates competency in recognizing inflammatory reactive repair, LGSIL, HGSIL and carcinoma on Pap smears and is able to report them out with the Bethesda System 2001
- The resident demonstrates an improvement in medical knowledge in cytology at sign-out
- The resident is ready to start supervising (in the third year) junior residents in cytology

PGY 3 GOALS: By the end of the third year:

- Residents should be reviewing and signing out all types of cytopathology with minimal correction by the attending staff
- The resident should be able to perform most fine needle aspirations without direct supervision, and produce diagnostic aspirations that are well-preserved, well-stained and with adequate cell button for ancillary studies
- The resident must develop professionalism and interpersonal and communication skills that are respectful and compassionate toward patients, demonstrating cultural competency

PGY 4 GOALS:

- The resident must have reviewed a minimum of 1,500 cytologies (Pap smears, nongynecologic exfoliatives and fine needle aspirations)
- The resident should be able to supervise junior residents in all aspects of cytopathology
- The resident is practice ready for billing, Medicare compliance and accreditation issues
- The resident should have received training and be certified in ThinPrep
- The resident should be competent in all Cytology Skill Levels 1 and 2

GENERAL - Throughout the entire duration of residency training the resident must also demonstrate the specific skills for Professionalism, Practice--Based Learning and Improvement, Interpersonal and Communication Skills and System-Based Learning as listed on pages 16 and 17.

Recommended Reading List

1. Holladay EB, *Cytopathology Review Guide*, 3rd ed. Chicago, ASCP Press, 2006.
2. DeMay RM: *The Pap Smear*, , ASCP Press, Chicago, 2005.
3. Geisinger KR, Stanley MW, Raab SS, Silverman JF, Abati A. *Modern Cytopathology*, Philadelphia; Churchill Livingstone, 2004.
4. Kurman RJ and Solomon D, ed. *The Bethesda System for Reporting Cervical Cytology*, 2nd ed. New York: Springer, 2004.
5. Rosai J. *Rosai and Ackerman's Surgical Pathology*, 9th ed, Vol 1-2. St. Louis: Mosby, 2004.
6. Atkinson B (Ed): *Atlas of Diagnostic Cytopathology*, WB Saunders, Philadelphia, 2nd Edition, 2003.
7. Cibas ES and Ducatman BS: *Cytology: Diagnostic Principles and Clinical Correlates*, WB Saunders, Edinburgh, 2nd Edition, 2003.
8. Ramzy I (Ed): *Clinical Cytopathology & Aspiration Biopsy: Fundamental Principles & Practice*, 2nd Edition, Appleton & Lange, Norwalk, CT, 2000.
9. McKee GT: *Cytopathology*, Mosby-Wolfe, London, 1997.
10. DeMay RM: *The Art & Science of Cytopathology*, ASCP Press, Chicago, 1996.

Graded Responsibilities

The first month rotation (usually in the second year of residency) focuses on the basic cytopreparatory techniques and basic diagnostic skills. Residents spend one week in the laboratory to learn the techniques on specimen collection and staining. Residents then spend one week learning screening of Pap smears with a senior cytotechnologist or a cytopathology fellow. Residents are expected to review cases everyday with the cytopathology fellow and sign out with the attending cytopathologist on a daily basis. The first month should cover negative, atypical, dysplastic, carcinoma in-situ, and invasive carcinoma of gynecological origin.

In the second and third rotations, residents learn more non-gynecologic cytology, including the Fine Needle Aspiration technique, adequacy check on radiologically guided fine needle aspirations, cytology of the thyroid, salivary gland, breast, urinary tract, lymph node, soft tissue, gastrointestinal tract, and miscellaneous fluid specimens. Residents are expected to review cases that have been pre-screened by cytotechnologists, formulate a diagnosis, obtain any necessary follow-up or clinical information on the case and sign these cases out with the fellow and/or attending cytopathologist.

Residents are encouraged to use supplemental learning materials including study sets and books, participate in conferences and participate in research activities in cytopathology.

PRACTICAL ASPECTS OF CYTOPATHOLOGY

Policies and procedures

Residents are expected to become familiar with the Department of Pathology and Laboratory Medicine, Resident Manual, as well as the Graduate Medical Education Policy and Procedure Manual.

General Activities

The Resident will work closely with the cytotechnologists to learn technical principles and early interpretation as well as some principles of organization. Whereas, the cytopathologists will be involved in all aspects of the training, instruction at the multi-headed microscope emphasizing interpretation and follow up will be the most essential aspect of the rotation. This will be done according to the following schedule:

10:00 - 12:00 am	Fellow/resident review of cytologic material
1:00 - 4:00 pm	Sign out of cytologic material

Turnaround time:

(i.e. the time from Cytotechnologist review to Pathologist review and approval)

DEPARTMENTAL TURNAROUND TIME POLICY

- We expect over 80% of all of our specimens to meet the following expected parameters. All times, days and hours, are working days from delivery of the specimen.
- Uncomplicated non-gynecologic specimens will be completed within 24 hours from delivery to the laboratory.

- Complicated non-gynecologic specimens will be completed within 48 hours.
- Fine needle aspirations should have a preliminary report within 2 hours and will be signed out the same day unless special stains, immunohistochemistry or review of the biopsy or previous material is required. In that case they will be done within 24 hours and a report will be discussed with the clinician and documented in the chart.
- Gynecologic cases will be screened within one week of receipt and reviewed by the cytopathologist within two days of transmittal to the pathologist. The entire report will be finalized within 10 days total.

SPECIFIC PROCEDUES

Fine Needle Aspirations

Principle

- The primary reason for doing fine needle aspiration cytology is to rule out or confirm malignancy or to diagnose infectious diseases. The use of FNA will result in a decrease in the number of open biopsies, as well as a decrease in health care costs.

Equipment

- 23 to 27 gauge sterile needles in a variety of lengths, with "see through" plastic hubs, and 10-20 ml disposable (preferably "slip tip") plastic syringes.
- Frosted end plain glass slides.
- 95% alcohol in a Coplin jar or bottle to immerse glass slides.
- Slide tray for air dried slides.
- Gloves of appropriate size, wood applicator sticks, gauze, alcohol swabs and bandages.
- RPMI-1640 Collection fluid (cell culture medium) for cell block and/or flow cytometry, if necessary for presumed hematopoietic/lymphoreticular disorders.
- CytoLyte Collection fluid for ThinPrep (preferably not PreservCyt initially).
- Cytology requisition forms.
- Institutional/hospital patient consent forms.
- No. 2 lead pencil.
- Vial of glutaraldehyde for electron microscopy, if necessary.
- Microscope.
- Cart.

Note:

- The routine practice of rinsing the needle into either Cytolyte or cell culture medium allows for maximum retrieval of cytologic material and may allow you to prepare a cell block that can later be used for ancillary studies.
- Excessively bloody aspirates will likely not make readable or very cellular direct smears. You should probably put most if not all of such aspirates directly into Cytolyte, fixative (if you use formalin or alcohol make sure that the laboratory knows in advance), or cell culture medium. Repeat such aspirates using a smaller gauge needle.
- Residents may not perform unsupervised FNAs without the permission of the Cytology Director.

- Fellows and residents may not render final interpretations.
- Fellows may perform FNAs alone, perform adequacy checks on FNAs, and communicate their preliminary findings to clinicians after an appropriate period of training as determined by program faculty.

FNA Technique - The successful FNA of palpable masses requires:

- Slides are clean and appropriately labeled with the patient's name. Discard any and all slides that were taken from the box for an individual case, but were not used. If there is any doubt about whether a slide belongs to a particular patient or case, please notify the cytology faculty on call. Do not assume anything.
- A palpable mass (i.e. something that you can clearly feel). Indistinct or poorly defined masses, without image guided assistance, are as likely to result in a non-diagnostic FNA as they are to yield a diagnostic result.
- Proper palpation and immobilization of the lesion. The skin is swabbed with an alcohol pad (local anesthesia is usually not required). The mass is often best immobilized between the index and middle fingers of the gloved left hand (for right-handed aspirators) or the gloved right hand (for left-handed aspirators).
- The needle, usually a 25 swg 1 1/4 inches long securely connected to a 10 ml syringe (which is in turn attached to the Cameco Syringe Pistol), is inserted in the lesion, while it is immobilized. THEN the piston of the syringe is retracted to create a vacuum in the syringe. NOT before the needle is inserted. The needle is moved gently back and forth several times within the mass. NOTE: Changing directions of the needle while it is embedded deep within the lesion will tear tissue unnecessary and produce more bleeding. If you must redirect, pull the needle towards the subcutaneous tissue, without exiting the completely, change directions and repeat back and forth movements. Continue to move the needle back and forth about 10 to 15 times or until a flash of blood appears in the hub of the needle.
- The needle is detached from the syringe very carefully and the piston is retracted to fill the syringe with air. Reattach the need and then forcibly expel the material onto a clean glass slide, near the frosted end.
- Skillful preparation of the smears. The quality of your interpretation is greatly dependent upon the quality of the cytologic smears. A high yield FNA can be rendered non-diagnostic if the smears are not skillfully prepared. The one step technique is the one that you should use most often and works best with "thick and creamy" specimens, i.e. non-cystic and not overly blood specimens.
- Slide preparation using the one step technique is described as follows:
 - Hold the slide with the aspirated material in the left hand with the label or frosted end between the thumb and index finger, using the middle, fourth, and fifth fingers to stabilize the glass slide along its long edge.
 - A clean slide is held in the right hand between the thumb and index finger perpendicular to the other slide, which holds the specimen.
 - The edge of the clean slide closest to you (the aspirator/smearer) is placed on the slide with the specimen at a 45-degree angle, so that the edge furthest from you (the aspirator/smearer) is over the specimen.

- Lower the clean slide onto the specimen and it will spread without force slightly by capillary action, continue to spread without force by guiding the top slide with middle finger of the right hand along the edge of the slide which holds the specimen.
- The "Dab" technique or "Touch and Divide" is a method of making multiple smears from a single FNA pass or aspirate. This also works best with the "thick and creamy" specimens that one obtains from lymph nodes or solid tumors. This technique is desirable when you want to avoid an excessively thick slide and/or when ancillary studies might be better performed on fresh cytologic preparations. The "Dab" technique or "Touch and Divide" is described below:
 - Expel the cellular material onto the slide as described above.
 - Lightly touch the specimen to the clean slide, close the end "furthest" from the label and near the long edge of the slide furthest from the aspirator.
 - The touch or dab can be repeated on a different part of the slide (closer to the label) one or more times.
 - Smear the "dabbed off" samples onto separate clean slides as described above and several slides can result from a single specimen.

Patient Consent

A signed consent form must be obtained from the patient. The rule of thumb is that, a physician should obtain such consent "any time the skin is broken". The signed consent form stays with the patient's chart.

Procedure Note

A procedure note must be written in the patient's chart following the FNA performed by the Pathologist for inpatients. The procedure note can be included as a part of the cytology report for all out-patient procedures. The procedure note should follow the SOAP format, including what can be used as subjective data (or what you are seeing the patient for/chief complaint), objective data (what you found in your limited physical examination), your assessment, and your plan. It is important for billing purposes to document the procedures in this manner.

It is also important to document in the procedure note that two patient's identifiers are confirmed and a "time out" is called to identify the site of aspiration before procedure.

Fine Needle Aspiration Consultation Service Procedure Note (EXAMPLE)

The FNA procedure was performed by Dr. _____. The staff pathologist, Dr. _____ was present throughout the procedure. Prior to beginning the procedure, two of the patient's identifiers (medical record number, date of birth, or patient name) were confirmed in addition to the proposed site of the FNA. The FNA procedure was explained to the patient, and with his/her informed consent a limited physical examination and the FNA procedure were performed. # FNAs were performed on an approximately # cm mass using separate, sterile, # swg needles. The procedure was well tolerated and without complications.

Preliminary interpretation:

This preliminary result was reported to Dr. _____ at _____ on _____ by Dr. _____.

Defer final diagnosis until all cytologic material has been stained and evaluated.

Final Diagnosis to follow. Thank you for this interesting consult.

Dr. *Smith* (Beeper Number 1234)

Location

COMMENT (EXAMPLE)

The FNA procedure was performed by Dr. _____. The staff pathologist, Dr. _____ was present throughout the procedure. Prior to beginning the procedure, two of the patient's identifiers (medical record number, date of birth, or patient name) were confirmed in addition to the proposed site of the FNA. The FNA procedure was explained to the patient, and with his/her informed consent a limited physical examination and the FNA procedure were performed. # FNAs were performed on an approximately # cm mass using separate, sterile, # swg needles. The procedure was well tolerated and without complications.

Preliminary interpretation:

This preliminary result was reported to Dr. _____ at _____ on _____ by Dr. _____.

Stat Specimens When there is a request for a STAT result, the Pathology faculty member on service or on call should be notified immediately. If the STAT request includes a request for PCP evaluation and it is after hours or on the weekend, it is up to the Pathology faculty member on service or on call to approve such requests. The Fellow or Resident should contact that faculty member on service or on call.

Calling Physicians with Results All new cancer diagnoses should be called to the physician and there should be documentation on the patient's cytology report of that call, i.e. the name of the physician or healthcare provider who was given the results, the date and the time of the call. Anytime an interpretation is called to a physician, whether preliminary or final, there should be documentation of the telephone call, i.e. the name of the physician or healthcare provided given the results, the date and time of the call should be included in the report.

Technical Principles Residents will be exposed to the methodology of collection, fixation, cytopreparation, staining and screening cytological samples. They will also participate in the processing of cytology specimens for E.M., immunocytochemistry and flow cytometry.

Interpretation and Reporting Residents will be instructed on the principles involved in examining cytological preparations, applying diagnostic criteria and reporting cytopathologic findings. Incorporation in the report of ultrastructural, immunocytochemical and ploidy information will enable the resident to integrate concepts from various disciplines.

Utilization and Feedback Residents will participate in the interface between cytopathology and the clinicians utilizing the laboratory in terms of reports, recommendations and submission of adequate samples, patient instruction, and other significant items. Review of pertinent X-rays, CT scans, scintigrams and other data from the patient charts will be strongly stressed.

Follow Up and Quality Control Residents will participate actively in correlating cytopathology diagnosis with histopathologic data derived from biopsies or surgical extirpations, They will also evaluate specimens as to the adequacy of cytopreparatory and staining methods and learn to trouble shoot deficient areas.

Quality Assurance and Standards of Care Residents are expected to familiarize themselves with the current guidelines and standards of performance and care. Residents are required to have knowledge of issues related to Quality Assurance in Cytopathology, by reviewing the Cytopathology Policies and Procedures Manual (located in 1601 Bell Hospital), attending division meetings, and through self-study (www.cytopathology.org).

RESIDENT EVALUATION

Residents receive monthly evaluations (available in the Wahl Hall West). The program faculty on a monthly basis will evaluate fellows. The program director will provide formal written evaluations (formative and summative) of the fellows on a semi-annual basis. Fellows and residents are evaluated in the following areas: technical skill, morphologic skills, clinical judgment, teaching, research efforts, and the above outlined core competencies. In addition, fellows and residents have the opportunity to discuss their training in Cytology program with the program director and/or Department head on a monthly basis. Fellows and residents are required to evaluate the Cytopathology Program and Faculty on a regular basis. All evaluations are reviewed and discussed with the Department Head. Fellows are encouraged to write a formal evaluation of the program at its conclusion.

AUTOPSY SERVICE

The autopsy is a major key in the study of our discipline. It is an invaluable tool to assess and assure quality control of patient care. The autopsy is performed in a complex institutional, administrative, legal, and professional setting. It is important that you are aware of these elements.

The responsibility for determining when an autopsy will be performed is that of the staff consultant assigned to the autopsy service for that day. Under unusual circumstances, autopsies may be performed at night. This must, however, be cleared by the staff consultant before beginning the autopsy. PGY1 residents must be directly supervised during their first three autopsies by faculty, PGY3 or PGY4 residents.

GOALS AND OBJECTIVES

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal: <i>Residents must become competent in performing medical and forensic autopsies</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate competent autopsy prosection using routine techniques, completing gross examination in a period of 3 hours for uncomplicated cases, or 4 hours for complicated ones. (I)	FSO, DSP, RM, IC	RR, DO, CL, GR/FE, PF
Perform at least one adult and one pediatric autopsy under indirect (B) supervision (with the assistance of dieners and/or pathology assistants) (II)	DL, FSO, DSP, RM, IC	RR, DO, GR/FE, SE, IWE
Demonstrate knowledge of modified autopsy techniques such as Rokitansky-style organ removal, other <i>en bloc</i> dissections, needle biopsies, aspiration of joint fluid, and procurement of spinal fluid. (II)	DL, FSO, JC, DSP, RM, OT, USC	RR, DO, CL, GR/FE, SE, PSE, IWE, PF, PCL
Demonstrate ability to remove the brain and spinal cord without causing injury to either structure (II)	DL, FSO, JC, DSP, RM, IC, OT	RR, DO, GR/FE, SE, IWE, PF, PCL
Demonstrate ability to remove the eyes, the epiglottis and tongue, & the inner and middle ears, and to examine leg veins, bones and joints (II)	DL, FSO, JC, DSP, RM, IC, OT	DO, GR/FE, SE, IWE, PCL
Demonstrate ability to identify those cases for which blood samples and vitreous eye fluid are required for biochemical tests, and to collect those samples in the proper fashion. (II)	DL, FSO, JC, RM, IC, OT	DO, GR/FE, PCL
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Residents must demonstrate competency in basic skills in anatomic pathology</i>		
Objectives:	Learning Activities	Evaluation Activities
Show the ability to correctly describe common abnormalities of diseased organs by gross and microscopic examination, including congenital, degenerative, inflammatory, neoplastic, and autoimmune	DL, FSO, JC, DSP, RM, IC, OT, USC, P	RR, DO, CL, GR/FE, SE, PSE, IWE

disorders. (I)		
Demonstrate ability to describe those circumstances in which specimens (fluids or tissues) should be kept for toxicological studies, and knowledge of how to do so (II)	DL, FSO, JC, DSP, IC, OT, USC	RR, DO, CL, GR/FE, SE, PSE, IWE, PF, PCL
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Residents must become competent in performing medical and forensic autopsies.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate an ability to compose a provisional anatomic diagnostic report of autopsy findings within 24 hours of completing the postmortem examination (I)	FSO, RM, DSP	RR, DO, GR/FE, PCL
Demonstrate an ability to compose a final autopsy report within 30 days of completing the postmortem examination (I)	FSO, RM, DSP	RR, DO, GR/FE, PCL
Demonstrate ability to assist Autopsy I residents in the achievement of basic skills in anatomic pathology (II)	FSO, RM, DSP	DO, GR/FE
Take selective autopsy call in support of Autopsy I residents (II)	FSO, RM, DSP	DO, GR/FE
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Residents must become competent in writing autopsy reports and communicating results with medical staff and families.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate an ability to compose a provisional anatomic diagnostic report of autopsy findings within 24 hours of completing the postmortem examination (I)	FSO, DSP RM	RR, GR/FE, DO, PCL
Demonstrate an ability to compose a final autopsy report according to an approved format & within 30 days of completing the postmortem examination, including accurate and complete anatomic diagnoses, thorough gross and microscopic descriptions, and pertinent clinical-pathologic correlations and mechanistic interpretations. (I)	FSO, DSP RM	RR, GR/FE, DO, PCL
Conduct both individual consultations and presentations at multidisciplinary conferences that are focused, clear, and concise.	RM, IC, USC	DO, GR/FE, PSE
CORE COMPETENCY: PROFESSIONALISM		
Goal: <i>Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate compassion: be understanding and respectful of patients, their families, and the staff and physicians caring for them.	FSO, DSP, RM, IC	DO, GR/FE, 360
Interact with others without discriminating on the basis of religious, ethnic, sexual, or educational differences.	FSO, DSP, RM, IC	DO, GR/FE, 360
Demonstrate positive work habits, including punctuality, dependability, and professional appearance.	FSO, RM	DO, GR/FE, 360
Demonstrate principles of confidentiality with all information	DL, FSO,	DO, GR/FE,

transmitted both during and outside of a patient encounter.	DSP, RM, IC	360
Demonstrate interpersonal skills in functioning as a member of a multidisciplinary healthcare team	FSO, DSP, RM, IC	DO, GR/FE, 360
CORE COMPETENCY: SYSTEM-BASED PRACTICE		
Goal: <i>Residents must become familiar with all regulations associated with the autopsy service.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate familiarity with the laws regarding permission for autopsy and the classification of those autopsies requiring medico-legal status. (II)	FSO, RM, DSP, IC	DO, GR/FE, IWE

PGY SPECIFIC GOALS

PGY 1 GOALS: By the end of the first year:

- The resident has completed their first three autopsies under direct supervision
- The resident demonstrates a strong knowledge in gross and microscopic anatomy
- The resident understands and applies the seven components of the autopsy, as appropriate, required by ACGME for participation credit
- The resident demonstrates the ability to review and extract appropriate information from the clinical history prior to the autopsy
- The resident recognizes indications for performing an autopsy and recognizes settings where the Coroner should be contacted
- The resident can independently perform a full autopsy, including removal of the brain and spinal cord, and be able to correlate gross and microscopic findings with clinical history

PGY 2 GOALS: By the end of the second year:

- The resident should be able to perform autopsies independently and efficiently with minimal correction by the attending
- The resident should be able to prepare and discuss the autopsy findings at morbidity and mortality conferences, including preparation of gross and microscopic photographs
- The resident can properly dissect the brain and spinal cord for gross examination independently, identify the majority of gross and microscopic neuropathology
- The resident is ready to start supervising (in third year) junior residents in autopsy procedures

PGY 3 GOALS: By the end of the third year:

- The resident should have completed a rotation at Jackson County Medical Examiners Office and be competent in general forensic autopsy skills
- The resident should have case logs of a minimum of 50 autopsies, of which all 50 autopsies can be shared with one other resident. All seven elements must be documented, except forensic cases where microscopics are taken only when deemed necessary

PGY 4 GOALS:

- The resident should have completed all autopsy training, including the Medical Examiner's rotation

- The resident should have minimally fifty (50) autopsies with gross and microscopic examination (see Year 3 goals; microscopics are taken as indicated on forensic cases)
- The resident should be competent in all Autopsy Skill Levels 1 and 2

GENERAL - Throughout the entire duration of residency training the resident must also demonstrate the specific skills for Professionalism, Practice--Based Learning and Improvement, Interpersonal and Communication Skills and System-Based Learning as listed on pages 16 and 17.

Recommended Reading List

1. Knight B (Ed): *Simpson's Forensic Medicine*, 11th Ed., Edward Arnold, London, 1997.
2. Ruttly GN: *Essentials of Autopsy Practice*, Springer-Verlag, New York, 2002.
3. Ludwig J: *Handbook of Autopsy Practice*, 3rd Ed., Humana Press, Wotawa, NJ, 2002.
4. Gilbert-Barness E (Ed): *Potter' Pathology of the Fetus, Infant and Child*, Second edition, Mosby, Elsevier, St Louis, 2007.

SIGNING OF DEATH CERTIFICATE

The death certificate, the vital statistics of which will have been completed by the autopsy technician, should be signed by the responsible senior pathologist, attending physician or coroner. Under no circumstances should the resident prosector sign the death certificate. It will be the responsibility of the technician to see that the death certificate is signed, since the body cannot be released until this is done.

AUTOPSY CALL SCHEDULE

The autopsy call schedule is prepared monthly by the Chief Residents and copies are given to all residents, staff, mortician, and office personnel. One copy will be posted in the autopsy service office and one on the departmental bulletin board. From 8 a.m. to 4 p.m. each weekday, Monday through Friday, autopsies are performed by prosectors as assigned. After 4 p.m., the person on call is responsible for the performance of autopsies. On weekends, the persons on call begin their tour of duty at 8 a.m. on Saturdays or Sundays and remain on call until the next morning at 8 a.m. Residents should contact the autopsy technician between 7-730 a.m. to check on possible cases for the day and must be available by pager for possible late cases. Adjustments will be made during the week to equalize the number of autopsies performed by the residents on the service. In the event of an excessive number of autopsies at any one time, senior staff may participate in the performance of autopsies.

AUTOPSY PERMITS

The right to authorize the performance of an autopsy is guided by the law of the State of Kansas. In case of doubt, the Office of the Legal Counsel of KUMC should be consulted. In general, the autopsy technician and senior staff will be able to resolve the issue.

One autopsy permit, the vital statistics of which will have been filled out by nursing personnel, is signed by the legally responsible person and witnessed and countersigned by a hospital physician or nurse. A duplicate copy of this permit is made and subsequently filed with the departmental autopsy record. A complete autopsy will ordinarily include examination of the brain, organs of the neck, and contents of the thoracic, abdominal, and pelvic cavities. This should be stated or implied in the permit. The autopsy permit

should be coextensive with the autopsy to be performed. It should also contain permission to retain any part or organ for future study. In requesting permission for autopsy, the nature and the extent of the autopsy must not be misrepresented.

Be certain that the body is identified properly and that you are performing the autopsy on the body for which you have legal permission.

An autopsy permit legally may limit the extent and specify the manner of performance of an autopsy in any way the person signing the permit demands. Under no circumstances should you exceed the limit of the permission. Adhere strictly to wishes of the party who authorized the postmortem examination.

It is important that the face, hands, and other exposed areas not be mutilated. This should not restrict the performance of an autopsy or serve as an excuse for omitting necessary, even though unusual, procedures in a given case. Proper restorative measures, however, must be taken. Be sure that these measures can be accomplished before you make any incisions.

The hospital charts provided at the time of the autopsy are to be returned to medical records within 24 hours of the completion of the autopsy. These charts are needed by the clinical staff but may be checked out again when necessary. Upon completion of the autopsy, the autopsy permit and the yellow registration card is to be taken by the autopsy technician to the autopsy secretary or left on her desk. X-rays generally can be obtained from the radiology department.

To register the autopsy: The autopsy technician will fill out the yellow card in the autopsy office. The secretary will then place this card in a Kardex file alphabetically where it will remain until the case is completed. After the autopsy has been completed the card will be filed, by year, in the administrative office. Each autopsy is registered by the technician in the log book in the autopsy office before the autopsy is begun.

NOTIFICATION OF CLINICIANS OF AUTOPSIES

The autopsy technician or resident will notify the attending clinicians, if requested on the consultation form, when the autopsy is to start or is available for review. Some clinicians may wish to observe the dissection of certain organs. Please accommodate them. Copies of the preliminary autopsy diagnoses and the final protocols should be sent to these referring physicians. In case the responsible attending physicians are unable to attend the autopsy, the resident prosecutor or pathology senior staff should notify them of the autopsy findings following completion of the gross dissection.

ATTENDANCE AT AUTOPSIES

In general, members of the senior and house staff, visiting physicians and medical and other allied health students are admitted to the autopsy room, with the permission of the supervising senior staff pathologist. It is within the legal right of persons authorizing permission for an autopsy to limit the attendance at that autopsy and to restrict the conditions under which it can be performed. He/she can restrict the autopsy to a private autopsy if he so desires and specifically state who may or may not attend. These are binding commitments. No lay people will be permitted in the autopsy room except by special permission from the

Senior Staff Supervisor or the Director of the Autopsy Service and only after clearance from hospital risk management.

OUTSIDE INQUIRIES CONCERNING AUTOPSY FINDINGS

Phone calls from relatives are to be referred to the staff physician. Inquiries by lawyers on matters relating to subpoenaed autopsy findings and reports in court or before a grand jury should be discussed first with the senior staff supervisor or the director of the autopsy service. Any inquiries from local newspapers should be referred to the media relations department. Any request for information regarding Coroner's cases must be referred to the respective Coroner's office.

ORGAN AND TISSUE DONATION

Midwest Transplant Network is notified of every hospital death and approaches the family if appropriate for any tissue or organ donation.

AUTOPSIES REQUESTED BY OUTSIDE AGENCIES

In general, outside autopsies (which personnel of this department may be called upon to perform) may be from the following sources:

- Coroner of Johnson County, Kansas, or coroners of adjacent counties.
- Private autopsies may be performed on special arrangement by the Director of the Autopsy Service.
- Brain bank and special CNS related autopsies under the auspices of Dr. Newell.
- All outside autopsies will be transported to and performed at the hospital. Transportation will be paid by the outside party or agency.

RESEARCH TISSUES FOR OTHER DEPARTMENTS

Other departments in the hospital may ask us to save tissue specimens for them. Requesting departments must fill out a tissue resource request form, available from Dr. Kathy Newell, Director of the Brain Bank program. All requests will be reviewed and cleared by Dr. Newell.

DEPARTMENTAL AUTOPSY SERVICE CLERICAL POLICIES

Clinical and gross dictation and PAD must be submitted to the autopsy secretary (extension 1710) within 24 hours of the autopsy.

Dictation: Use the Gross Autopsy Findings format when dictating. Speak slowly and enunciate as clearly as possible. After you have dictated a few sentences, please check back and listen to see if dictation is clear and recording properly. Also say when you are at the end of your dictation (*e.g.*, "this ends the gross dictation on autopsy A04-94"). Place the cassette in an inter-departmental envelope labeled with the autopsy number and your name. Check with the Director of Autopsy for an autopsy template.

Yellow Card and autopsy permit: The autopsy technician delivers these to the autopsy secretary.

PAD: Autopsy Secretaries type and submit to Senior Staff for final approval and signature within 24 hours of autopsy. The PAD is then distributed to appropriate personnel.

Chart: All requests for charts are to be made through the medical records department (extension 82408).

FINAL AUTOPSY TYPING

The PAD, Clinical Summary/Opinion, Gross Autopsy Findings, Microscopic Findings, Postmortem Laboratory Findings, Histology Slide List, Photos and Slides **MUST** be submitted together and initialed by Senior Staff (there will be **NO** exceptions). Please make written draft legible and double spaced.

The Final Autopsy Report is typed and returned to Resident within 4 working days. The Resident should proof and return to the Autopsy Secretaries, who will submit to the Senior Staff for signature (this should be completed within 4 days). The final signed original **MUST** be received from the staff promptly. Delays cause major problems for numerous individuals and are generally unnecessary.

LATE LIST

The "Autopsy Pending List" is distributed every Tuesday at 8:00 a.m. Autopsies not completed in 30 days will be deemed to be late. Autopsies will be deleted from the list after final signature by Resident and Senior Staff.

CODING

Autopsy diagnoses should be SNOMED coded into CoPath.

USE OF "STOCK JAR" FOR AUTOPSY

The plastic containers with screw cap lids are used to store small, representative portions of autopsy tissues and organs for prolonged periods of time (3 years is required by Kansas law for Coroner Cases). These representative samples of tissues are then available for review at a later date. At the time of the autopsy place small representative portions of the organs and tissues are placed into the plastic container. The pieces should generally not exceed 2 cm. in greatest dimension. They must be thin enough so that they will fix properly. From these tissues the smaller portions are trimmed for microscopic sections on the day following the autopsy, still leaving archival portions in the "stock jar".

- Tissues to be kept include the following:
- brain
- heart-LV, RV, septum, conduction system if appropriate
- aorta
- bilateral lung
- trachea
- muscle-skeletal, including diaphragm
- kidneys
- adrenals
- lymph nodes
- spleen
- bone marrow
- liver
- gallbladder
- appendix

- pancreas
- urinary bladder
- sex organs-ovaries, testes, prostate, uterus, vagina, Fallopian tubes
- thyroid
- pituitary
- skin
- AND REPRESENTATIVE PORTIONS OF ALL PATHOLOGY

GENERAL PLAN OF THE AUTOPSY STUDIES-OBJECT AND SCOPE OF THE AUTOPSY

The autopsy is a scientific examination of the body to determine the pathologic processes present and their relation to clinical phenomena and history, to determine the causes of the pathological processes, and to acquire information regarding the processes and nature of disease and injury. The more effectively these ends are accomplished, the greater will be the contribution of the autopsy to the sum of knowledge concerning the disease or injury from which the patient died and thereby to clinical medicine, to public health and to the interest of the family of the deceased. Purposes for performing autopsies may be summarized as follows: teaching and training, discovery of new diseases and pathogenetic mechanisms, evaluation of treatment - medical and surgical, family benefits; public health, socioeconomic, vital statistics, and medicolegal reasons. The autopsy should cover not only those structures which are the seat of obvious alteration, but all of the organs of the body because the normality of certain viscera is often quite as significant as the disease of others and because organs that appear normal macroscopically are frequently abnormal microscopically. The gross examination should be amplified by microscopic studies, bacteriological, viral, toxicological, molecular examinations and such other investigations as may be indicated.

The autopsy record embodies the results of the only complete examination a certain patient ever had. For this reason findings which may have little significance in the last or main illness take on some importance and deserve to be recorded. The evidences of disease produced by an autopsy are direct and objective. The findings are those of the lesion itself and not only of some disturbance which results secondarily from the presence of a lesion.

Autopsy records are a much used source of statistical data relating to diseases. Rarely are these statistical studies made by the author of the protocols. For this reason clear, concise language and completeness of records are imperative. Typographical errors in the protocol become as confusing or misleading to the reader as misstatements of fact. Protocols should be completed using proper grammar and English, as though they were being prepared for publication.

PROVISIONAL ANATOMICAL DIAGNOSIS

After the staff supervisor has examined the organs in the autopsy room with the prosector and discussed the provisional anatomical diagnosis, it should be initialed by the senior staff and turned in to the secretarial office for typing and distribution. The provisional anatomical diagnosis must be prepared, signed by senior staff and mailed to the necessary individuals within 24 hours after completion of the autopsy.

Provisional anatomical diagnosis will have several copies, one copy going to each of the following:

- Record Room (chart copy) = original + original permit
- Resident prosector
- Departmental file
- Service where patient died
- Clinicians whose names are on consultation sheet
- Mortician
- Weekly Staff Supervisor on call
- Clinical Pathology
- Chief resident
- Blood Bank
- Surgical Pathology
- Coroner (if applicable);

FORM OF THE REPORT

- Anatomical diagnoses
- Cause of death
- Prosector's comments and opinion
- Gross autopsy findings
- Brain after fixation
- Microscopic findings
- Postmortem laboratory findings
- Diagrams, if any
- Gross photographs
- Clinical summary

Anatomical Diagnosis

The final report begins with a list of diagnoses. Where applicable include in the list of diagnoses "clinical history of _____" either as a separate item, or in parenthesis, after a pertinent anatomical finding. The anatomical diagnoses should be as complete as possible. List the lesion first and the structure next (example: adenocarcinoma , right main bronchus). Diagnostic terms should be as specific as possible and yet be general pathological terms (for example: "arteriosclerosis, cerebral arteries" rather than "cerebral sclerosis"). Specifying the exact site is very important. There are many situations in which the whole course of a disease depends upon a relatively innocuous lesion being located in a particular site. For example, subcutaneous abscess is not always a particularly serious lesion. A subcutaneous abscess of the upper lip, however, carries considerably more danger because of its location. In the diagnoses the order should be as follows: (1) disease process (noun); (2) organ, tissue or cells, and (3) modifier (*e.g.* acute, massive, *etc.*).

The list of diagnoses should be as complete as possible, but should not include abnormalities of no significance. Amputated phalanges, tattoos, old operative scars, absence of teeth, etc., which bear no relation to the case may not be mentioned in the diagnosis. They should, however, be described in the protocol.

With regard to the major diagnoses, the first diagnosis should always be the fundamental disease, and should be similar to the wording on the death certificate.

Example

- Acute gangrenous appendicitis, with:
- Appendiceal abscess
- thrombosis of appendiceal vein
- pylephlebitis
- multiple liver abscesses

Other diagnoses should include any other concomitant conditions such as hyperplasia of prostate, arteriosclerosis, etc. These should be arranged in order of importance. Each should be followed by conditions which may have been secondary to them. This arrangement of specific terms and specific sites will give the reader at a glance a fairly good summary of the patient's illness and death. Do not include any descriptions in the anatomical diagnoses. Where there have been surgical pathology specimens, they should be cross referenced in the diagnosis, the accession number given, described in the autopsy protocol where applicable, and duplicate slides filed with the autopsy slides. Do not append the surgical pathology report.

The Provisional Anatomical Diagnosis will, in most cases, be modified considerably in the light of subsequent studies and should be re-worked thoroughly to result in the Final Anatomical Diagnosis before the case is presented for final checking. For file card purposes, check the one principal or most important disease process or anatomical diagnosis on both the provisional and final anatomical diagnosis.

Opinion

Use the opinion section of the report to synthesize the clinical and pathologic findings. Most autopsies already have a history contributed by the clinician and one dictated by the pathologist. The opinion is not the place for another clinical summary. Similarly, since a diagnosis sheet is present elsewhere in the autopsy protocol, a re-listing of diagnoses is inadvisable. An opinion can be based on a clinical problem list, or better, one that the pathologist generates after reading the chart and performing the gross autopsy. This should lead to a concise (one page typed single-space) opinion. It should be principally a clinical-pathological correlation, discussion of significance of the principal findings and a resume of the prosector's correlation of the case with the literature and departmental files of similar cases. Surprises, fulfilled predictions, interesting or unusual conditions, significant negative findings should be mentioned. It should include a statement as to the manner and final cause of death. List at least one pertinent reference for each case. Remember that all statements made in the opinion can be used directly in court. The opinion is not the place to criticize the clinical care, yet the autopsy still remains the best instrument of quality control. Use good judgment and common sense.

Gross and Microscopic Description

Because data are obtained essentially at two different times, two descriptive reports are written. The first embodies the data obtained from the clinical history, the gross examination and such chemical, bacteriological or frozen section data as are available at the completion of gross dissection. The gross description should be dictated shortly after the gross dissection. The most complete and accurate description

is made at the time of dissection not by relying on memory afterwards. The second is written after microscopic examination and all chemical, bacteriological, viral, histochemical and other studies have been completed. The first report is made to preserve the detailed data of the clinical record and gross examination until the final report can be written, and is used in selecting case material and specimens for conferences, classes, etc. Pictures or diagrams are used as an adjunct to the written description.

Autopsy Photographs

Color photographs should be taken at the time of autopsy of the overall body, the facial features, injuries, and significant anatomic abnormalities. These are not only used to document lesions, but will be used for CPC's and numerous teaching purposes. Black and white copies may be appended to the departmental copy of the protocol. Please label all photographs and return to the mortician. The autopsy number should be at the top, along with the organ.

Clinical Summary

The clinical record is available at the time the autopsy is done, but must be returned to the record room via the secretary within 24 hours from the completion of the autopsy. Therefore, the first draft of the clinical summary should be reasonably complete since the data provided may well be used in the final interpretation. The final clinical summary generally should not exceed one typewritten page. The rough draft of the clinical summary should include dates, laboratory data, opinions of various examiners, results of special examinations and any other relevant data. The clinical summary should be chronological and should include clinical opinions and diagnoses. The clinical summary should include certain calendar dates: date of onset of the important illness, date of admission to the hospital, date of operation (for that illness), and date and time of death. Other temporal relationships should be established with these dates. Important incidents in the past history (before the present illness) may be referred to by date. The train of events in the last illness, however, should be tied together by a few reference points and liberal use of days, weeks, months, years, *etc.* Example: Third postoperative day, sixth week of hospitalization, tenth year of disease *etc.* One need not catalog every symptom so that the reader views the patient's story exactly as the clinician did. It is necessary to distinguish important from unimportant therapeutic measures. Generally it is necessary to state if the patient was treated with antibiotics, with transfusions, antimetabolites, diuretics, corticosteroids, *etc.*; the compound involved and the dose and duration of treatment should be mentioned. A chronologic appendix may be useful in complex cases. Supportive treatment such as vitamins, sedatives or tranquilizers need not be listed specifically. The dose and extent of radiation therapy should always be given.

FINAL REPORTS

- When an autopsy is submitted for final typing, all photographs and all other slides must be returned to the staff mortician for filing.
- All junior staff should submit their completed autopsies to the senior staff supervisor for final evaluation with notations concerning problems, questions or other relevant comments.
- The following procedure should be used in the performance and completion of all autopsies within 30 days:
 - Autopsy assigned to resident - permit checked - chart read - research requests noted.
 - Autopsy dissection with concurrent gross description dictated, photographs taken, cultures, *etc.*
 - Clinical summary dictated and given together with gross dictation to office.

- Within 24 hours further dissection completed and gross autopsy checked by senior staff supervisor. PAD to office for typing and distribution.
- Tissue cut in blocks and sent to histology - within 48 hours following completion of autopsy. Gross organs saved for museum, medical teaching, etc.
- Check to make sure “stock jar” contains all representative tissues. This includes all tissues if a newborn.
- Rough draft of gross returned to resident for corrections.
- Histology slides reviewed and histological descriptions made.
- Brain cut after 10 days to 2 weeks fixation.
- Brain slides reviewed with a neuropathologist and descriptions made.
- Compilation of final diagnoses and opinion.
- Appointment with senior staff to review slides and protocol with resident at mutual convenience.
- Case with slides, photos, *etc.*, turned into office for final typing.
- Check diagnoses for coding.
- Final signatures and distribution

FORENSIC PATHOLOGY

The one month rotation at the Jackson County Medical Examiner’s Office comprises a working exposure to the operation of an urban medical examiner's office. The pathology resident should be able to perform a competent medicolegal examination and document the findings with sufficient detail to aide in the administration of justice.

GOALS AND OBJECTIVES

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal: <i>Residents should become competent in performing forensic autopsies</i>		
Objectives:	Learning Activities	Evaluation Activities
Perform a competent medicolegal autopsy.	FSO, DSP, RM	RR, DO, GR/FE, PCL
Produce a report of the examination appropriate for administration of justice.	FSO, DSP, RM	RR, DO, GR/FE
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Residents must demonstrate competency in basic skills in forensic pathology</i>		
Objectives:	Learning Activities	Evaluation Activities
Recognize and describe postmortem changes.	FSO, DSP, RM, DL	RR, DO, GR/FE
Explain the physical principals of trauma relating to blunt force injury and gunshot wounds.	FSO, DSP, RM, DL	RR, DO, GR/FE, SE, IWE
Distinguish the various types of injuries due to blunt force trauma, sharp trauma, gunshot wounds and automobile collisions, both in medical terms and in layman’s terms.	FSO, DSP, RM, DL	RR,DO, GR/FE
List the types of asphyxia deaths and give examples of pertinent findings.	FSO, DSP, RM, DL	RR,DO, GR/FE, IWE
Demonstrate the ability to describe those circumstances in which specimens (fluids or tissues) should be collected for toxicological studies in drug abuse and overdose cases.	DL, FSO, RM DSP	RR, DO, GR/FE,PSE, IWE
Generate a sufficiently detailed differential diagnosis for the sudden unexpected death of an infant, child, adolescent, young adult and middle-aged adult, respectively.	FSO, DSP, RM, DL	DO, GR/FE
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Residents must become competent in writing autopsy reports and communicating results with families and legal systems.</i>		
Objectives:	Learning	Evaluation

	Activities	Activities
Demonstrate an ability to compose a provisional anatomic diagnostic report of autopsy findings within 24 hours of completing the postmortem examination.	FSO, DSP, RM, DL	RR,DO, GR/FE
Demonstrate an ability to compose a final autopsy report according to an approved format & within 30 days of completing the postmortem examination, including accurate and complete anatomic diagnoses, thorough gross and microscopic descriptions, and pertinent clinical-pathologic correlations and mechanistic interpretations.	FSO, DSP, RM, DL	RR,DO, GR/FE
CORE COMPETENCY: PROFESSIONALISM		
Goal: <i>Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate compassion: be understanding and respectful of patients, their families, and the staff and physicians caring for them.	FSO, DSP, RM, IC	DO, GR/FE
Interact with others without discriminating on the basis of religious, ethnic, sexual, or educational differences.	FSO, DSP, RM, IC	DO, GR/FE
Demonstrate positive work habits, including punctuality, dependability, and professional appearance.	FSO, RM	DO, GR/FE
Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.	DL, FSO, DSP, RM, IC	DO, GR/F
Demonstrate interpersonal skills in functioning as a member of a forensic medicolegal team.	FSO, DSP, RM, IC	DO, GR/FE
CORE COMPETENCY: SYSTEM-BASED PRACTICE		
Goal: <i>Residents must become familiar with all regulations associated with the forensic autopsy.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate familiarity with the laws regarding permission for autopsy and the classification of those autopsies requiring medico-legal status.	FSO, DSP, RM, DL	DO, GR/FE

RESIDENT DUTIES AND RESPONSIBILITIES

The resident shall be supervised by the Medical Examiner in their participation in forensic autopsies. The resident will dictate autopsies in which they are the primary prosector within 24 hours. Reports will be reviewed and edited by the Medical Examiner. The resident shall follow up on microscopic, radiographic and toxicologic examinations, and observe court proceedings. Responsibility and accountability is further described in the "Resident Agreement with JCMEO." Ultimate responsibility for the autopsy, autopsy reports and court appearances shall be by the Medical Examiner.

EVALUATION

Residents shall at all times be personally supervised by the Medical Examiner. Evaluation will be standard evaluation form.

TRANSFUSION MEDICINE

Residency training in Transfusion Medicine prepares the resident to provide laboratory and clinical transfusion services at community and tertiary care hospitals as well as medical school based tertiary care centers. Further, it prepares the resident for additional training for career specializing in clinical transfusion medicine, transfusion medicine research, blood center operations, histocompatibility hematopoietic stem cell transplants or organ banking.

After the training period, the resident will be knowledgeable and experienced with red cell antigens, compatibility testing, component therapy, adverse effects of transfusion, transfusion appropriateness review, blood donor evaluation and donation, therapeutic apheresis, peripheral blood stem cell collection, stem cell processing and infusion. Transfusion medicine clinical training and experience is provided at two major teaching sites.

Kansas University Medical Center (KUMC) is an academic medical center with major programs in organ and stem cell transplantation, oncology, cardiovascular surgery, obstetrics and a neonatal ICU.

Community Blood Center of Kansas City is a state-of-the-art blood collection and processing center. They also provide apheresis services, and conduct both clinical and basic science research related to Transfusion Medicine. The resident will take a 2-week bench-oriented course, as an introduction to the science of Transfusion Medicine as part of their training.

Supervisory Guidelines for Patient Care:

KUMC Transfusion Service: The resident is directly supervised by a Senior Staff attending physician. The attending physician spends one to three hours each week day with the resident. The resident carries out the provision of clinical blood bank services but with close overview. The attending physician also sees therapeutic apheresis patients and inpatient consults and countersigns notes made by the resident in the patient's medical record (consults, stem cell infusions, therapeutic procedures). Individual decisions to approve components not meeting guidelines and deviations from blood bank procedures (e.g. release incompatible blood,) are reviewed by the attending physician, not only for supervision and teaching purposes but also for attending physician billing documentation. In addition to daily mentoring by the attending physician, the resident receives scheduled didactic learning sessions (one-on-one) from the physician in charge of the apheresis/donor center, the blood bank laboratory and the cell therapy laboratory.

GOALS AND OBJECTIVES

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal: <i>Residents must demonstrate a satisfactory level of diagnostic competence and the ability to provide appropriate and effective consultation in the context of transfusion medicine services</i>		
Objectives:	Learning Activities	Evaluation Activities
Gather essential and accurate information about patients using all relevant available modalities.	DSP, RM, IC	DO, GR/FE

Act as a skilled consultant to other clinicians to develop a diagnostic plan based on specific clinical questions and relevant clinical and pathologic information. This should be accomplished both in the patient-specific setting and the broader context of developing appropriate clinical pathway algorithms for diagnosis.	DL, FSO, DSP, RM, IC	DO, GR/FE, SE, IWE
Gain knowledge and technical skills to recognize, interpret, and explain pathologic processes in the clinical practice of transfusion medicine.	DL, JC, DSP, RM	DO, GR/FE, SE, IWE
Consult as part of a multidisciplinary healthcare team in developing a therapeutic plan that includes laboratory monitoring of efficacy and toxicity. Where clinically appropriate, consult on the use of laboratory-based therapeutics such as blood transfusion and other forms of cellular therapy.	DL, JC, DSP, RM, IC	DO, GR/FE, IWE
Provide expert consultation on the interpretation and follow-up of unusual or unexpected test results.	DL, DSP, RM	DO, GR/FE, SE, IWE
Consult as a clinical expert in laboratory medicine at multidisciplinary conferences.	DL, DSP, RM, IC	DO, GR/FE, PCL
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Demonstrate knowledge about established and evolving biomedical, clinical and cognitive (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to transfusion medicine</i>		
Objectives:	Learning Activities	Evaluation Activities
Be able to use all relevant information resources to acquire and evaluate evidence-based information. Demonstrate proficiency in evaluating and presenting findings from appropriate peer-reviewed journals.	DL, JC, DSP, RM, IC	RR, DO, GR/FE, SE, IWE
Develop and maintain a knowledge base in the basic and clinical sciences necessary for effective consultation in transfusion medicine.	DL, JC, DSP, IC	RR, DO, GR/FE, SE, IWE
Demonstrate sufficient knowledge to determine clinically optimal yet cost-effective testing and laboratory-based therapeutic strategies, including issues of turnaround time, test menu construction, and in-house referral diagnostic testing.	DL, JC, RM, IC	RR, DO, GR/FE, SE, IWE
Employ mathematics and statistics as appropriate to laboratory testing; understand and implement quality control (QC) and quality assurance procedures as required.	DL, JC, RM	DO, CL, GR/FE, SE, IWE
Recognize the unique aspects of transfusion medicine practice as modified by patient age and other patient population characteristics, especially aspects of pediatric and geriatric practice.	DL, JC, DSP, RM, IC	RR, DO, GR/FE, SE, IWE
Demonstrate awareness and understanding of general and test-specific standards for method development and evaluation, such as those promulgated by the Clinical Laboratory Standards Institute (CLSI; formerly NCCLS), CAP, and similar organizations.	DL, RM, LI	DO, GR/FE, SE, IWE
Demonstrate awareness and understanding of proficiency programs, such as those provided by CAP and similar organizations.	DL, RM, LI, OT	DO, GR/FE, SE, IWE
Demonstrate knowledge of the principles of clinical research design, implementation, and interpretation. Understand the various levels of evidence in medicine and their translation into evidence-based practice.	JC, DSP, RM, P	DO, GR/FE, SE, IWE

Be able to design a study that can be used to validate methodologies and parameters of clinical utility for the implementation and continuing use of new evidence-based analytes in the local setting.	DL, JC, DSP, RM, LI, P	DO, GR/FE, SE, IWE
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise and assimilate scientific evidence and improve their patient care practices.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to critically assess the scientific literature.	JC, RM	DO, GR/FE
Demonstrate knowledge of evidence-based medicine and apply its principles in practice.	JC, RM	DO, GR/FE
Use multiple sources, including information technology, to optimize lifelong learning and support patient care decisions.	JC, RM, OT	DO, GR/FE
Develop personally effective strategies for the identification and remediation of gaps in medical knowledge needed for effective practice.	DSP, RM	DO, GR/FE, SE, IWE
Use laboratory problems and clinical inquiries to identify process improvements to increase patient safety.	RM, IC	DO, GR/FE
Demonstrate knowledge of how to establish continuing competency assessment for pathologists as well as for laboratory personnel.	RM, LI	DO, GR/FE
Use proficiency programs to improve laboratory practices.	RM, LI, OT	DO, GR/FE
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with other health care providers, patients and patients' families.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to provide direct communication to the referring physician or appropriate clinical personnel when interpretation of a laboratory assay reveals an urgent, critical, or unexpected finding and document this communication in an appropriate fashion.	DSP, RM	DO, GR/FE
Conduct both individual consultations and presentations at multidisciplinary conferences that are focused, clear, and concise.	RM, IC	DO, GR/FE
Demonstrate the ability to communicate the vision of the transfusion medicine service role to other clinicians as well as to other healthcare personnel and administrators to develop clinically advantageous and cost-effective strategies.	RM, IC	DO, GR/FE
Choose effective modes of communication (listening, nonverbal, explanatory, questioning) and mechanisms of communication (face-to-face, telephone, e-mail, written), as appropriate.	RM, IC	RR, DO, GR/FE
Demonstrate skills in obtaining informed consent, including effective communication to patients about procedures, alternative approaches, and possible complications of laboratory-based patient care diagnostic and therapeutic activities, such as those related to transfusion medicine.	DSP, RM	DO, GR/FE
Demonstrate skills in educating colleagues and other healthcare professionals: (1) demonstrate the ability to help other residents obtain	JC, RM, IC	DO, GR/FE

proficiency in laboratory medicine; (2) demonstrate the ability to work well with technologists and to present laboratory medicine concepts to them effectively in continuing education settings and in the day-to-day laboratory environment; (3) demonstrate the ability to educate non-pathology clinicians and other healthcare workers, including pharmacists, nurses, residents, medical students, and others, about topics such as the fundamental principles of pathophysiology underlying test design/ interpretation and the approach to choosing and interpreting laboratory tests; (4) demonstrate an understanding of the principles one must follow when educating other practicing pathologists through publications or seminars on new testing and therapeutic strategies, research discoveries, and other cutting-edge professional knowledge.		
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CORE COMPETENCY: PROFESSIONALISM

Goal:
Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population.

Objectives:	Learning Activities	Evaluation Activities
Demonstrate compassion: be understanding and respectful of patients, their families, and the staff and physicians caring for them.	DSP, RM, IC	DO, GR/FE
Interact with others without discriminating on the basis of religious, ethnic, sexual, or educational differences.	DSP, RM, IC	DO, GR/FE
Demonstrate positive work habits, including punctuality, dependability, and professional appearance.	RM	DO, GR/FE
Demonstrate a responsiveness to the needs of patients and society that supersedes self-interest.	DSP, RM	DO, GR/FE
Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.	DL, DSP, RM, IC	DO, GR/FE
Demonstrate knowledge of regulatory issues pertaining to the use of human subjects in research.	DL, OT	GR/FE, SE
Demonstrate a commitment to excellence and ongoing professional development.	RM	DO, GR/FE
Demonstrate interpersonal skills in functioning as a member of a multidisciplinary healthcare team	DSP, RM, IC	DO, GR/FE

CORE COMPETENCY: SYSTEM-BASED PRACTICE

Goal:
Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide pathology services that are of optimal value

Objectives:	Learning Activities	Evaluation Activities
Demonstrate understanding of the role of transfusion medicine in the healthcare system.	DL, LI, IC	DO, GR/FE
Demonstrate the ability to design resource-effective diagnostic plans based on knowledge of best practices in collaboration with other clinicians.	RM	DO, GR/FE, SE, IWE
Demonstrate knowledge of basic healthcare reimbursement methods.	DL	DO, GR/FE, SE, IWE

Demonstrate knowledge of the laboratory regulatory environment, including licensing authorities; federal, state, and local public health rules and regulations; regulatory agencies such as the Centers for Medicare and Medicaid Services and the US Food and Drug Administration; and accrediting agencies such as The Joint Commission (TJC), CAP, and the ACGME.	DL, FSO, LI, OT	DO, CL, GR/FE, SE, IWE
Understand and implement policies to continually improve patient safety as they relate to transfusion medicine.	FSO, RM, LI, P	DO, GR/FE

ADDITIONAL OBJECTIVES SPECIFIC TO TRANSFUSION MEDICINE

General Transfusion Medicine Objectives:

Interacts with physicians to ensure that blood components are used appropriately balancing risk, benefit and availability. [PC, MK, PBL, ICS, PRO, SBP]

- Evaluate transfusions and transfusion requests that are out of established guidelines.
- Approve initial requests for HLA-matched donors or crossmatch-negative platelets.
- Advise about difficult crossmatches, antibody problems and selection of compatible red cells.
- When fully compatible red cells are unavailable, approves release of least-incompatible blood and assures that clinician is aware of risk for a risk-benefit analysis.
- Approves use of granulocyte transfusion and ensures availability of high-dose (G-CSF) granulocytes when needed.

Provide medical direction to ensure an adequate supply of blood components [PC, MK, PBL, ICS, PRO, SBP]

- Make decisions for the donor center regarding blood donors with medical suitability conditions out of established guidelines.
- Provides medical management of donors experiencing adverse reactions and complications due to blood donation.
- Provide peripheral blood stem cell collections.
- Evaluate requests, suitability of patient, write orders.
- Manage blood shortages (ABO, Rh switches).
- Interacts with clinicians using stem cell components particularly if there are positive bacterial culture results or if cell dose is out of desired range.
- Approves directed platelet donors.
- Participates in College of American Pathologists and American Association of Blood Bank annual inspections.

Provide transfusion-related services directly to patients. [PC, MK, ICS, PRO]

- Provide therapeutic apheresis services (plasma exchange, cytapheresis, SPA column, photopheresis, red cell exchange).

Immunohematology Objectives for Community Blood Center:

The resident will be able to explain and perform basic tests, solve antibody problems and correlate laboratory findings with clinical significance in the following areas: [PC, MK, PBL, ICS]

Blood Groups:

- ABO and other carbohydrate antigens (Lewis, P)
- Rh and other protein antigens (Kell, Duffy, Kidd, MNSs)
- Inheritance
- Clinical significance for transfusion or pregnancy
- Resolution of typing problems

Pre-transfusion Testing:

- Type and screen
- Compatibility tests including a complete crossmatch through the antiglobulin phase using both tube and gel technologies.
- IgM and IgG antibodies
- Mechanisms of immune hemolysis
- Direct and indirect antiglobulin testing
- Alloantibody identification using panels
- Enhancement media including low ionic strength (LISS), enzyme, albumin and polyethylene glycol (PEG)
- Testing before non-red cell transfusion
- Role of the computer crossmatch and electronic crossmatch.

Red Cell Serological Studies:

- Autoantibody evaluation, cold and warm
- Autoimmune hemolytic anemias – treatment and transfusion
- Drug-related antibodies – evaluation and mechanisms
- Elution – purpose, methods, and interpretation
- Complex antibody problems – *i.e.*, multiple, high frequency antigens, selection of appropriate components
- Prenatal screening and intra-partum monitoring
- Evaluation of hemolytic diseases of the newborn
- Fetal maternal hemorrhage, Rh immune globulin dose
- Exchange transfusion and/or intrauterine transfusion

Platelet Serology:

- Platelet antigen groups
- Drug-dependent platelet antibodies
- Autoimmune thrombocytopenia
- Neonatal allo-immune thrombocytopenia
- Post transfusion purpura
- Platelet antibody testing including platelet immunofluorescence and antigen capture assays (MAIPA)

Neutrophil Serology:

- Neutrophil-specific antigens
- Autoimmune neutropenia
- Drug-dependent neutrophil antibodies
- Neutrophil serology including immunofluorescence and agglutination assays

Whole Blood Collection Objectives at Community Blood Center:

The resident will be able to provide medical assistance to a blood donation program. A basic understanding of the following topics will be obtained: [PC, MK, PBL, ICS, PRO, SBP]

Blood Donation:

- Performance of donor interview and physical examination
- Donor safety issues
- Recipient safety issues
- Phlebotomy process
- Evaluation and treatment of donor reactions and injuries
- Autologous donation – candidates, frequency, common problem
- Directed donation – pros and cons of a directed donor program

Blood Component Preparation and Testing:

- Component preparation including labeling
- Donor testing
 - Blood groups – ABO, Rh, antibody screen
 - Infectious disease marker testing: syphilis, HBsAg, anti-HIV, ALT, anti-HBc, anti-HTLV, anti-HCV
 - Confirmatory testing including anti-HIV western blots, anti-HCV RIBA, and anti-HTLV western blot
 - CMV antibody testing
 - Nucleic acid amplification testing (NAT) for Hep C, HIV, and West Nile virus
- Observe and understand Leukoreduction of red cells and apheresis platelets. Know the benefits of leukocyte reduction for the recipient.

Blood Donor Counseling: [PC, MK, ICS, PRO, SBP]

- Donor notification of positive results
- Confidentiality and requirements for reporting infectious disease markers to public health agencies

Clinical Transfusion Service Objectives (KUMC):

The resident should be able to discuss standard laboratory and clinical practices, investigate problems and questions, and assess transfusion therapy in the following areas: [PC, MK, PBL, ICS, PRO, SBP]

Blood Component Therapy:

- Blood administration – specimen and patient identification, thawing, pooling, issuing, transport time and temperature, filtration
- Blood components – red blood cells, platelet concentrates, apheresis platelets, plasma, cryopoor plasma, cryoprecipitate, and granulocytes
- Blood appropriateness review – audit requirements, methods, transfusion committee activities.
- Modified components – washed, irradiated, leukocyte-reduced, frozen/thawed deglycerolized red cells, HLA-matched platelets, crossmatched platelets.
- Support for solid organ and bone marrow transplant patients

- Adverse Effects of Transfusion:

The resident will:

- i. Be able to recognize and discuss pathophysiology, treatment, and prevention of the following: febrile, allergic, acute hemolytic, delayed hemolytic, anaphylactic, septic, transfusion-associated graft-versus-host disease, transfusion-related acute lung injury, and circulatory overload [PC, MK, SBP]
- ii. Be able to manage massive transfusion including the appropriate and timely ordering of laboratory tests for monitoring the patient and recognizing the metabolic and hemostatic consequences of massive transfusion [PC, MK, SBP]
- iii. Have a working knowledge of the effects of stored blood on recipients, including pediatric patients [PC, MK, SBP]
- iv. Transfusion-Related Infections:
 - HIV, hepatitis B and C, HTLV, CMV, West Nile Virus, protozoa, and bacterial contaminants [PC, MK, SBP]
 - current risks of transfusion
 - procedures to minimize risk for recipients

Apheresis for Collection of Blood Components, Patient Therapy and Blood Progenitor Cell Collections:

The resident will have an understanding of the basic concepts of apheresis and stem cell collection. The resident will have a working knowledge of the variety of therapeutic apheresis instruments, procedures, and the appropriate indications.

Therapeutic Apheresis – The resident will:

- Have a clear understanding of the appropriate indications for either cytapheresis or plasmapheresis. [PC, MK, SBP]
- Act as a consultant and evaluate the patient before, during and after apheresis. [PC, MK, ICS, PRO, SBP]
- Be able to design a treatment plan including and write orders for use of replacement solutions. [PC, MK, ICS, SBP]
- Understand and recognize the side effects and reactions related to therapeutic apheresis. [PC, MK]
- Understand the processing of the instrumentation with regard to the separation and collection of various blood components. [PC, MK]

KUMC Cell Therapy Laboratory:

Hematopoietic Stem Cell Processing – The resident will:

- Understand the preparation and cryo-preservation of bone marrow/stem cells. [PC, MK]
- Have an introductory knowledge of the quality control aspects of a marrow processing laboratory including cell culture, cell viability, and sterile technique. [PC, MK, PBL]
- Have a general understanding of purging malignant cells. [PC, MK]
- Have a conceptual understanding of the protocol to change blood types in patients undergoing allogeneic transplants. [PC, MK]

- Understand the concepts of engraftment and the use of cytokines (recombinant growth factors) to speed marrow engraftment. [PC, MK]
- Understand the overall theory and methods of T-cell depletion. [PC, MK]
- Understand methods to positively select CD34+ stem cells. [PC, MK, PBL, ICS, PRO, SBP]
- Be familiar with techniques for thawing and transfusing frozen marrow or PBSCs including the side effects or reactions and will participate in these transfusions. [PC, MK, PBL]

Umbilical Cord Blood Banking and Processing – The resident will:

- Understand the role of cord blood in hematopoietic cell transplantation. [PC, MK, SBP]
- Understand the structure and operation of a cord blood bank. [PC, MK, PBL, SBP]
- Understand the medical evaluation and other criteria used to determine the suitability of cord blood for banking. [PC, MK]
- Understand the ethical issues involved in cord blood banking including those relating to consent. [PC, MK, PBL, PRO, SBP]
- Be knowledgeable of the methods used to process and store cord blood. [PC, MK]
- Be familiar with techniques for thawing and transfusing cord blood. [PC, MK]

SPECIFIC LEARNING OBJECTIVES FOR TRANSFUSION MEDICINE (SKILL LEVELS)

Skill Level I

- Demonstrate knowledge of the principles of patient/ unit identification and pretransfusion testing, including ABO/Rh testing, RBC antibody screen, and antibody identification. [PC, MK, PBL, SBP]
- Recognize the symptoms and signs of hemolytic and nonhemolytic transfusion reactions and demonstrate knowledge of the pathophysiology, treatment, and prevention of these complications. [PC, MK, SBP]
- Identify the major infectious complications of blood transfusions and the current risk of these infections, and explain how these infections can be prevented. [PC, MK, SBP]
- Identify the major noninfectious complications of blood transfusions, including transfusion-related acute lung injury, the risk of these complications, and strategies to prevent them. [PC, MK, SBP]
- Choose appropriate blood components and derivatives based on a thorough knowledge of the indications for transfusion. [PC, MK]
- Demonstrate knowledge of the pathophysiology, prevention, and treatment of hemolytic disease of the newborn. Recognize those antibodies in pregnant patients that are clinically significant and make appropriate recommendations for blood products. [PC, MK, SBP]
- Demonstrate knowledge of the pathophysiology and treatment of neonatal alloimmune thrombocytopenia. [PC, MK]
- Demonstrate proficiency in the evaluation and appropriate transfusion therapy of thrombocytopenic patients (both adult and pediatric). [PC, MK]
- Apply the principles of a massive transfusion protocol. [PC, MK, SBP]
- Demonstrate a working knowledge of the principles of hemostasis and coagulation and proficiency in the initial treatment of patients with bleeding disorders (see also the Hematology section). [PC, MK]
- Demonstrate knowledge of the transfusion requirements of special patient populations (e.g.,

- hematology/ oncology, pediatrics, geriatrics, transplantation, and burn/trauma). [PC, MK, SBP]
- Demonstrate knowledge of landmark published studies in transfusion medicine. [PC, MK, PBL]
 - Demonstrate proficiency in evaluating and presenting findings from recent peer-reviewed journal articles related to transfusion medicine. [PC, MK, PBL, ICS, PRO]

Skill Level II

- Identify clinically significant RBC antibodies from an antibody panel including multiple alloantibodies and mixtures of alloantibodies and autoantibodies; determine how difficult it will be to obtain blood for this patient, and effectively communicate these results to clinicians. [PC, MK, ICS, PRO, SBP]
- Demonstrate proficiency in evaluating and recommending treatment plans for complex transfusion reactions. [PC, MK, PBL, ICS, PRO, SBP]
- Demonstrate familiarity with the appropriate use of highly specialized blood products (e.g., granulocytes, donor lymphocyte infusions, HLA-matched platelets, and coagulation factor concentrates). [PC, MK, SBP]
- Demonstrate familiarity with the requirements of all applicable regulatory and accrediting agencies [e.g., TJC, CAP, American Association of Blood Banks (AABB), and US Food and Drug Administration]. [PBL, SBP]
- Compare and contrast the various means of performing blood utilization reviews. [PC, MK, PBL, ICS, SBP]
- Demonstrate competence in the management of blood inventory and the ability to communicate effectively the hospital's needs to the blood supplier. [PC, MK, PBL, ICS, PRO, SBP]
- Demonstrate knowledge of various methods of blood conservation, including pre-and perioperative autologous blood collection, and approaches to "bloodless" surgery. [PC, MK, PBL, SBP]
- Demonstrate proficiency in evaluating patients that are refractory to platelet transfusions. Outline the principles of histocompatibility testing and platelet cross-matching and apply this knowledge in selecting appropriate platelet products when indicated (see also the Immunology and Immunogenetics section). [PC, MK, SBP]
- Demonstrate proficiency in the evaluation of patients with immune-mediated and non-immune-mediated hemolytic anemia and in the appropriate transfusion management of these patients. [PC, MK, SBP]

Blood Collection/Blood Center/Cell Processing Responsibilities

Skill Level 1

- Compare and contrast the eligibility requirements for allogeneic and autologous blood donations. [PC, MK, SBP]
- Demonstrate knowledge of the indications for therapeutic phlebotomy. [PC, MK, SBP]
- Demonstrate proficiency in evaluating and treating adverse reactions associated with blood donation/phlebotomy (whole blood and apheresis donations). [PC, MK, SBP]
- Outline the assay principles of required donor blood tests and the associated confirmatory testing and describe donor re-entry algorithms. [PC, MK]

- Demonstrate professionalism in interactions with prospective donors. [ICS, PRO]
- Summarize the steps in blood component and blood derivative preparation. [PC, MK]
- Describe the factors that influence the motivation of volunteers to donate blood. [PBL, ICS, SBP]
- Explain the operational logistics required in determining appropriate blood inventory for a geographic region and the process of meeting daily, weekly, and monthly collection goals. [PC, MK, PBL, SBP]

Skill Level II

- Outline the necessary steps in donor notification and counseling associated with positive infectious disease testing results, and the donor look-back process. [PC, MK, PBL, ICS, PRO, SBP]
- Demonstrate knowledge concerning the requirements of all applicable regulatory and accrediting agencies. [PBL, SBP]
- Demonstrate knowledge of the principles of hematopoietic stem cell transplantation, including collection, processing, and storage of these stem cell products, and the indications for use (e.g., bone marrow, peripheral blood, and cord blood). [PC, MK, SBP]
- Demonstrate understanding of the elements of current good manufacturing practices and current good tissue practices as they apply to the collection, processing, ex vivo manipulation, and storage of all cellular therapeutic products (e.g., pancreatic islet cells, negative/positive selection/purging of hematopoietic stem cells, gene manipulations, donor lymphocyte infusions, dendritic cell vaccines, and ex vivo expansion of progenitor cells). [PC, MK, PBL, SBP]
- Develop an understanding of emerging areas of cellular therapy, including hematopoietic graft engineering and cellular immunotherapeutics. [PC, MK, PBL, SBP]

Therapeutic Apheresis

Skill Level I

- Summarize the principles of apheresis technology, including centrifugation, filtration, and immunoabsorption. [PC, MK]
- Demonstrate knowledge of the indications for therapeutic apheresis and of the appropriate replacement fluids to be used in various situations. [PC, MK, SBP]
- Demonstrate proficiency in evaluating and preparing patients for therapeutic apheresis, including discussion with the patient of the risks and benefits associated with apheresis procedures. [PC, MK, ICS, PRO, SBP]
- Communicate effectively with clinicians and housestaff regarding emergent or scheduled therapeutic apheresis procedures through conversations and writing of consult notes. [PC, MK, ICS, PRO, SBP]

Skill Level II

- Demonstrate proficiency in evaluating and treating adverse reactions associated with therapeutic apheresis. [PC, MK, SBP]
- Demonstrate proficiency in the treatment of patients using specialized methods (e.g., photopheresis and immunoabsorption columns). [PC, MK, SBP]

ADDITIONAL COMPETENCIES SPECIFIC TO TRANSFUSION MEDICINE

Patient Care

- Correctly classify transfusion reactions and give appropriate treatment recommendations.
- Choose appropriate cross-matching methods for various patients (e.g., electronic, immediate spin, and antiglobulin).
- Recognize and appropriately refer serological evaluations that are beyond the scope of a hospital-based transfusion service/blood bank.
- Correctly choose (or recommend) the appropriate blood product for patients with special needs.
- Triage and screen requests for blood components appropriately during inventory shortages.
- Demonstrate the ability to perform blood utilization reviews.
- Perform a donor interview and exam.
- Evaluate and perform initial management of whole blood and apheresis donor reactions.
- Write physician orders for peripheral blood hematopoietic stem cell collections and therapeutic apheresis procedures.
- Appropriately manage reactions that occur during peripheral blood hematopoietic stem cell collections or therapeutic apheresis procedures.

Medical Knowledge

- Demonstrate understanding of and ability to interpret major regulations and guidelines that are applicable to collection, processing, storage, and release of blood and other cellular therapeutic product.

Practice-Based Learning and Improvement

- Demonstrate the ability to develop new policies and procedures or change existing policies and procedures based on a review of the literature or issuance of new guidelines by regulatory agencies.

Interpersonal and Communication Skills

- Demonstrate the ability to discuss the process of therapeutic apheresis with patients, and/or family members where appropriate; answer their questions; and obtain informed consent.

PGY SPECIFIC GOALS

PGY 1 GOALS: By the end of the first year:

- The resident should achieve competency in Skill Level 1

PGY 2 GOALS: By the end of the second year:

- The resident should achieve competency in Skill Levels 1 and some 2
- The resident should have worked up patients for autologous donor and pheresis in a competent manner
- The resident should have completed the rotation at the Community Blood Center

PGY 3 GOALS: By the end of the third year:

- The resident must achieve competency in Skill Level 1

PGY 4 GOALS:

- The resident should be competent in all Transfusion Skill Levels 1 and 2

GENERAL - Throughout the entire duration of residency training the resident must also demonstrate the specific skills for Professionalism, Practice--Based Learning and Improvement, Interpersonal and Communication Skills and System-Based Learning as listed on pages 16 and 17.

Transfusion Medicine Reference Materials:

1. *AABB web site.* <http://www.aabb.org>.
2. *AABB Standards for Blood Banks and Transfusion Services*, 23rd ed. Bethesda, MD: AABB Press, 2005.
3. *AABB Standards for Cellular Therapy Product Services*, 1st ed. Bethesda, MD: AABB Press, 2004.
4. *AABB Technical Manual*, 15th ed. Bethesda, MD: AABB Press, 2005.
5. McLeod BC, Price TH, Weinstein RA. *Apheresis: Principles and Practice*, 2nd ed. Bethesda, MD: AABB Press, 2003.
6. Blackall DP, Helekar PS, Triulzi DJ. *Transfusion Medicine: Self-Assessment and Review*. Bethesda, MD: AABB Press, 2002.
7. Harmening DM. *Modern Blood Banking and Transfusion Practices*, 5th ed. Philadelphia: FA Davis, 2005.
8. Blajchman MA. *Landmark studies that have changed the practice of transfusion medicine*. *Transfusion* 2005;45:1523–30.
9. Hillyer CD, Silberstein LE, Ness PM, Anderson KC, Roush KS. *Blood Banking and Transfusion Medicine: Basic Principles and Practice*. New York: Churchill Livingstone, 2003.
10. Mintz PD. *Transfusion Therapy: Clinical Principles and Practice*, 2nd ed. Bethesda, MD: AABB Press, 2005.
11. Mollison PL, Engelfriet CP, Contreras M. *Blood Transfusion in Clinical Medicine*, 10th ed. Oxon, UK: Blackwell Science, 1997.
12. Petz LD, Garratty G. *Immune Hemolytic Anemias*, 2nd ed. New York: Churchill Livingstone, 2004.
13. Reid ME, Lomas-Francis C. *The Blood Group Antigen Facts Book*, 2nd ed. Amsterdam: Elsevier, 2004.
14. Simon TL, Dzik WH, Snyder EL, Rossi EC, Stowell CP, Strauss RG. *Rossi's Principles of Transfusion Medicine*, 3rd ed. Philadelphia: Lippincott Williams & Wilkins, 2002.
15. US Department of Labor. Occupational Safety & Health Administration. *Bloodborne pathogens and needlestick prevention*. <http://www.osha.gov/SLTC/bloodbornepathogens/>.
16. US Food and Drug Administration. *Center for Biologics Evaluation and Research. Blood*. <http://www.fda.gov/cber/blood.htm>.

KUMC Transfusion Service:

The resident will have a basic understanding of blood bank laboratory procedures, component production, blood collection, component therapy and evaluation of transfusion reactions.

Opportunities to Function as Consultant to other physicians

The pager for the daily clinical service at KUMC will be carried by the resident who is the primary contact from 8:00 a.m. to 5:00 p.m. for all clinical transfusion problems and consultations. The most common calls from clinicians on a daily basis include several on the topic of requests for HLA or cross-matched platelets in patients that are refractory to transfusion and questions about management of therapeutic apheresis patients. Calls also are received via this pager several times a day from blood bank staff and usually result in the need for the resident to directly contact our clinical colleagues. During the 3 months at KUMC, specific time periods will be assigned to the resident for carrying this pager, depending on the resident's experience and capabilities. As part of the clinical service team, the resident will document consultations and other patient updates directly in the patient's record. The resident often interacts by phone and directly on the patient care unit with the clinicians taking care of the patient. Daily, the resident is on the patient care units, usually re-evaluating the use of components that were issued outside of the guidelines set by the Transfusion Committee. The daily situations whereby the resident correlates laboratory results with clinical findings to determine whether special platelets are needed or should continue to be provided, including platelet counts, platelet antibody and platelet cross-matching results, the patient's clinical state (*i.e.*, bleeding) or has non-immune causes of platelet refractoriness. Approximately twice a week the resident will correlate patient signs and symptoms with laboratory data in evaluating transfusion reactions. In plasma exchange patients, the resident will follow the clinical status daily, correlating with laboratory tests to determine effectiveness of therapy, and decide further treatments or manage adverse reactions (*e.g.*, hypocalcemia). The resident will correlate results from several laboratories in the care of pheresis patients (*e.g.*, TTP patients – following hematology laboratory results (*e.g.*, platelet count) and chemistry laboratory results (*e.g.*, creatinine, LDH) and special hematology laboratory results (*e.g.*, peripheral smear for schistocytes).

Transfusion Reaction Workups:

All suspected transfusion reactions (from 8:00 a.m. – 5:00 p.m. weekdays) are immediately referred to the resident (when carrying pager) for immediate evaluation regarding need for intervention or special testing. Within 24 hr of a suspected reaction, the laboratory will have preliminary data (DAT, serum color, gram stain if performed, etc) and refer the case to the resident with the evaluation report form. The resident obtains a clinical history for the patient, reviews the laboratory data and subsequently shares the data and the resident's preliminary assessment with the blood bank attending physician. Together, the assessment and recommendations are documented on the report.

All reactions are handled in this manner either by the resident or attending physician.

Training in the Unique Computer Needs of a Transfusion Service:

During the blood bank laboratory orientation and training, the resident learns how laboratory staff use computers to acquire components from the blood supplier (Community Blood Center), enter test results, track the unit, and release the unit to the patient care unit.

The resident also learns the principles behind the electronic cross-match using a computer. The resident frequently uses the blood bank computer for retrieving patient and blood bank data. The resident has computer continuous access in the resident/fellow office for patient care and for Medline literature searches.

Training in Immunologic/Serologic Aspects of Blood Product Screening:

The resident is trained regarding blood donor testing at the Community Blood Center, including red blood cell serology and infectious disease serologic testing. In addition, they spend time learning neutrophil serology and platelet serology & cross-matches.

On Call Duties:

For a two month period during the rotation, the resident carries the KUMC on call pager during working hours provides first call consultation and blood bank problem solving for KUMC. During this period, the residents will on average have one out of every seven days free of hospital duties. The resident is directly supervised by the KUMC blood bank medical director and has access to additional help from blood bank medical faculty at KUMC and the American Red Cross. While on-call, residents are supervised by a Faculty Member, who is available at all times, either via their office phone, pager, or home phone. During the KUMC site rotation, all calls are reviewed at the weekday morning blood bank rounds, with the HCMC blood bank medical director. At KUMC, the resident is expected to be available to laboratory personnel, either in person or by pager, throughout the working day. No on call duties outside of regular laboratory working hours are assigned to the resident involving coverage at these sites.

Call duties are constructed in the following fashion. The resident who is assigned to Transfusion Medicine for the month, is responsible for Clinical Pathology Call from Monday to Friday 8 a.m. to 5 p.m. The remainder of the call time is divided between all residents who are on a Clinical pathology rotation, who have previously rotated through Transfusion Medicine. The Chief Residents will make out the clinical pathology call schedule and make sure no resident is on call for more than 6 days in a row.

Reliable Communication with on duty Faculty:

Blood Bank Medical Directors and Teaching Faculty Members on service are physically present during standard operating hours (8:00 AM - 5:00PM) and immediately available in person or by pager; specific faculty members when not physically present in the laboratory are available by phone or pager. At all times, a supervising faculty member is on call for evening and weekend questions.

At KUMC, the attending MD meets daily (weekdays) with the resident to discuss direct patient care activities. All residents on clinical pathology rotations, except for the Hematopathology resident are expected to attend the weekly CP Call Rounds to review Transfusion Medicine calls from the previous week as well as interesting cases from other aspects of clinical pathology. In addition, the resident usually has an informal lunch meeting with the blood bank medical director at least once a week and often three times a week (case discussions, mentoring).

Education in Blood Bank Management

Blood supply inventory management is discussed both at regular Transfusion Committee meetings. The resident should attend these meetings regularly.

Scholarly Activities/Research

Because of this the resident evaluates and discusses research findings in the literature and receives feedback from faculty. The resident is urged to write up and publish interesting or unique transfusion problems

encountered during the rotation. Blood Bank faculty eagerly offers to mentor the resident through the process leading to a publication.

If a resident is interested in a research project and has sufficient time, the blood bank faculty will arrange this in one of the Transfusion Medicine research labs.

Resident Evaluation

If problems with not meeting expected knowledge and skills are observed during the rotation, the lead faculty member meets with the resident to evaluate the problem and develop a corrective action plan.

Residents will be evaluated on performance of daily activities (described previously), participation in required meetings and conferences, and presentations to the staff on assigned cases. The residents are provided with continuous feedback on their performance during the rotation. In general, only deficiencies are noted in writing. Residents are evaluated on their demonstrated ability to provide informative consultation to the clinical service teams, their medical knowledge, their application of this knowledge to efficient/quality patient care, and their diagnostic, technical and observational skills. Residents are also evaluated on their interpersonal skills, professional attitudes, reliability, and ethics with members of the teaching faculty, peers, laboratory staff, and clinicians. They are further evaluated on their initiative in fostering quality patient care and use of the medical literature, as it relates to their assigned cases. Their timely completion of assigned interpretive reports is another component of the evaluation. Residents on probation receive a written mid-rotation evaluation.

CLINICAL CHEMISTRY

The clinical chemistry rotation provides a 3-month experience for all Department of Laboratory Medicine and Pathology residents. While designed for residents, clinical chemistry post-doctoral fellows and incoming chemical pathology fellows may also take this rotation either together with or separate from the residents. In either case the residents and fellows equally share the daily duties and are considered peers. Interaction with faculty located at these institutions is intended to provide a perspective on laboratory organization/design and the practice of clinical chemistry as seen in a variety of different settings.

The clinical chemistry rotation is organized to both teach the fundamental principles of clinical chemistry and to provide extensive experience with the day-to-day clinical application of those fundamentals. The fundamental principles are taught through a structured list of teaching objectives that are arranged into three separate Units. Each Unit Coordinator is responsible for arranging the day-to-day scheduling of their Unit, how and when the laboratory exercises will be performed, and when the resident will meet with the faculty members. Depending on the faculty and the Unit, this interaction will include the following:

- Didactic sessions on specific topics with the faculty members.
- Assigned reading of textbooks and/or journal articles.
- Case studies, chart reviews, case presentations.
- Laboratory demonstrations and exercises.

At least one week prior to the start date of each unit, the resident(s) should review the section of this manual that describes the requirements for the next scheduled Unit. They then should contact the Coordinator to receive information regarding appointments for the didactic sessions and to complete any necessary arrangements for laboratory demonstrations and exercises. Prior to each Unit, the resident should review the *Specific Learning Objectives* and review the *Required Reading Assignment* listed in each Unit. If they are familiar with the material, they need not read the reading assignment word-for-word. However, if the material is not familiar to them, they should make every attempt to master it *before meeting with the faculty* for the didactic sessions. This will allow for more efficient use of time during the didactic sessions and will minimize the possibility of not having a chance to discuss with the faculty any section that is confusing or needs extraction of the most clinically relevant points of the subject matter. The *Additional/Optional Readings* are for the resident particularly interested in that area or having a case or clinical question posed to them as part of their consultative responsibilities during the rotation. There is no expectation that a resident will read all of these *Additional/Optional Readings* during the clinical chemistry rotation.

The clinical applications are taught primarily through performance of a variety of assigned clinical responsibilities which are intended to provide extensive contact with attending and house staff physicians from clinical services. Laboratory exercises are designed not only to illustrate technical aspects of clinical laboratory testing, but also interesting clinical results and potential clinically important interferences. In some cases the laboratory exercises involve actual performance of an "experiment" by the resident. Other times they merely observe a laboratory test being performed to gain some familiarity on the analytical time and complexity of a variety of representative tests. However, we recognize that our residents possess a wide variety in previous laboratory experience -- thus, the faculty has agreed that no laboratory exercise is required. At the beginning of each Unit, the resident should clearly state which experiments they plan to do

or not do so that the technologists who assist with the laboratory exercises do not waste time preparing for something the resident does not intend to complete.

Additional experience with practical problems related to laboratory operations and management is gained through involvement with basic issues of laboratory management, such as:

- Evaluation of analytical instrumentation
- Laboratory staffing
- Cost account of a new analytical method relative to an older one
- New method evaluation for technical performance
- Quality assurance practices
- Review of abnormal results report from the lab information system

GOALS AND OBJECTIVES

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal: <i>Residents must demonstrate a satisfactory level of diagnostic competence and the ability to provide appropriate and effective consultation in the context of chemistry services</i>		
Objectives:	Learning Activities	Evaluation Activities
Gather essential and accurate information about patients using all relevant available modalities.	DSP, RM, IC	DO, GR/FE
Act as a skilled consultant to other clinicians to develop a diagnostic plan based on specific clinical questions and relevant clinical and pathologic information. This should be accomplished both in the patient-specific setting and the broader context of developing appropriate clinical pathway algorithms for diagnosis.	DL, FSO, DSP, RM, IC	DO, GR/FE, SE, IWE
Gain knowledge and technical skills to recognize, interpret, and explain pathologic processes in the clinical practice of chemistry.	DL, JC, DSP, RM	DO, GR/FE, SE, IWE
Consult as part of a multidisciplinary healthcare team in developing a therapeutic plan that includes laboratory monitoring of efficacy and toxicity. Where clinically appropriate, consult on the use of laboratory-based therapeutics such as blood transfusion and other forms of cellular therapy.	DL, JC, DSP, RM, IC	DO, GR/FE, IWE
Provide expert consultation on the interpretation and follow-up of unusual or unexpected test results.	DL, DSP, RM	DO, GR/FE, SE, IWE
Consult as a clinical expert in laboratory medicine at multidisciplinary conferences.	DL, DSP, RM, IC	DO, GR/FE, PCL
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Demonstrate knowledge about established and evolving biomedical, clinical and cognitive (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to chemistry</i>		
Objectives:	Learning	Evaluation

	Activities	Activities
Be able to use all relevant information resources to acquire and evaluate evidence-based information. Demonstrate proficiency in evaluating and presenting findings from appropriate peer-reviewed journals.	DL, JC, DSP, RM, IC	RR, DO, GR/FE, SE, IWE
Develop and maintain a knowledge base in the basic and clinical sciences necessary for effective consultation in transfusion medicine.	DL, JC, DSP, IC	RR, DO, GR/FE, SE, IWE
Demonstrate sufficient knowledge to determine clinically optimal yet cost-effective testing and laboratory-based therapeutic strategies, including issues of turnaround time, test menu construction, and in-house referral diagnostic testing.	DL, JC, RM, IC	RR, DO, GR/FE, SE, IWE
Employ mathematics and statistics as appropriate to laboratory testing; understand and implement quality control (QC) and quality assurance procedures as required.	DL, JC, RM	DO, CL, GR/FE, SE, IWE
Recognize the unique aspects of transfusion medicine practice as modified by patient age and other patient population characteristics, especially aspects of pediatric and geriatric practice.	DL, JC, DSP, RM, IC	RR, DO, GR/FE, SE, IWE
Demonstrate awareness and understanding of general and test-specific standards for method development and evaluation, such as those promulgated by the Clinical Laboratory Standards Institute (CLSI; formerly NCCLS), CAP, and similar organizations.	DL, RM, LI	DO, GR/FE, SE, IWE
Demonstrate awareness and understanding of proficiency programs, such as those provided by CAP and similar organizations.	DL, RM, LI, OT	DO, GR/FE, SE, IWE
Demonstrate knowledge of the principles of clinical research design, implementation, and interpretation. Understand the various levels of evidence in medicine and their translation into evidence-based practice.	JC, DSP, RM, P	DO, GR/FE, SE, IWE
Be able to design a study that can be used to validate methodologies and parameters of clinical utility for the implementation and continuing use of new evidence-based analytes in the local setting.	DL, JC, DSP, RM, LI, P	DO, GR/FE, SE, IWE
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise and assimilate scientific evidence and improve their patient care practices.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to critically assess the scientific literature.	JC, RM	DO, GR/FE
Demonstrate knowledge of evidence-based medicine and apply its principles in practice.	JC, RM	DO, GR/FE
Use multiple sources, including information technology, to optimize lifelong learning and support patient care decisions.	JC, RM, OT	DO, GR/FE
Develop personally effective strategies for the identification and remediation of gaps in medical knowledge needed for effective practice.	DSP, RM	DO, GR/FE, SE, IWE
Use laboratory problems and clinical inquiries to identify process improvements to increase patient safety.	RM, IC	DO, GR/FE
Demonstrate knowledge of how to establish continuing competency assessment for pathologists as well as for laboratory personnel.	RM, LI	DO, GR/FE

Use proficiency programs to improve laboratory practices.	RM, LI, OT	DO, GR/FE
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with other health care providers, patients and patients' families.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to provide direct communication to the referring physician or appropriate clinical personnel when interpretation of a laboratory assay reveals an urgent, critical, or unexpected finding and document this communication in an appropriate fashion.	DSP, RM	DO, GR/FE
Conduct both individual consultations and presentations at multidisciplinary conferences that are focused, clear, and concise.	RM, IC	DO, GR/FE
Demonstrate the ability to communicate the vision of the chemistry service role to other clinicians as well as to other healthcare personnel and administrators to develop clinically advantageous and cost-effective strategies.	RM, IC	DO, GR/FE
Choose effective modes of communication (listening, nonverbal, explanatory, questioning) and mechanisms of communication (face-to-face, telephone, e-mail, written), as appropriate.	RM, IC	RR, DO, GR/FE
Demonstrate skills in obtaining informed consent, including effective communication to patients about procedures, alternative approaches, and possible complications of laboratory-based patient care diagnostic and therapeutic activities, such as those related to chemistry.	DSP, RM	DO, GR/FE
Demonstrate skills in educating colleagues and other healthcare professionals: (1) demonstrate the ability to help other residents obtain proficiency in laboratory medicine; (2) demonstrate the ability to work well with technologists and to present laboratory medicine concepts to them effectively in continuing education settings and in the day-to-day laboratory environment; (3) demonstrate the ability to educate non-pathology clinicians and other healthcare workers, including pharmacists, nurses, residents, medical students, and others, about topics such as the fundamental principles of pathophysiology underlying test design/ interpretation and the approach to choosing and interpreting laboratory tests; (4) demonstrate an understanding of the principles one must follow when educating other practicing pathologists through publications or seminars on new testing and therapeutic strategies, research discoveries, and other cutting-edge professional knowledge.	JC, RM, IC	DO, GR/FE
CORE COMPETENCY: PROFESSIONALISM		
Goal: <i>Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate compassion: be understanding and respectful of patients, their families, and the staff and physicians caring for them.	DSP, RM, IC	DO, GR/FE

Interact with others without discriminating on the basis of religious, ethnic, sexual, or educational differences.	DSP, RM, IC	DO, GR/FE
Demonstrate positive work habits, including punctuality, dependability, and professional appearance.	RM	DO, GR/FE
Demonstrate a responsiveness to the needs of patients and society that supersedes self-interest.	DSP, RM	DO, GR/FE
Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.	DL, DSP, RM, IC	DO, GR/FE
Demonstrate knowledge of regulatory issues pertaining to the use of human subjects in research.	DL, OT	GR/FE, SE
Demonstrate a commitment to excellence and ongoing professional development.	RM	DO, GR/FE
Demonstrate interpersonal skills in functioning as a member of a multidisciplinary healthcare team	DSP, RM, IC	DO, GR/FE
CORE COMPETENCY: SYSTEM-BASED PRACTICE		
Goal: <i>Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide pathology services that are of optimal value</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate understanding of the role of the chemistry laboratory in the healthcare system.	DL, LI, IC	DO, GR/FE
Demonstrate the ability to design resource-effective diagnostic plans based on knowledge of best practices in collaboration with other clinicians.	RM	DO, GR/FE, SE, IWE
Demonstrate knowledge of basic healthcare reimbursement methods.	DL	DO, GR/FE, SE, IWE
Demonstrate knowledge of the laboratory regulatory environment, including licensing authorities; federal, state, and local public health rules and regulations; regulatory agencies such as the Centers for Medicare and Medicaid Services and the US Food and Drug Administration; and accrediting agencies such as The Joint Commission (TJC), CAP, and the ACGME.	DL, FSO, LI, OT	DO, CL, GR/FE, SE, IWE
Understand and implement policies to continually improve patient safety as they relate to the chemistry laboratory.	FSO, RM, LI, P	DO, GR/FE

ADDITIONAL OBJECTIVES SPECIFIC TO CHEMISTRY

Laboratory Management

- Introduction to Reporting of Laboratory Results
 - Be familiar with chemistry specimen processing, data handling, record keeping, telephone answering and stat procedure system. [PC, MK, PBL, ICS, PRO, SBP]
 - Learn the core lab chemistry automation line including [PC, MK]
 - Robotic movement of specimens
 - Automatic centrifugation

- Serum level determination
 - Automatic decapping of specimens
 - Bar code identification and bidirectional interface with the LIS
 - Aliquoting of tubes for tests not intended for automation line
 - Analysis of assays on the LXIs, DXI and non-automation equipment
 - Understanding of computerized specimen storage and add-on orders done robotically.
- Be familiar with the reporting units (SI and conventional), and enzymatic units. [PC, MK]
- Understand the following:
 - Laboratory accreditation – CLIA ‘88, JCAHCO, CAP [PBL, SBP]
 - Internal quality control programs-materials available, methods. [PC, MK, PBL, SBP]
 - What is the precision of the method?
 - How are "action" and "warning" limit defined?
 - How large is the analytical imprecision compared to the reference range?
 - Would a more precise analytical method be useful clinically?
 - External quality control programs (proficiency testing)-CAP, others. [PC, MK, PBL, SBP]
- Understand the impact of CLIA '88 on hospital and physician office laboratories. [PBL, SBP]
- Be able to describe the concept of a quality assurance program, as opposed to a quality control program, as defined by the JCAHCO. Understand the concept of a quality assurance "indicator" and understand how to develop, perform, and utilize these indicators as part of an on-going quality assurance program. Attend quality assurance monthly meetings. [PBL, SBP]
- Know the general principles of the clinical laboratory administrative structure for optimum direction and management. [PBL, SBP]
- Know the principles for laboratory design. [PBL, SBP]
- Understand the following personnel matters: [PBL, ICS, PRO, SBP]
 - Registration, certification, licensure of various levels of laboratory personnel (CLA, MLT-non-degree, MLT-degree, MT, clinical chemists, pathologists) and agencies involved (ASCP, NCA, ABCC, ABP).
 - Importance of position descriptions and performance evaluations.
 - Ways of handling personnel problems with unionized and non-unionized employees.
 - Productivity measurements (annual billable tests).
- Understand principles concerning: [PC, MK, PBL, ICS, PRO, SBP]
 - What test should be offered and when they should be made available.
 - What analytical methods should be used - analytic, economic and other considerations. Instruments selection-financing (lease, purchase, "free" for reagent use.) routine vs. STAT, sample size.
 - Instrument maintenance - in-house availability or vendor service, service contracts.
 - Reagent selection - kits, price, delivery, ordering, inventory, quality control in-house and by the vendor.
 - Laboratory safety including state and federal regulations.
- Understand the importance of good communications with other areas of the hospital (e.g., medical and nursing staff, hospital administration, medical records, etc.). [ICS, PRO]
- Attend nurse liaison monthly meetings and round with the laboratory pathologists and administrative staff on Thursday mornings. [PBL, ICS]

- Attend all CAP Virtual Management courses [PBL, PRO, SBP]

References

1. *Tietz Textbook of Clinical Chemistry* 5th Edition. Burtis C.A. and Ashwood E.R. Editors. Chapter 17.
2. *Clinical Chemistry Theory, Analysis and Correlation*. 2nd Edition Kaplan, L.A. and Pesce, A.J. Editors. Chapters 18 and 19.
3. Naito H.K. et al. *Matrix effects on Proficiency Testing Materials, Impact on accuracy of Cholesterol Measurement in Laboratories in the Nation's Largest Hospital System*. Arch Pathol Lab Med 117: 345-351, 1993.
4. Westgard et al. *A Muti-Rule Shewhart Chart for Quality Control in Clinical Chemistry*. Clin Chem 27: 493-501, 1981.

General Chemistry

- Describe functions of the principal components of and major differences between the following instruments using a block diagram: [PC, MK]
 - Simple single-beam spectrophotometer
 - Fluorometer
 - Nephelometer
 - Several major automated instruments used in the clinical chemistry laboratories (*e.g.*, Beckman Coulter in the main KU Lab, Ortho Vitros at KU Med West and Cancer Center labs)
 - Describe Beer's Law, stray light, bandwidth, and Allen's correction. [PC, MK]
 - Know the importance of a spectrophotometer bandwidth. [PC, MK]
 - Describe the main clinical use of fluorescence polarization spectroscopy. Why is it useful? [PC, MK]
 - Describe the principles of flame emission and atomic absorption spectroscopy and the clinical uses of each? [PC, MK]

References

1. *Clinical Chemistry Theory, Analysis and Correlation*. 2nd Edition Kaplan, L.A. and Pesce, A.J. Editors. Chapters 3 and 14.
2. *Tietz Textbook of Clinical Chemistry* 5th Edition. Burtis C.A. and Ashwood E.R. Editors. Chapter 3 and 4

Therapeutic Drug Monitoring - Kinetics

- List five reasons for performing drug analysis [PC, MK, SBP]
- Know the definition and Clinical utility of the following pharmacokinetic terms [PC, MK]
 - Volume of distribution
 - Half-life
 - Clearance
 - Loading dose
 - Steady state
 - Bioavailability
 - Therapeutic Concentration

- Peak
- Trough
- Review the pharmacokinetics of the following drugs through case review and problems [PC, MK]
 - Theophylline
 - Vancomycin
- Know the principles that are involved in the measurement of therapeutic drugs by: [PC, MK]
 - Fluorescent Polarization Immunoassays (FPIA)
 - Enzyme Multiplied Immunoassays (EMIT)
 - Cloned Enzyme Donor Immunoassay (CEDIA)
 - Kinetic Interaction of Microparticles in solution (KIMS)
 - High performance Liquid Chromatography (HPLC)
 - Gas Chromatography (GC)
- Know the advantages and disadvantages of measuring drug levels by immunoassay techniques compared to those that use HPLC or GC. [PC, MK]
- Know the circumstances wherein determinations of serum free drug levels are necessary [PC, MK, PBL, SBP]
- Describe the mechanism of toxicity, relevant serum drug concentrations and treatment for the overdose of salicylate and acetaminophen. [PC, MK, SBP]

References

1. Clinical Chemistry Theory, Analysis and Correlation. 2nd Edition Kaplan, L.A. and Pesce, A.J. Editors. Chapters 5, 6, and 11.
2. Tietz Textbook of Clinical Chemistry 5th Edition. Burtis C.A. and Ashwood E.R. Editors. Chapter 24
3. Friedman H and Greenblatt D.J. Rational Therapeutic Drug Monitoring. JAMA 256 (16): 2227-2233, 1986
4. Levy R.H. and Moreland T.A. Rationale for Monitoring Free Drug Levels. Clinical Pharmacokinetics 9 (suppl 1): 1-9, 1984.
5. Salgia, A.D.T. and Kosnik.S.D. When Acetaminophen use becomes toxic. Postgraduate Medicine 105: 81-90, 1999

Electrolyte/Acid-Base Balance

- Understand the general operation of the following: [PC, MK]
 - Flame photometer
 - Atomic absorption
 - Blood gas and pH instruments
 - Osmometer
 - Ion Specific Electrodes
- Understand the theoretical basis and application of ion-selective electrodes; understand the analytical difference between direct and indirect potentiometry, ion-specific electrodes on different instruments [PC, MK]
- Know the flame emission methods for Na⁺ and K⁺, the atomic absorption methods for Ca⁺⁺ and Mg⁺⁺, the major methods for Ca⁺⁺, phosphorus, Cl⁻, CO₂ and HCO₃⁻, the flame, atomic absorption and electrode methods for lithium. [PC, MK]

- Understand the analytical principles and the quality control for blood gas measurements. [PC, MK, PBL]
- Understand the pathophysiology of water regulation, extracellular fluid sodium content, ventilation and oxygenation. [PC, MK]
- Understand the pathophysiology of hyponatremia, hypernatremia, hypokalemia, hyperkalemia, hypercalcemia, hypophosphatemia, hypomagnesemia. [PC, MK]
- Understand the pathophysiology of acid-base disturbances. Be familiar with the tables and nomograms for acute and chronic disorders. [PC, MK]
- Know the causes of hypoxemia; learn to calculate the arterial/alveolar pO₂ difference. [PC, MK]
- Become familiar with the kinetics and affects of CO on oxygen saturation of hemoglobin. Know the principles of measuring saturated hemoglobin and methemoglobin by oximeter. [PC, MK]

References

1. *Clinical Chemistry Theory, Analysis and Correlation*. 2nd Edition Kaplan, L.A. and Pesce, A.J. Editors. Chapters 13, 20, and 21.
2. Cowell DC & McGrady PM: *Direct-measurement ion-selective electrodes: Analytical error in hyponatremia*. Clin. Chem. 1985;31:2009-2012.
3. Apple FS, Koch DD, Graves S, and Ladenson J: *Relationship between direct-potentiometric and flame-photometric measurement of sodium in blood*. Clin. Chem. 1982;28:1931-1935.
4. Ladenson.J.H. AppleF.S. and Koch D.D. *Misleading Hyponatremia Due to Hyperlipemia: A Method-dependent Error*. Annals Internal Med 95: (1981)

Renal Function

- Know the major methods for BUN and creatinine measurements.
- Know the relationship between BUN and creatinine in prerenal and renal azotemia.
- Know the relationship between serum creatinine and creatinine clearance and how methods (Jaffe vs. enzymatic creatinine) will affect these results.
- Know uric acid metabolism.
- Know the usual causes of hyperuricemia and their management.
- Discuss the ways of distinguishing prerenal, renal and post-renal failure.
- Know how to evaluate polyuria.

Reference

1. *Clinical Chemistry Theory, Analysis and Correlation*. 2nd Edition Kaplan, L.A. and Pesce, A.J. Editors. Chapters 22

Basic Enzymology, Liver Function Tests, and Gastrointestinal Disease

- Residents should have a working knowledge of the following basics:
 - The Michaelis-Menten equation.
 - Zero- and first-order kinetic portions of this equation.
 - Principles used in the measurement of serum or urine enzyme activity
 - Principles used in the measurement of an organic molecule's concentration using an enzymatic method.

- Know the factors involved in clinical interpretation of enzyme tests:
 - Tissue distribution, intracellular location, isozymic forms of the commonly measured serum enzymes.
 - Mechanisms of release and duration of release from damaged cells and tissues.
 - How rates of enzyme clearance from plasma effect serum enzyme concentrations.
 - Which enzymes rise primarily because of induced enzyme synthesis rather than release from damaged cells.
- Be familiar with the analytical methods used in the determination of enzyme activity, enzyme mass, and isoenzymes:
 - Electrophoretic
 - Spectrophotometric
 - Immunoenzymatic
- Know the normal anatomy, physiology and biochemistry of the liver:
 - Micro and macroanatomy of the liver and biliary tract.
 - Metabolism of carbohydrates, lipids and proteins in the liver.
 - Hormonal influences in the liver (e.g. insulin, glucagon).
 - Synthesis of specific plasma proteins.
 - Bile acid synthesis and excretion.
 - Urea synthesis and excretion.
 - Drug metabolism in the liver.
 - Metabolism and excretion of bilirubin.
- Understand the etiology and diagnosis of the major types of jaundice:
 - Pre-hepatic (hemolysis, ineffective erythropoiesis).
 - Hepatic (pre-microsomal, microsomal, post-microsomal, intrahepatic obstruction).
 - Post-hepatic (gallstones, stricture, carcinoma of the pancreas or biliary tree).
- Be familiar with the basic liver function tests:
 - Hepatocellular serum enzyme indicators (serum AST, ALT).
 - Obstructive jaundice indicators (serum conjugated bilirubin, alkaline phosphatase, gamma-glutamyltransferase).
- Know the macro and microanatomy of the upper and lower gastrointestinal tract and the specialized functions of each region.
- Understand the pathogenesis, diagnosis and management of acute and chronic pancreatitis.
- Know the difference between malabsorption and maldigestion, and how the laboratory is used to distinguish them.
- Understand the pathogenesis of diarrhea, the techniques for evaluation and the interpretation of stool testing.

References

1. *Clinical Chemistry Theory, Analysis and Correlation*. 2nd Edition Kaplan, L.A. and Pesce, A.J. Editors. Chapters 23, 25 and 26
2. *Tietz Textbook of Clinical Chemistry* 5th Edition. Burtis C.A. and Ashwood E.R. Editors. Chapter 20
3. Singh J. and Bowers L. *Serum Bilirubin Species: Analysis and Clinical Utility*. *Lab Medicine* 16: 597-601 (1985)

4. Shiao YF: *Clinical and laboratory approaches to evaluate diarrheal disorders*. CRC Crit Rev Clin Lab Sci 1987;25:43-69.
5. Wong, ECC. *The Clinical Chemistry Laboratory and Acute Pancreatitis*. Clin Chem 1993;39(2):234-243.
6. Moseley RH. *Evaluation of Abnormal Liver Function Test*. Medical Clinics of North America 1996;80(5):887-906.
7. Lott JA, Darmas BT. "Direct" and Total Bilirubin Test: Contemporary Problems. Clin Chem 1993;39(4):641-647.

Analytical Techniques and Instrumentation

Skill Level I

- Understand the principles and operational characteristics of analytical chemistry techniques, including photometric, electrochemical, enzymatic, electrophoretic, radiometric, chromatographic, mass spectrometric, and immunologic methods (see also the Immunology and Immunogenetics section). [PC, MK]
- Understand different types of random-access automated analyzers and the measurement principles employed in these systems, including spectrophotometric, ion-selective electrode, and electrochemical methods, as well as immunologic methods, including enzyme multiplied immunoassay technique, cloned enzyme donor immunoassay, fluorescence polarization immunoassay, microparticle enzyme immunoassay, electrochemiluminescence, ELISA, turbidimetry, and nephelometry. [PC, MK]
- Understand the basic biology of, and analytical methods for, determination of qualitative and quantitative changes in blood and fluid proteins and amino acids (enzymes, biomarkers, hormones, and cytokines), carbohydrates, lipids and lipoproteins, and clinically relevant small molecules (including metals, trace elements, and vitamins). [PC, MK, SBP]

Skill Level II

- Understand the principles of laboratory robotics and automation strategies. [PC, MK, PBL, ICS, PRO, SBP]
- Understand the general principles of assay calibration, QC, and the need for calibration verification. [PC, MK, PBL, ICS, PRO, SBP]
- Understand the causes of both positive and negative interferences as well as how to detect and avoid them. [PC, MK, PBL, ICS, PRO, SBP]
- Understand the techniques employed for specific extraction of analytes from biological fluids. [PC, MK, PBL, ICS, PRO, SBP]
- Identify factors influencing separation and resolution in electrophoresis and chromatography, including mechanism of separation and mobile/stationary phases. [PC, MK, PBL, ICS, PRO, SBP]
- For chromatography, understand the importance of internal standards, the relative retention time, carryover, and matrix effects. [PC, MK, PBL, ICS, PRO, SBP]
- For mass spectrometry, understand the pitfalls of ion suppression and the need for defining characteristic ion ratios for reliable compound identification. [PC, MK, PBL, ICS, PRO, SBP]

ORGAN-BASED BIOCHEMICAL PATHOPHYSIOLOGY

ASSESSMENT OF PULMONARY FUNCTION: BLOOD GASES AND OXYGEN SATURATION

Skill Level I

- Understand the principles of partial pressure of gases and the need for an O₂ carrier. Be able to describe the alveolar-arterial O₂ gradient and anion gap. [PC, MK, PBL, ICS, PRO, SBP]
- Know the pathophysiology of ketoacidosis and lactic acidosis. [PC, MK, PBL, ICS, PRO, SBP]
- Understand the significance of P₅₀, O₂ content, O₂ capacity, and O₂ saturation and be able to distinguish between O₂ saturation and P_{o2}. [PC, MK, PBL, ICS, PRO, SBP]
- Be able to describe the hemoglobin-oxygen dissociation curve and factors that affect the curve and P₅₀. [PC, MK, PBL, ICS, PRO, SBP]
- Understand the principles of integrated blood gas, electrolyte, and CO-oximetry systems. [PC, MK, PBL, ICS, PRO, SBP]

ACID-BASE CHEMISTRY, ELECTROLYTES, AND RELEVANT DISORDERS

Skill Level I

- Define the Henderson–Hasselbach equation. Be familiar with physiologic buffer systems and the role of respiratory and renal compensation. Understand categories of clinical disorders of acid–base balance (metabolic and respiratory acidosis, metabolic and respiratory alkalosis, mixed disorders). [PC, MK, PBL, ICS, PRO, SBP]
- Know the differential diagnosis of common electrolyte disorders. [PC, MK, PBL, ICS, PRO, SBP]

ASSESSMENT OF RENAL FUNCTION

Skill Level I

- Know the basic physiology of renal function. Understand the basic categories of renal diseases (e.g., pre-renal azotemia, obstructive azotemia, glomerulonephritis, acute vs chronic renal failure, uremic syndrome) and be familiar with the National Kidney Foundation practice guidelines for these conditions. Know the laboratory analytical methods (e.g., Jaffe vs creatinase) for the assessment of renal function (creatinine, urea nitrogen, glomerular filtration rate) and proteinuria. [PC, MK]
- Understand the concept of creatinine clearance, how it can be used to estimate glomerular filtration rate, and the various methods employed to measure it. Understand renal handling of electrolytes and key metabolites and the interpretation of urinary electrolyte measurements. [PC, MK]
- Understand the definition of osmolality, molecules in serum that contribute to osmolality, and calculation of osmolal gap as well as the principle of the osmometer. Understand the common pitfalls and sources of error during estimation of the osmolal gap (e.g., hyperproteinemia, hyperlipidemia, hypermagnesemia). Understand the differential diagnosis of an unexplained, increased osmolal gap, including alcohol or glycol ingestion, alcoholic or diabetic ketosis or ketoacidosis, and osmotherapy (e.g., mannitol or glycerol administration), among others. [PC, MK]. Understand the principles of fluid balance. [PC, MK]

CARDIAC BIOMARKERS FOR THE ASSESSMENT OF CORONARY ARTERY DISEASES

Skill Level I

- Know the current definition of myocardial infarction by the European Society of Cardiology/American College of Cardiology guidelines and the New York Heart Association classifications and understand the interaction of diagnostic modalities in its definition (electrocardiogram, laboratory testing, and imaging). [PC, MK, PBL, SBP]
- Know the diagnostic and prognostic significance as well as the limitations of current coronary artery disease biomarkers [troponins I and T, creatine kinase (CK-MB index and isoforms), and myoglobin]. [PC, MK, SBP]
- Know the pathophysiology and evaluation of congestive heart failure. Understand the markers of congestive heart failure [B-type natriuretic peptide (BNP) and N-terminal fragment of the BNP prohormone (NTproBNP)] and their biological and technical limitations. [PC, MK]
- Understand the utility of markers of inflammation in the evaluation of cardiac risk (e.g., homocysteine and C-reactive protein). [PC, MK]

ASSESSMENT OF LIVER AND BILIARY TRACT STATUS

Skill Level I

- Understand the dynamics and mechanisms of liver enzyme release and the clinical utility of measuring hepatic enzymes (e.g., aspartate aminotransferase, alanine aminotransferase, glutamyltransferase, alkaline phosphatase, and lactate dehydrogenase). [PC, MK, SBP]
- Know the biochemical assessment of liver function by nonenzyme analytes such as albumin, ammonia, bile acids, bilirubin, urea nitrogen, cholesterol, total protein, and triglycerides. [PC, MK]
- Understand bilirubin metabolism, fractionation of bilirubin (conjugated, unconjugated, bilirubin, direct vs indirect) and unique aspects of neonatal bilirubin. Understand the conditions and genetic defects that affect bilirubin metabolism, transport and clearance (e.g., Gilbert disease and Dubin–Johnson syndrome). [PC, MK]

ASSESSMENT OF THYROID FUNCTION

Skill Level I

- Understand the structure, biosynthesis, secretion, and metabolism of thyroid hormones [thyroxine (T4), triiodothyronine (T3), and reverse T3 (rT3)]. Know thyroid physiology and control of thyroid function [thyrotropin-releasing hormone (TRH) and thyrotropin (TSH)]. [PC, MK]
- Know the common causes of hypothyroidism and hyperthyroidism. [PC, MK]
- Know the laboratory tests for evaluation of thyroid disorders and be able to interpret these analytes in their clinical context with an appreciation for the euthyroid sick state. [PC, MK]
- Be familiar with current analytical methodologies for thyroid testing (TSH methods: 1st-, 2nd-, and 3rd generation assays; isotopic and nonisotopic methods; T4; free T3 methods; T-uptake methods; TSH suppression and stimulation tests). [PC, MK]

ASSESSMENT OF PITUITARY FUNCTION

Skill Level II

- Understand the physiological action, biochemistry, and regulation of anterior pituitary hormones [adrenocorticotrophic hormone (ACTH), growth hormone (GH), prolactin (PRL), luteinizing hormone (LH), follicle-stimulating hormone (FSH)] and of posterior pituitary hormones [antidiuretic hormone (ADH) and oxytocin]. [PC, MK]
- Understand endocrine tests of hypothalamic-pituitary function (cosyntropin test/rapid ACTH stimulation test, insulin hypoglycemia test, metyrapone test, levo-dopa test, arginine infusion test, glucose-GH suppression test, TRH test, gonadotropin-releasing hormone (GnRH) test, clomiphene test, corticotropin-releasing hormone (CRH) test, gonadotropin-releasing hormone test, water deprivation test, saline infusion test, and water loading test). Understand the pathophysiology of disorders of the pituitary. [PC, MK]

ASSESSMENT OF ADRENAL FUNCTION

Skill Level I

- Understand the physiological action, biochemistry, biosynthesis, chemical structure, and metabolism of glucocorticoids and mineralocorticoids. [PC, MK]
- Understand the physiological regulation of the renin-angiotensin-aldosterone system. [PC, MK]
- Understand clinical conditions associated with excess and deficiency of adrenal cortex hormones. Understand testing of the functional status of the adrenal cortex [basal values vs stimulation tests and suppression tests, circadian rhythm of corticosteroids, morning ACTH, cortisol (urinary, random, and free), rapid ACTH cortisol stimulation test, multiday ACTH stimulation, metyrapone stimulation, CRH stimulation, and quantitative serum and urinary steroid hormone panels]. [PC, MK]
- Understand the synthesis and metabolism of biogenic amines, including catecholamines and serotonin. [PC, MK]
- Be familiar with the strengths and weaknesses of tests available for evaluation of disorders of the adrenal medulla, such as pheochromocytoma or neuroblastoma. [PC, MK]

ASSESSMENT OF REPRODUCTIVE FUNCTION, PREGNANCY, AND PRENATAL TESTING

Skill Level II

- Understand the role of sex hormones in reproduction and the evaluation of pregnancy and reproductive dysfunction, such as menstrual disorders and infertility. [PC, MK]
- Understand the importance of demographic data and biochemical assessment in prenatal testing for fetal defects. [PC, MK]

ASSESSMENT OF GASTRIC, PANCREATIC, AND INTESTINAL FUNCTION

Skill Level I

- Understand the clinical manifestations of gastric, pancreatic, and intestinal disease and diagnostic methodologies such as the breath tests for *Helicobacter pylori*, fecal occult blood, lipase, and

amylase (e.g., fractionation of amylase; pancreatic vs salivary and amylase/creatinine clearance ratio). [PC, MK]

- Appreciate the role of gastrointestinal hormones and enzymes in digestion and the evaluation of malabsorption and diarrheal syndromes. [PC, MK]

ASSESSMENT OF GLUCOSE AND EVALUATION OF DIABETES MELLITUS

Skill Level I

- Understand the metabolism of carbohydrates (insulin, C-peptide, and other regulatory hormones) and be familiar with the American Diabetes Association (ADA) definitions of impaired fasting glucose, impaired glucose tolerance, type 1 and type 2 diabetes mellitus, criteria for diabetic ketoacidosis and hyperosmolar hyperglycemic state, as well as gestational diabetes. Understand the underlying pathophysiology of different forms of diabetes. [PC, MK]
- Understand the diagnosis and laboratory assessment of diabetes (blood glucose, oral glucose tolerance test, hemoglobin A1c, fructosamine, and urinary microalbumin) and its complications. [PC, MK]
- Understand the diagnosis and evaluation of hypoglycemia. [PC, MK]

ASSESSMENT OF MINERAL AND BONE METABOLISM

Skill Level I

- Understand the biochemistry and physiology of calcium, phosphate, and magnesium. [PC, MK]
- Know the hormones that regulate mineral metabolism [parathyroid hormone (PTH), calcitonin, and vitamin D] as well as parathyroid hormone-related protein (PTHrP). Understand various PTH assays, including bioactive PTH and intraoperative PTH. [PC, MK]
- Know the pathophysiology of metabolic bone diseases such as osteoporosis, osteomalacia, and Paget disease. [PC, MK]

ASSESSMENT OF PORPHYRINS AND DISORDERS OF PORPHYRIN METABOLISM

Skill Level II

- Understand the biochemistry of heme and porphyrins. [PC, MK]
- Understand the porphyrias and be able to consult on the selection and interpretation of both screening and diagnostic tests for each disorder. [PC, MK]

TUMOR BIOMARKERS

Skill Level I

- Be familiar with the definition, classification, biochemistry, and distribution of tumor markers, both protein and carbohydrate, including, but not limited to, prostate-specific antigen, calcitonin, human chorionic gonadotropin, alpha-fetoprotein, carcinoembryonic antigen, CA 15-3, CA 125, and CA 19-9.

- Know the limitations of laboratory assessment of various tumor markers and the factors affecting the results of different analytical procedures. [PC, MK]
- Understand the conceptual basis of assays used to screen for malignancy, including Bayes theorem. [PC, MK]

Skill Level II

- Be familiar with ongoing efforts to identify proteomic patterns for cancer detection. [PC, MK]

ASSESSMENT OF FETAL LUNG MATURITY

Skill Level I

- Understand the physiology of respiratory distress syndrome. [PC, MK]
- Understand fetal lung maturity testing [lecithin/sphingomyelin (L/S) ratio, phosphatidyl glycerol (PG), foam stability index (FSI or shake test), fluorescence polarization, and counting of lamellar bodies]. Understand the biochemistry, physiology, and diagnostic performance of fetal fibronectin. [PC, MK]
- Understand the biochemistry, physiology, and diagnostic performance of fetal fibronectin. [PC, MK]

TRACE ELEMENT ASSESSMENT

Skill Level II

- Understand the biochemistry, physiology, and metabolism of trace elements (iron, magnesium, zinc, copper, selenium, cobalt, and fluoride). Know the biochemistry and clinical significance of metal-binding proteins such as transferrin, ferritin, and ceruloplasmin. [PC, MK]
- Know the clinical assessments of trace elements (serum iron, iron-binding capacity, transferrin, transferrin saturation, serum ferritin, zinc protoporphyrin, and serum ceruloplasmin). [PC, MK]

VITAMIN ASSESSMENT

Skill Level I

- Know the definition and classification of vitamins: fat-soluble vitamins (A, D, E, and K) and water-soluble vitamins [B1, B2, B6, B12 (cobalamin), C, niacin, nicotinamide, folic acid, biotin, and pantothenic acid]. [PC, MK]
- Understand the clinical disorders associated with the deficiency as well as toxicity of vitamins. [PC, MK]

CHOLESTEROL AND LIPID ASSESSMENT

Skill Level I

- Understand the chemical structures, biosynthesis, classification, function, and metabolism of lipids

and lipoproteins. [PC, MK]

- Understand the Fredrickson classification and the National Cholesterol Education Program Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (ATP III) classification of hyperlipidemia. [PC, MK]
- Understand the pathophysiology of lipid disorders. [PC, MK]
- Know the principles of analytical techniques for laboratory assessment of lipids. [PC, MK]

SERUM AND FLUID PROTEIN AND AMINO ACID ASSESSMENT

Skill Level I

- Understand the principles of protein analysis in body fluids (e.g., Kjeldahl and Biuret methods, refractometry, and qualitative dipstick). [PC, MK]
- Know the principles of serum, urine, and cerebrospinal fluid (CSF) protein electrophoresis. Recognize key patterns of dysproteinemias and monoclonal gammopathies (see also the Immunology and Immunogenetics section). [PC, MK]
- Understand approaches for distinguishing transudates vs exudates in fluids. [PC, MK]
- Know the analytical methods involved in genetic and acquired aminoacidurias and the current guidelines for screening neonates for these disorders. [PC, MK]

Skill Level II

- Understand the emerging technology of proteomics and its potential applications in clinical diagnostics. [PC, MK, SBP]

CLINICAL ENZYME KINETICS

Skill Level II

- Understand the principles of enzyme kinetics (e.g., Michaelis–Menten equation, concepts of K_m , V_{max} , and zero-order and first-order kinetics) and clinical enzymology, including isoenzymes, isoforms, and tissue distribution. [PC, MK,]
- Be familiar with the principles of analytical enzymology and know the concepts of activity vs mass assays (e.g., CK vs CK-MB assays). [PC, MK]

PEDIATRIC BIOCHEMISTRY

Skill Level II

- Understand the differences and unique aspects of pediatric and neonatal chemistry, including reference ranges. [PC, MK]

THERAPEUTIC DRUG MONITORING AND TOXICOLOGY

PHARMACOKINETICS

Skill Level I

- Understand the concepts of drug absorption, bioavailability, volume of distribution, and distribution phases (multicompartment models) and be able to predict peak drug levels. [PC, MK]
- Understand the differences between first- and zero-order kinetics of drug metabolism/elimination. [PC, MK]
- Understand the concepts of drug clearance, half-life, and the exponential rate constant. Be able to calculate steady-state drug levels and estimate peak and trough drug levels throughout a dosing cycle. [PC, MK]
- Understand the origin and consequences of nonlinear or zero-order pharmacokinetics on drug pharmacokinetics. [PC, MK]
- Understand the differences between measurement of total, free, and protein-bound drug levels and be able to assess the consequences of altered protein binding on pharmacokinetics and therapeutic drug monitoring. [PC, MK]

DRUG METABOLISM

Skill Level I

- Understand the differences between phase I and phase II drug metabolism reactions. [PC, MK]
- Appreciate the various consequences of competing metabolic pathways to modulate both the efficacy and toxicity of administered medications. [PC, MK]
- Appreciate the frequent interindividual variability of drug-metabolizing enzymes and its impact on the variability of drug response. [PC, MK]

PHARMACODYNAMICS

Skill Level I

- Understand the general mechanisms of drug action, including drug-receptor interactions, modulation of metabolic pathways, and nucleic acid biochemistry. [PC, MK]
- Understand how reference ranges for therapeutic drug monitoring are established and understand the varying utility of trough, peak, or steady-state drug levels for monitoring both drug efficacy and toxicity. Understand the therapeutic index. [PC, MK]

THERAPEUTIC DRUG MONITORING OF SPECIFIC DRUG CLASSES

Skill Level I

- Understand the principles and practice of therapeutic drug monitoring of antidepressants, mood stabilizers, and antipsychotics; anticonvulsants; cardioactive drugs; bronchodilators; antibiotics; and immunosuppressants. [PC, MK]
- Understand the relative significance of peak and trough levels for monitoring of these drug classes.

[PC, MK]

TOXICOLOGIC SYNDROMES

Skill Level II

- Understand the pathophysiological basis and be able to recognize the five major toxicologic syndromes (cholinergic, anticholinergic, sympathomimetic, opiate, and sedative-hypnotic). [PC, MK]
- Be able to formulate a toxicologic differential diagnosis and be able to design a clinical laboratory testing protocol for each of the syndromes. [PC, MK]
- Understand the basic therapeutic approach to each syndrome. [PC, MK]

LABORATORY EVALUATION AND MANAGEMENT OF OVERDOSED OR POISONED PATIENTS

Skill Level I

- Be familiar with the National Academy of Clinical Biochemistry guidelines for Emergency Toxicology. [PC, MK, PBL, SBP]
- Understand the important differences between urine and blood (including serum and plasma) for monitoring and detection of drugs/xenobiotics. [PC, MK]
- Understand how to design and implement standardized STAT panels of laboratory tests for evaluation of overdosed/poisoned patients. [PC, MK, PBL]
- Understand the limitations of drug “screening” protocols and be able to consult on the design of more extensive drug-testing protocols to supplement the standard STAT panels. [PC, MK, PBL]

Skill Level II

- Understand the toxicologic profiles of specific agents, including acetaminophen, salicylates, alcohols and glycols, barbiturates, tricyclic antidepressants, carbon monoxide, organophosphates and carbamate, digoxin, lead, iron, and cyanide. [PC, MK]
- Understand the general supportive measures, the role of alkalization, the importance of specific antidotes, and the variable efficacy of exchange transfusion, hemodialysis, plasmapheresis, and charcoal hemoperfusion of blood in the management of specific agents. [PC, MK]

LABORATORY EVALUATION OF DRUGS OF ABUSE

Skill Level I

- Understand the generic methodology of the routine immunoassays for drugs-of-abuse testing. [PC, MK]
- Be familiar with the major drugs of abuse and their clinical manifestations. [PC, MK]
- Know the common methods for adulteration of urine and the techniques available in the laboratory to detect them. [PC, MK]

Skill Level II

- Know the specific reactivities of each immunoassay, the standard cutoffs for detection, and whether the assay is capable of detecting the parent drug, its metabolites, or both. Know which members of a drug class are poorly or well detected by a generic immunoassay (e.g., oxycodone detection by the opiate immunoassay) and know the common causes of false positives due to cross-reactivities. [PC, MK]

References

1. American College of Cardiology. Myocardial Infarction Redefined—A Consensus Document of The Joint European Society of Cardiology/American College of Cardiology Committee for the Redefinition of Myocardial Infarction. http://www.acc.org/clinical/consensus/mi_redefined/.
2. American Diabetes Association Clinical Practice Guidelines. <http://www.diabetes.org/for-health-professionals-and-scientists/cpr.jsp>.
3. American Society for Clinical Oncology. 2000 Update of Recommendations for the Use of Tumor Markers in Breast and Colorectal Cancer. http://www.asco.org/ac/1,1003,_12-002130,00.asp.
4. Burtis CA, Ashwood EA, Bruns DE, eds. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics, 4th ed. St. Louis, MO: Elsevier Saunders, 2005. Kaplan LA, Pesce A, Kazmierczak S, eds. Clinical Chemistry: Theory, Analysis, Correlation, 4th ed. St. Louis, MO: CV Mosby, 2003. National Academy of Clinical Biochemistry. NACB Laboratory Practice Guidelines. <http://www.nacb.org/Impg/main.stm>.
5. National Heart, Lung, and Blood Institute, National Institutes of Health. Third Report of the Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). <http://www.nhlbi.nih.gov/guidelines/cholesterol/>

POINT-OF-CARE TESTING

Point-of-care testing (POCT) occurs across all disciplines, but because there are important common issues in its clinical use, it has been made a separate, distinct part of the curriculum in this document. The POCT curriculum may be taught in a concentrated fashion in any of the subdisciplines, depending on what is most appropriate to the institution.

Skill Level I

- Understand definitions of POC and waived testing. [PC, MK, PBL, SBP]
- Understand the range of analytes available in devices used at the point of care. [PC, MK]
- Understand the impact of POCT on clinical care, in terms of volume of tests performed, turnaround time, and the utilization of common POC tests (e.g., bedside glucose, rapid strep, and activated clotting time). [PC, MK, SBP]
- Understand the differences in reference ranges and test performance characteristics between POCT and central laboratory assays. [PC, MK, SBP]
- Appreciate the difference between POCT and near-patient testing and the personnel resources that best accomplish quality testing in these distinct situations. [PC, MK, PBL, SBP]

Skill Level II

- Understand the principles of performance for common POC tests such as glucose, urine drugs of abuse, rapid microbial antigen, and activated clotting time. Understand the performance characteristics of the common POC devices used for these tests. Know the issues surrounding specimen collection and preparation and the limitations and interpretation of results. [PC, MK, PBL, SBP]
- Understand the quality principles of POCT, including QC of unit-use testing devices, and proficiency/competency assessment of testing with multiple sites and operators and diverse testing personnel. [PC, MK, SBP]
- Understand the regulatory, administrative, and operational context of POC, waived, and home testing. [PC, MK, PBL, SBP]
- Be able to assess economic, workflow, human resources, and clinical factors driving the decision to perform testing at the point of care vs the central laboratory. [PC, MK, PBL, SBP]
- Know the most common test systems used in POCT. [PC, MK]
- Develop an appreciation of emerging POCT technologies, including microelectrical mechanical systems (MEMS) and other biosensor techniques, and their potential clinical applicability. [PC, MK, PBL, SBP]

POCT Reference Materials:

1. Joint Commission on Accreditation of Healthcare Organizations. *Quality Point of Care Testing: A Joint Commission Handbook*. Oakbrook Terrace, IL: Joint Commission on Accreditation of Healthcare Organizations, 1999.
2. Price CP, St John A. *Point of care testing*. In: Burtis CA, Ashwood EA, Bruns DE, eds. *Tietz Textbook of Clinical Chemistry and Molecular Diagnostics*, 4th ed. St. Louis, MO: Elsevier Saunders, 2005:299–320.
3. Price CP, St John A, Hicks JM. *Point of Care Testing*, 2nd ed. Washington: AACC Press, 2004.
4. Threatte GA. Physician office laboratories. In: Henry JB, ed. *Clinical Diagnosis and Management by Laboratory Methods*, 20th ed. Philadelphia: WB Saunders, 2001.

PGY SPECIFIC GOALS

PGY 1 GOALS: By the end of the first year:

- The resident should achieve competency in Skill Level 1

PGY 2 GOALS: By the end of the second year:

- The resident must achieve competency in Chemistry Skill Level 1 and most of 2
- Residents should demonstrate the ability to do method validation, reference intervals and test utilization
- Residents should be able to demonstrate the ability to perform laboratory accreditation and prepare the laboratory for accreditation.

PGY 3 GOALS: By the end of the third year:

- The resident should achieve competency in Skill Level 1

PGY 4 GOALS:

- The resident should be competent in all Chemistry Skill Levels 1 and 2

GENERAL - Throughout the entire duration of residency training the resident must also demonstrate the specific skills for Professionalism, Practice--Based Learning and Improvement, Interpersonal and Communication Skills and System-Based Learning as listed on pages 16 and 17.

Guidelines for Patient Care and Specimen Handling

Specimen handling in the laboratories is the direct responsibility of the laboratory technologists. Resident decision making in the laboratory is under the direct supervision of the teaching faculty at their assigned site. The on service teaching faculty members are physically present during standard operating hours; faculty members not physically present are rapidly available by phone or pager. No diagnosis is communicated to the clinicians before a faculty member has evaluated the case.

Resident Opportunities to Function as Consultant to Other Physicians

Residents have the responsibility, under faculty supervision, of discussing the interpretive consultative reports and laboratory results with appropriate members of the clinical/surgical teams. Through their discussions with the clinical team members, the residents have the opportunity to directly impact patient care.

On-call Duties

During this rotation the residents will on average have one out of every seven days free of hospital duties. Due to the at-home nature of call and the limited number of emergencies, the call duties are constructed in the following fashion. The resident who is assigned to Transfusion Medicine for the month, is responsible for Clinical Pathology Call from Monday to Friday 8 a.m. to 5 p.m. The remainder of the call time is divided between all residents who are on a Clinical pathology rotation, who have previously rotated through Transfusion Medicine. The Chief Residents will make out the clinical pathology call schedule and make sure no resident is on call for more than 6 days in a row. While on-call, residents are supervised by a Senior Staff Member, who is available at all times, either via their office phone, pager or home phone.

Scholarly Activities / Research Activities

Residents are provided with continuous access to literature searching programs. The expectation is that residents will utilize the medical literature to find up-to-date information on their cases. It is further expected that residents will utilize the medical literature to help provide our clinical colleagues with up-to-date knowledge related to their cases. During sign-out and discussion of cases, the residents and teaching faculty discuss each case from a scholarly perspective. The resident and faculty discuss both normal and abnormal physiology and the mechanisms potentially responsible for creating the clinical findings observed. It is hoped that these discussions will foster an interest in research and the development of new knowledge. Residents are not only encouraged to become involved in research but technical, logistic, and economic support for such activities is available.

Resident Evaluation

Residents will be evaluated primarily on the performance of daily activities, particularly on evidence of their assimilation of the material present and their ability to apply it in a practical situation, namely, case

interpretation. Also, they will be evaluated on participation in required meetings, conferences, and their presentations. The residents are provided with continuous feedback on their performance during the rotation. In general, only deficiencies are noted in writing. Residents are evaluated on their demonstrated ability to provide informative consultation to the clinical service teams, their medical knowledge, their application of this knowledge to efficient/quality patient care, and their diagnostic, technical and observational skills. Residents are also evaluated on their interpersonal skills, professional attitudes, reliability, and ethics with members of the teaching faculty, peers, laboratory staff, and clinicians. They are further evaluated on their initiative in fostering quality patient care and use of the medical literature, as it relates to their assigned cases. Their timely completion of assigned interpretive reports is another component of the evaluation. Residents on probation receive a written mid-rotation evaluation.

HEMATOPATHOLOGY

The hematopathology rotation (three months) is designed to provide residents the opportunity to acquire comprehensive knowledge about hematologic diseases, acquire morphologic skills necessary for diagnosing hematologic diseases and develop effective consultative skills that aid the clinician in disease diagnosis.

GOALS AND OBJECTIVES

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal: <i>Residents must demonstrate a satisfactory level of diagnostic competence and the ability to provide appropriate and effective consultation in the context of hematopathology services</i>		
Objectives:	Learning Activities	Evaluation Activities
Gather essential and accurate information about patients using all relevant available modalities.	FSO,DSP, RM, IC	RR,DO, GR/FE
Act as a skilled consultant to other clinicians to develop a diagnostic plan based on specific clinical questions and relevant clinical and pathologic information. This should be accomplished both in the patient-specific setting and the broader context of developing appropriate clinical pathway algorithms for diagnosis.	DL, FSO, DSP, RM, IC	DO, GR/FE, SE, IWE
Gain knowledge and technical skills to recognize, interpret, and explain pathologic processes in the clinical practice of hematopathology.	FSO,DL,JC, DSP, RM	DO, GR/FE, SE, IWE
Consult as part of a multidisciplinary healthcare team in developing a therapeutic plan that includes laboratory monitoring of efficacy and toxicity.	DL,JC, DSP, RM, IC	DO, GR/FE, IWE
Provide expert consultation on the interpretation and follow-up of unusual or unexpected test results.	FSO,DL, DSP, RM	DO, GR/FE, SE, IWE
Consult as a clinical expert in laboratory medicine at multidisciplinary conferences.	DSP, RM, IC	DO, GR/FE, PCL
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Demonstrate knowledge about established and evolving biomedical, clinical and cognitive (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to hematopathology</i>		
Objectives:	Learning Activities	Evaluation Activities
Be able to use all relevant information resources to acquire and evaluate evidence-based information. Demonstrate proficiency in evaluating and presenting findings from appropriate peer-reviewed journals.	FSO,DL, JC, DSP, RM, IC	RR, DO, GR/FE, SE, IWE
Develop and maintain a knowledge base in the basic and clinical sciences necessary for effective consultation in hematopathology..	DL, JC, DSP, IC	RR, DO, GR/FE, SE, IWE
Demonstrate sufficient knowledge to determine clinically optimal yet cost-effective testing and laboratory-based therapeutic strategies,	DL, JC, RM, IC,FSO	RR, DO, GR/FE, SE,

including issues of turnaround time, test menu construction, and in-house referral diagnostic testing.		IWE
Employ mathematics and statistics as appropriate to laboratory testing; understand and implement quality control (QC) and quality assurance procedures as required.	DL, JC, RM	DO, CL, GR/FE, SE, IWE
Recognize the unique aspects of hematopathology practice as modified by patient age and other patient population characteristics, especially aspects of pediatric and geriatric practice.	DL, JC, DSP, RM, IC	RR, DO, GR/FE, SE, IWE
Demonstrate awareness and understanding of general and test-specific standards for method development and evaluation, such as those promulgated by the Clinical Laboratory Standards Institute (CLSI; formerly NCCLS), CAP, and similar organizations.	DL, RM, LI	DO, GR/FE, SE, IWE
Demonstrate awareness and understanding of proficiency programs, such as those provided by CAP and similar organizations.	DL, RM, LI, OT	DO, GR/FE, SE, IWE
Demonstrate knowledge of the principles of clinical research design, implementation, and interpretation. Understand the various levels of evidence in medicine and their translation into evidence-based practice.	JC, DSP, RM, P	DO, GR/FE, SE, IWE
Be able to design a study that can be used to validate methodologies and parameters of clinical utility for the implementation and continuing use of new evidence-based analytes in the local setting.	DL, JC, DSP, RM, LI, P	DO, GR/FE, SE, IWE
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise and assimilate scientific evidence and improve their patient care practices.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to critically assess the scientific literature.	JC, RM	DO, GR/FE
Demonstrate knowledge of evidence-based medicine and apply its principles in practice.	JC, RM	DO, GR/FE
Use multiple sources, including information technology, to optimize lifelong learning and support patient care decisions.	JC, RM, OT	DO, GR/FE
Develop personally effective strategies for the identification and remediation of gaps in medical knowledge needed for effective practice.	DSP, RM	DO, GR/FE, SE, IWE
Use laboratory problems and clinical inquiries to identify process improvements to increase patient safety.	RM, IC	DO, GR/FE
Demonstrate knowledge of how to establish continuing competency assessment for pathologists as well as for laboratory personnel.	RM, LI	DO, GR/FE
Use proficiency programs to improve laboratory practices.	RM, LI, OT	DO, GR/FE
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with other health care providers, patients and patients' families.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to provide direct communication to the referring physician or appropriate clinical personnel when interpretation of a laboratory assay reveals an urgent, critical, or	DSP, RM	DO, GR/FE

unexpected finding and document this communication in an appropriate fashion.		
Conduct both individual consultations and presentations at multidisciplinary conferences that are focused, clear, and concise.	RM, IC	DO, GR/FE
Demonstrate the ability to communicate the vision of the hematopathology service role to other clinicians as well as to other healthcare personnel and administrators to develop clinically advantageous and cost-effective strategies.	RM, IC	DO, GR/FE
Choose effective modes of communication (listening, nonverbal, explanatory, questioning) and mechanisms of communication (face-to-face, telephone, e-mail, written), as appropriate.	RM, IC	RR, DO, GR/FE
Demonstrate skills in obtaining informed consent, including effective communication to patients about procedures, alternative approaches, and possible complications of laboratory-based patient care diagnostic and therapeutic activities, such as those related to hematopathology.	DSP, RM	DO, GR/FE
Demonstrate skills in educating colleagues and other healthcare professionals: (1) demonstrate the ability to help other residents obtain proficiency in laboratory medicine; (2) demonstrate the ability to work well with technologists and to present laboratory medicine concepts to them effectively in continuing education settings and in the day-to-day laboratory environment; (3) demonstrate the ability to educate non-pathology clinicians and other healthcare workers, including pharmacists, nurses, residents, medical students, and others, about topics such as the fundamental principles of pathophysiology underlying test design/ interpretation and the approach to choosing and interpreting laboratory tests; (4) demonstrate an understanding of the principles one must follow when educating other practicing pathologists through publications or seminars on new testing and therapeutic strategies, research discoveries, and other cutting-edge professional knowledge.	JC, RM, IC	DO, GR/FE
CORE COMPETENCY: PROFESSIONALISM		
Goal: <i>Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate compassion: be understanding and respectful of patients, their families, and the staff and physicians caring for them.	DSP, RM, IC	DO, GR/FE
Interact with others without discriminating on the basis of religious, ethnic, sexual, or educational differences.	DSP, RM, IC	DO, GR/FE
Demonstrate positive work habits, including punctuality, dependability, and professional appearance.	RM	DO, GR/FE
Demonstrate a responsiveness to the needs of patients and society that supersedes self-interest.	DSP, RM	DO, GR/FE
Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.	DL, DSP, RM, IC	DO, GR/FE
Demonstrate knowledge of regulatory issues pertaining to the use of human subjects in research.	DL, OT	GR/FE, SE
Demonstrate a commitment to excellence and ongoing professional	RM	DO, GR/FE

development.		
Demonstrate interpersonal skills in functioning as a member of a multidisciplinary healthcare team	DSP, RM, IC	DO, GR/FE
CORE COMPETENCY: SYSTEM-BASED PRACTICE		
Goal: <i>Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide pathology services that are of optimal value</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate understanding of the role of the hematopathology laboratory in the healthcare system.	DL, LI, IC	DO, GR/FE
Demonstrate the ability to design resource-effective diagnostic plans based on knowledge of best practices in collaboration with other clinicians.	RM	DO, GR/FE, SE, IWE
Demonstrate knowledge of basic healthcare reimbursement methods.	DL	DO, GR/FE, SE, IWE
Demonstrate knowledge of the laboratory regulatory environment, including licensing authorities; federal, state, and local public health rules and regulations; regulatory agencies such as the Centers for Medicare and Medicaid Services and the US Food and Drug Administration; and accrediting agencies such as The Joint Commission (TJC), CAP, and the ACGME.	DL, FSO, LI, OT	DO, CL, GR/FE, SE, IWE
Understand and implement policies to continually improve patient safety as they relate to the hematopathology laboratory.	FSO, RM, LI, P	DO, GR/FE

ADDITIONAL SPECIFIC OBJECTIVES IN HEMATOPATHOLOGY

Skill Level I

- Understand the clinical indications for bone marrow evaluation. [PC, MK, SBP]
- Understand the diagnostic limitations of bone marrow aspirate and biopsy sections. [PC, MK]
- Learn technical aspects of performing and analyzing bone marrow aspiration and biopsy. Encourage performance of bone marrow aspiration and biopsy. [PC, MK]
- Identify sites for the acquisition of bone marrow in children and adults. [PC, MK]
- Learn handling, preparation and interpretation of bone marrow specimens, including special stains (e.g., silver stain and Prussian blue). [PC, MK]
- Correctly assess bone marrow cellularity and M-E ratio. [PC, MK]
- Recognize effects of chemotherapy and growth factor stimulation on blood and bone marrow. [PC, MK]
- Understand common drug effects leading to benign cytopenias. [PC, MK]
- Correctly identify storage iron and assess adequacy. [PC, MK]
- Understand hematopoiesis and distinguish the stages for cells in each hematopoietic cell series.
- Know the major hematopoietic regulatory factors/cytokines. [PC, MK]
- Recognize normal WBC, RBC, and platelet maturation as well as cellular dysplasia. [PC, MK]

- Understand diagnostic principles involved in distinguishing transient myeloproliferative syndromes (such as associated with Down syndrome), transient cytopenias, and transient lymphocytoses from clonal disorders. [PC, MK]

Skill Level II

- Understand the pathophysiology, clinical findings, etiology, and expected bone marrow morphology for vitamin deficiency anemias, hemoglobinopathies, thalassemias, aplastic anemia, red cell aplasia, leukemias, myeloproliferative disorders, myelodysplastic syndromes, plasma cell dyscrasias, and mast cell diseases. [PC, MK]
- Integrate morphology, cytochemistry, immunophenotype, and molecular and cytogenetics in the differential diagnosis of acute and chronic leukemia, lymphoma, and myeloproliferative and myelodysplastic diseases. [PC, MK]
- Integrate peripheral blood smear and bone marrow findings and render a preliminary diagnosis. [PC, MK]
- Know the post-therapy findings seen after treatment for leukemia and the temporal relationships to marrow regeneration post therapy. [PC, MK]
- Recognize the bone marrow manifestations of infections (e.g., viral, fungal, and hemophagocytic syndromes). [PC, MK]
- Recognize the bone marrow manifestations of noninfectious systemic diseases (e.g., alcoholism, collagen vascular disease, and nonhematologic malignancies). [PC, MK]

References:

1. Beutler E, Lichtman M, Collet B, Kipps T, Seligson U, eds. *William's Hematology*, 6th ed. New York: McGraw-Hill, 2001.
2. Carr JH, Rodak BF. *Clinical Hematology Atlas*. Philadelphia: WB Saunders, 1999.
3. Foucar K. *Bone Marrow Pathology*, 2nd ed. Chicago, IL: American Society of Clinical Pathology, 2001.
4. Glassy EF, ed. *Color Atlas of Hematology: An Illustrated Field Guide Based on Proficiency Testing*. Chicago, IL: American Society of Clinical Pathology, 1998.
5. Hoffman R, Benz E, Shattil S, Furie B, Cohen H. *Hematology: Basic Principles and Practice*, 4th ed. New York: Churchill Livingstone, 2004.
6. Jaffee ES, Harris NL, Stein H, Vardiman JW, eds. *World Health Organization Classification of Tumors. Pathogenesis and Genetics of Tumors of Hematopoietic and Lymphoid Tissues*. Lyon, France: IARC Press, 2001.

PGY SPECIFIC GOALS FOR HEMATOPATHOLGY AND WET HEME/FLOW CYTOMETRY (See next rotations description)

PGY 1 GOALS: By the end of the first year:

- The resident demonstrates the ability to work up properly a bone marrow biopsy. This includes correct identification of cells with appropriate cell count, write up and differential diagnosis
- Demonstrates basic skills in hematologic correlation through special coagulation test consulting

- Demonstrate basic skills with interpretation of ancillary data (flow cytometry, cytogenetics, molecular genetics, immunohistochemistry)

PGY 2 GOALS: By the end of the second year:

- Same skills as Year 1, but be competent in some Skill Level 2 hematology
- The resident should have familiarity with the clinical presentation and work-up of patients with coagulation problems
- The resident should demonstrate the ability to synthesize flow cytometry, cytogenetics, and molecular studies with hematology findings
- The resident should develop competency for Skill Level 1 in Flow Cytometry

PGY 3 GOALS: By the end of the third year:

- The resident demonstrates the ability to work up properly a bone marrow biopsy and aspirate, including correct identification of cells, appropriate cell count, write up and differential diagnosis
- Demonstrates basic skills in hematologic correlation through special coagulation test consulting.
- Demonstrates basic skills with interpretation of ancillary data (flow cytometry, cytogenetics, molecular genetics, immunohistochemistry)

PGY 4 GOALS:

- The resident should be competent in all Hematology and Flow Cytometry Skill Levels 1 and 2

GENERAL - Throughout the entire duration of residency training the resident must also demonstrate the specific skills for Professionalism, Practice--Based Learning and Improvement, Interpersonal and Communication Skills and System-Based Learning as listed on pages 16 and 17.

TRAINEE RESPONSIBILITIES

Hematopathology (i.e. Bone Marrow Pathology):

- Daily sign-out of bone marrow aspirations and biopsies:
 - Sign-out case with Pathology staff
 - Prior to sign out:
 - Organize all slides for an individual case (blood smear, marrow aspirate smears, core biopsy, cell block, special stains) on a single slide tray dedicated for that case
 - Obtain all pertinent information for each case, including previous histologic material, laboratory data, and clinical data
 - Write-up each case and establish a diagnosis
- Maintain an organized marrow sign-out room.
- Attend the weekly Internal Medicine Hematology Conference and present the microscopic portion of selected clinical cases (each Thurs., 8:30 am)
- Attend teaching conferences held by Pathology staff (e.g. CP Core Conference, AP Core Conference, etc.)
- Function as a consultant to resolve questions asked by lab personnel and clinicians; be available at all times by pager

TRAINEE EVALUATION CRITERIA

- The trainee must show active and effective participation in the laboratory
- The trainee must demonstrate knowledge about the clinical, pathologic, and diagnostic features of hematologic disease
- The trainee must demonstrate skill in the microscopic analysis of neoplastic and benign hematologic disease
- The trainee must demonstrate knowledge about the performance and interpretation of hematology tests.
- The trainee must demonstrate skill as a laboratory-based consultant for clinicians and laboratory personnel
- The trainee must demonstrate skill in verbal presentations at clinical conferences

VACATION POLICY

- In general, vacation is discouraged during this rotation because your services are essential for working up and signing out bone marrow biopsies.
- If vacation is absolutely needed, or if sick leave is needed, then you must find someone to cover for you. The first approach is to ask the Wet Hematology resident, provided that the Wet Hematology resident has experience in performing bone marrow biopsies.
- If there is no Wet Hematology resident, then ask the Pathology Chief Resident to assign someone to cover for you. This generally requires pulling someone temporarily from another rotation.
- Inform the pathologist and Heme Lab Supervisor when you will be away and who will cover for you.
- Have your sign-out pathologist sign your leave form.
- Be sure to return the favor to the person who covers for you.

WET HEME/FLOW CYTOMETRY

The wet hematology rotation/flow cytometry rotation (two months) is designed to provide residents the opportunity to acquire comprehensive knowledge and diagnostic skills in wet hematology (non-bone marrow) and flow cytometry (FCM).

GOALS AND OBJECTIVES

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal: <i>Residents must demonstrate a satisfactory level of diagnostic competence and the ability to provide appropriate and effective consultation in the context of wet heme/FCMy services</i>		
Objectives:	Learning Activities	Evaluation Activities
Gather essential and accurate information about patients using all relevant available modalities.	DSP, RM, IC	DO, GR/FE
Act as a skilled consultant to other clinicians to develop a diagnostic plan based on specific clinical questions and relevant clinical and pathologic information. This should be accomplished both in the patient-specific setting and the broader context of developing appropriate clinical pathway algorithms for diagnosis.	DL, FSO, DSP, RM, IC	DO, GR/FE, SE, IWE
Gain knowledge and technical skills to recognize, interpret, and explain pathologic processes in the clinical practice of wet heme and FCM.	DL, JC, DSP, RM	DO, GR/FE, SE, IWE
Consult as part of a multidisciplinary healthcare team in developing a therapeutic plan that includes laboratory monitoring of efficacy and toxicity.	DL, JC, DSP, RM, IC	DO, GR/FE, IWE
Provide expert consultation on the interpretation and follow-up of unusual or unexpected test results.	DL, DSP, RM	DO, GR/FE, SE, IWE
Consult as a clinical expert in laboratory medicine at multidisciplinary conferences.	DL, DSP, RM, IC	DO, GR/FE, PCL
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Demonstrate knowledge about established and evolving biomedical, clinical and cognitive (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to wet heme and FCM</i>		
Objectives:	Learning Activities	Evaluation Activities
Be able to use all relevant information resources to acquire and evaluate evidence-based information. Demonstrate proficiency in evaluating and presenting findings from appropriate peer-reviewed journals.	DL, JC, DSP, RM, IC	RR, DO, GR/FE, SE, IWE
Develop and maintain a knowledge base in the basic and clinical sciences necessary for effective consultation in wet heme and FCM	DL, JC, DSP, IC	RR, DO, GR/FE, SE, IWE
Demonstrate sufficient knowledge to determine clinically optimal yet	DL, JC, RM,	RR, DO,

cost-effective testing and laboratory-based therapeutic strategies, including issues of turnaround time, test menu construction, and in-house referral diagnostic testing.	IC	GR/FE, SE, IWE
Employ mathematics and statistics as appropriate to laboratory testing; understand and implement quality control (QC) and quality assurance procedures as required.	DL, JC, RM	DO, CL, GR/FE, SE, IWE
Recognize the unique aspects of wet heme/FCM practice as modified by patient age and other patient population characteristics, especially aspects of pediatric and geriatric practice.	DL, JC, DSP, RM, IC	RR, DO, GR/FE, SE, IWE
Demonstrate awareness and understanding of general and test-specific standards for method development and evaluation, such as those promulgated by the Clinical Laboratory Standards Institute (CLSI; formerly NCCLS), CAP, and similar organizations.	DL, RM, LI	DO, GR/FE, SE, IWE
Demonstrate awareness and understanding of proficiency programs, such as those provided by CAP and similar organizations.	DL, RM, LI, OT	DO, GR/FE, SE, IWE
Demonstrate knowledge of the principles of clinical research design, implementation, and interpretation. Understand the various levels of evidence in medicine and their translation into evidence-based practice.	JC, DSP, RM, P	DO, GR/FE, SE, IWE
Be able to design a study that can be used to validate methodologies and parameters of clinical utility for the implementation and continuing use of new evidence-based analytes in the local setting.	DL, JC, DSP, RM, LI, P	DO, GR/FE, SE, IWE
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise and assimilate scientific evidence and improve their patient care practices.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to critically assess the scientific literature.	JC, RM	DO, GR/FE
Demonstrate knowledge of evidence-based medicine and apply its principles in practice.	JC, RM	DO, GR/FE
Use multiple sources, including information technology, to optimize lifelong learning and support patient care decisions.	JC, RM, OT	DO, GR/FE
Develop personally effective strategies for the identification and remediation of gaps in medical knowledge needed for effective practice.	DSP, RM	DO, GR/FE, SE, IWE
Use laboratory problems and clinical inquiries to identify process improvements to increase patient safety.	RM, IC	DO, GR/FE
Demonstrate knowledge of how to establish continuing competency assessment for pathologists as well as for laboratory personnel.	RM, LI	DO, GR/FE
Use proficiency programs to improve laboratory practices.	RM, LI, OT	DO, GR/FE
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with other health care providers, patients and patients' families.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to provide direct communication to the referring physician or appropriate clinical personnel when	DSP, RM	DO, GR/FE

interpretation of a laboratory assay reveals an urgent, critical, or unexpected finding and document this communication in an appropriate fashion.		
Conduct both individual consultations and presentations at multidisciplinary conferences that are focused, clear, and concise.	RM, IC	DO, GR/FE
Demonstrate the ability to communicate the vision of the wet heme and FCM service role to other clinicians as well as to other healthcare personnel and administrators to develop clinically advantageous and cost-effective strategies.	RM, IC	DO, GR/FE
Choose effective modes of communication (listening, nonverbal, explanatory, questioning) and mechanisms of communication (face-to-face, telephone, e-mail, written), as appropriate.	RM, IC	RR, DO, GR/FE
Demonstrate skills in obtaining informed consent, including effective communication to patients about procedures, alternative approaches, and possible complications of laboratory-based patient care diagnostic and therapeutic activities, such as those related to wet heme/FCM.	DSP, RM	DO, GR/FE
Demonstrate skills in educating colleagues and other healthcare professionals: (1) demonstrate the ability to help other residents obtain proficiency in laboratory medicine; (2) demonstrate the ability to work well with technologists and to present laboratory medicine concepts to them effectively in continuing education settings and in the day-to-day laboratory environment; (3) demonstrate the ability to educate non-pathology clinicians and other healthcare workers, including pharmacists, nurses, residents, medical students, and others, about topics such as the fundamental principles of pathophysiology underlying test design/ interpretation and the approach to choosing and interpreting laboratory tests; (4) demonstrate an understanding of the principles one must follow when educating other practicing pathologists through publications or seminars on new testing and therapeutic strategies, research discoveries, and other cutting-edge professional knowledge.	JC, RM, IC	DO, GR/FE
CORE COMPETENCY: PROFESSIONALISM		
Goal: <i>Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate compassion: be understanding and respectful of patients, their families, and the staff and physicians caring for them.	DSP, RM, IC	DO, GR/FE
Interact with others without discriminating on the basis of religious, ethnic, sexual, or educational differences.	DSP, RM, IC	DO, GR/FE
Demonstrate positive work habits, including punctuality, dependability, and professional appearance.	RM	DO, GR/FE
Demonstrate a responsiveness to the needs of patients and society that supersedes self-interest.	DSP, RM	DO, GR/FE
Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.	DL, DSP, RM, IC	DO, GR/FE
Demonstrate knowledge of regulatory issues pertaining to the use of human subjects in research.	DL, OT	GR/FE, SE

Demonstrate a commitment to excellence and ongoing professional development.	RM	DO, GR/FE
Demonstrate interpersonal skills in functioning as a member of a multidisciplinary healthcare team	DSP, RM, IC	DO, GR/FE
CORE COMPETENCY: SYSTEM-BASED PRACTICE		
Goal: <i>Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide pathology services that are of optimal value</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate understanding of the role of the wet heme/FCM laboratory in the healthcare system.	DL, LI, IC	DO, GR/FE
Demonstrate the ability to design resource-effective diagnostic plans based on knowledge of best practices in collaboration with other clinicians.	RM	DO, GR/FE, SE, IWE
Demonstrate knowledge of basic healthcare reimbursement methods.	DL	DO, GR/FE, SE, IWE
Demonstrate knowledge of the laboratory regulatory environment, including licensing authorities; federal, state, and local public health rules and regulations; regulatory agencies such as the Centers for Medicare and Medicaid Services and the US Food and Drug Administration; and accrediting agencies such as The Joint Commission (TJC), CAP, and the ACGME.	DL, FSO, LI, OT	DO, CL, GR/FE, SE, IWE
Understand and implement policies to continually improve patient safety as they relate to the wet heme/FCM laboratory.	FSO, RM, LI, P	DO, GR/FE

ADDITIONAL SPECIFIC LEARNING OBJECTIVES

Automated Hematology

Skill Level I

- Understand clinical indications for peripheral blood cell enumeration and differential analysis. [PC, MK]
- Know the components of a complete blood count and understand the information provided by each. [PC, MK]
- Understand the principles of automated cell counting, including red blood cell (RBC) indices and their derivation. [PC, MK]
- Understand how “absolute values” are determined and how they differ from “relative percent”. [PC, MK]
- Identify spurious white blood cell (WBC) RBC, hemoglobin, and platelet determinations and be able to propose a course of action to be followed for reporting results. [PC, MK]
- Understand appropriate WBC correction for the presence of nucleated RBCs. [PC, MK]
- Understand automated differential analysis and manual review criteria. [PC, MK, PBL]

- Understand the absolute neutrophil count and its clinical utility, as well as problems associated with band counts. [PC, MK, SBP]
- Understand QC procedures specific to cell counters, such as Rumke limits on differential cell counts and Bull analysis of indices. [PC, MK, PBL]
- Understand principles of automated and manual reticulocyte enumeration and their respective technical limitations. [PC, MK]

Skill Level II

- Interpret results of automated and manual cell counts and understand the relevant technical limitations. [PC, MK]
- Recommend appropriate steps for abnormal sample processing, analysis, and result reporting. [PC, MK, PBL]
- Review abnormal results and correlate results with peripheral blood smear findings and clinical history. [PC, MK]

Peripheral Blood Smear Analysis

Skill Level I

- Know proper preparation and handling of peripheral blood smears, including standard stains and special stains used to identify cellular structures and inclusions. [PC, MK]
- Understand normal RBC, WBC, and platelet morphology. [PC, MK]
- Be able to estimate WBC and platelet counts. [PC, MK]

Skill Level II

- Recognize abnormal RBC, WBC, and platelet morphology; formulate a differential diagnosis; and suggest appropriate laboratory testing for follow-up. [PC, MK]
- Recognize technical artifacts in WBC, RBC, and platelet morphology. [PC, MK]
- Recognize infectious disorders that can be diagnosed by blood smear. [PC, MK]
- Recognize storage disorders and congenital disorders that have morphologic manifestations in the peripheral blood smear. [PC, MK]
- Correlate peripheral blood smear findings with bone marrow morphology. [PC, MK]

Body Fluid Analysis: CSF, Ascitic/Pleural Fluid, Joint Fluid

Skill Level I

- Understand clinical indications for body fluid analysis. [PC, MK]
- Understand manual hemocytometer cell counting. [PC, MK]
- Understand cytocentrifuge sample preparation and slide staining. [PC, MK]
- Identify blood and body fluid cell morphology. [PC, MK]

Skill Level II

- Interpret results of body fluid analyses in the appropriate clinical context. [PC, MK]

- Recognize malignant cells and recommend appropriate confirmatory tests. [PC, MK]
- Correlate abnormal body fluid cell morphology with cytology, flow cytometry, and other relevant diagnostic test results. [PC, MK]
- Identify body fluid crystals. Distinguish between urate and calcium pyrophosphate crystals, using polarized light. [PC, MK]

Manual Hematology Methods

Skill Level I

- Understand principles of microhematocrit determination and its technical limitations. [PC, MK]
- Understand the principles of erythrocyte sedimentation rate. [PC, MK]
- Understand the principle and utility of supravital stains, including reticulocyte stain, hemoglobin H preparation, and Heinz body preparation. [PC, MK]

RBC Disorders

Skill Level I

- Learn the clinical indications for laboratory tests involved in the assessment of intrinsic and extrinsic RBC defects/disorders. [PC, MK]
- Know the pathophysiology and characteristic laboratory findings of the major disorders causing normocytic, microcytic, and macrocytic anemia. [PC, MK]
- Describe iron metabolism and laboratory tests for iron depletion. [PC, MK]
- Understand hemoglobin synthesis and degradation. [PC, MK]
- Understand the principles of hemoglobin screening by HPLC and electrophoresis at acid and alkaline pH. [PC, MK]
- Understand the principle and clinical utility of screening tests for the presence of hemoglobin S. [PC, MK]
- Know the pathophysiology and laboratory features of intravascular and extravascular hemolysis. [PC, MK]
- Understand the principle and clinical utility of Kleihauer–Betke and/or flow cytometric analysis for fetal hemoglobin. [PC, MK]

Skill Level II

- Interpret hemoglobin electrophoretic patterns and ancillary tests for the diagnosis of [PC, MK]
 - Major hemoglobinopathies;
 - Disorders related to enzyme defects;
 - Hereditary spherocytosis and other RBC membrane/ cytoskeletal defects;
 - Paroxysmal nocturnal hemoglobinuria;
 - Hemolytic anemia;
 - Congenital dyserythropoietic anemias.

Platelet Disorders

Skill Level I

- Understand the pathophysiology of thrombocytopenia and thrombocytosis: [PC, MK]
- Differentiate between reactive and malignant processes; [PC, MK]
- Understand the pathophysiology of immune thrombocytopenia and thrombotic thrombocytopenic purpura. [PC, MK]
- Demonstrate competency in taking a bleeding history. [PC, MK]
- Understand the clinical utility of platelet function testing. [PC, MK]
- Understand general principles of platelet function testing. [PC, MK]
- Understand the pathophysiology of acquired and congenital platelet function disorders. [PC, MK]
- Understand the pathophysiology leading to major von Willebrand disease subtypes and expected laboratory results. [PC, MK]
- Recognize acquired platelet function abnormalities associated with antiplatelet therapy. [PC, MK]

Skill Level II

- Interpret platelet function studies, including screening tests, platelet aggregation, and platelet secretion studies. [PC, MK]
- Interpret studies performed for the evaluation of von Willebrand disease. [PC, MK]

Coagulation

Skill Level I

- Understand the clinical utility of coagulation and thrombosis testing. [PC, MK, SBP]
- Develop basic understanding of hemostatic and thrombotic disorders: [PC, MK]
- Understand the coagulopathy of liver disease; [PC, MK]
- Understand the pathophysiology of vitamin K deficiency and antagonism; [PC, MK]
- Understand the laboratory evaluation of disseminated intravascular coagulation; [PC, MK]
- Understand the pathophysiology of the hemophilias (A, B, and C). [PC, MK]
- Understand the pathophysiology of arterial and venous thrombosis. [PC, MK]
- Understand the general principles of screening coagulation tests (e.g., prothrombin time, activated partial thromboplastin time, fibrinogen, and thrombin time). [PC, MK]
- Understand the International Normalized Ratio derivation and its clinical significance [PC, MK, SBP]
- Understand the effect of hematocrit and blood-drawing technique on anticoagulation of blood samples for coagulation testing. [PC, MK]
- Demonstrate competency in taking a bleeding and thrombosis history. [PC, MK]
- Understand results of mixing studies and factor assays to guide further coagulation testing. [PC, MK]
- Understand the principles of tests involved in the identification of lupus anticoagulant and antiphospholipid antibody syndromes. [PC, MK]
- Recognize the effect of circulating anticoagulants on coagulation testing. [PC, MK]

- Understand the monitoring of anticoagulation therapy. [PC, MK]
- Understand the method of action of direct thrombin inhibitors and their effect on coagulation testing. [PC, MK]
- Understand the principles of molecular analysis of thrombotic risk factors [e.g., factor V Leiden, prothrombin G20210A, and methylenetetrahydrofolate reductase (MTHFR)]. [PC, MK]
- Understand the principles of functional and antigenic assays for proteins of the anticoagulation and fibrinolytic systems. [PC, MK]

Skill Level II

- Interpret results of coagulation and hypercoagulability testing and recommend further studies as needed. [PC, MK]
- Summarize laboratory evidence for hemostatic and thrombotic disorders and be able to assess and explain bleeding and thrombosis risk. [PC, MK]
- Interpret results of Bethesda assays for factor inhibitors. [PC, MK]
- Interpret results of coagulation tests in the setting of fibrinolytic therapy. [PC, MK]
- Interpret results of heparin-induced thrombocytopenia testing (ELISA tests vs serotonin release assay/platelet aggregation studies) in the appropriate clinical context. [PC, MK]
- Understand monitoring and complications of biologics as drugs (e.g., recombinant activated protein C and recombinant F VIIa). [PC, MK]

Flow Cytometry

Skill Level I

- Understand clinical indications for flow cytometric evaluation of blood, marrow, solid tissue, or fluid cells. [PC, MK]
- Understand the physical components and operating principles of a flow cytometer. [PC, MK]
- Understand QC procedures unique to flow cytometry assays (e.g., nature of controls and accounting for all lymphocyte subsets in a blood sample). [PC, MK, PBL]
- Understand the principles of routine flow cytometry evaluation of leukocytes, including both surface and intracellular markers, and recognition of clonal abnormalities. [PC, MK]
- Understand principles of tests designed to evaluate DNA content (ploidy) and cell cycle, as used in the evaluation of products of conception and other tissues. [PC, MK]
- Understand platelet antibody testing by flow cytometry and its clinical applications. [PC, MK]
- Understand the diagnostic and prognostic information provided by flow cytometry. [PC, MK]
- Understand the principles of lymphocyte subset analysis: know the commonly used antigens to define T-cell subsets, natural killer, and B cells. [PC, MK]
- Appreciate the effect of age on lymphocyte subset normal ranges. [PC, MK]
- Observe/perform lymphoma/leukemia panel on blood and/or bone marrow. [PC, MK]
- Observe/perform lymphoma panel on lymph node or spleen specimens. [PC, MK]

Skill Level II

- Evaluate and interpret results of flow cytometry in conjunction with cytochemistry, immunocytochemistry, immunohistochemistry studies, and lymph node pathology as related to hematopoietic and lymphoproliferative diseases: –Understand the characteristic clinical, morphologic, [PC, MK, SBP]
- Immunophenotypic, cytochemical, and cytogenetic/ molecular features of acute myeloid leukemia, acute lymphoid leukemia, myelodysplastic syndromes, paroxysmal nocturnal hemoglobinemia, multiple myeloma, monoclonal gammopathy of undetermined significance, non-Hodgkin and Hodgkin lymphoma, neuroblastoma, chronic lymphoproliferative disorders, lymphomatoid granulomatosis, posttransplant lymphoproliferative disorder, polymorphic and lymphomatoid papulosis, and histiocytic disorders. [PC, MK SBP]
- Interpret specific flow cytometric abnormalities associated with immunodeficiency syndromes. [PC, MK]
- Interpret CD34 counts for stem cell transplantation and for prognostication in myeloproliferative disorders. [PC, MK]
- Understand the principles and interpretation of reticulated platelet analysis. [PC, MK]
- Understand the principles of, and interpret analyses for, minimal residual disease. [PC, MK]

PGY SPECIFIC GOALS – See Hematopathology section where PGY specific goals are described for Hematopathology/wet hematology and flow cytometry.

TRAINEE RESPONSIBILITIES

- Sign-out of selected hematology tests with Pathology staff:
 - Blood smears
 - Body fluid cytospins
 - Flow cytometry panels
 - Hemoglobin electrophoresis
 - Platelet aggregation
 - Platelet function analyzer
- Prior to sign-out:
 - Obtain all pertinent information about the case, including previous laboratory and clinical data
 - Review the relevant pathology slides; perform a leukocyte differential count for blood smear and cytospin evaluations
 - Write a narrative interpretation
 - Review bone marrow aspirate smears to approve flow cytometry orders
 - Review the procedure manual for all hematology tests performed in the laboratory; perform selected tests under technologist supervision
 - Attend the weekly Internal Medicine Hematology Conference (each Thurs., 8:30 am)
 - Attend teaching conferences held by Pathology staff (e.g. CP Core Conference, AP Core Conference, etc.)
 - Function as a consultant to resolve questions asked by lab personnel and clinicians; be available at all times by pager.
 - Provide training and cross-coverage for the Bone Marrow resident or Post-Sophomore Fellow.

TRAINEE EVALUATION CRITERIA

- The trainee must show active and effective participation in the laboratory
- The trainee must demonstrate knowledge about the clinical, pathologic, and diagnostic features of hematologic disease
- The trainee must demonstrate skill in the microscopic analysis of neoplastic and benign hematologic disease
- The trainee must demonstrate knowledge about the performance and interpretation of hematology tests.
- The trainee must demonstrate skill as a laboratory-based consultant for clinicians and laboratory personnel
- The trainee must demonstrate skill in verbal presentations at clinical conferences

REFERENCES

Also see the Hematopathology Reference Materials in previous section.

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MICROBIOLOGY AND IMMUNOLOGY

The three months of rotations through microbiology and immunology are designed to aid residents to become competent in the interpretation of clinical microbiology and immunology testing and to learn consultative skills that aid in the diagnosis of infectious disease and immune disorders.

GOALS AND OBJECTIVES

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal: <i>Residents must demonstrate a satisfactory level of diagnostic competence and the ability to provide appropriate and effective consultation in the context of microbiology/immunology services</i>		
Objectives:	Learning Activities	Evaluation Activities
Gather essential and accurate information about patients using all relevant available modalities.	DSP, RM, IC	DO, GR/FE
Act as a skilled consultant to other clinicians to develop a diagnostic plan based on specific clinical questions and relevant clinical and pathologic information. This should be accomplished both in the patient-specific setting and the broader context of developing appropriate clinical pathway algorithms for diagnosis.	DL, FSO, DSP, RM, IC	DO, GR/FE, SE, IWE
Gain knowledge and technical skills to recognize, interpret, and explain pathologic processes in the clinical practice of microbiology/immunology.	DL, JC, DSP, RM	DO, GR/FE, SE, IWE
Consult as part of a multidisciplinary healthcare team in developing a therapeutic plan that includes laboratory monitoring of efficacy and toxicity. Where clinically appropriate, consult on the use of laboratory-based therapeutics such as blood transfusion and other forms of cellular therapy.	DL, JC, DSP, RM, IC	DO, GR/FE, IWE
Provide expert consultation on the interpretation and follow-up of unusual or unexpected test results.	DL, DSP, RM	DO, GR/FE, SE, IWE
Consult as a clinical expert in laboratory medicine at multidisciplinary conferences.	DL, DSP, RM, IC	DO, GR/FE, PCL
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Demonstrate knowledge about established and evolving biomedical, clinical and cognitive (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to microbiology/immunology</i>		
Objectives:	Learning Activities	Evaluation Activities
Be able to use all relevant information resources to acquire and evaluate evidence-based information. Demonstrate proficiency in evaluating and presenting findings from appropriate peer-reviewed	DL, JC, DSP, RM, IC	RR, DO, GR/FE, SE, IWE

journals.		
Develop and maintain a knowledge base in the basic and clinical sciences necessary for effective consultation in microbiology/immunology.	DL, JC, DSP, IC	RR, DO, GR/FE, SE, IWE
Demonstrate sufficient knowledge to determine clinically optimal yet cost-effective testing and laboratory-based therapeutic strategies, including issues of turnaround time, test menu construction, and in-house referral diagnostic testing.	DL, JC, RM, IC	RR, DO, GR/FE, SE, IWE
Employ mathematics and statistics as appropriate to laboratory testing; understand and implement quality control (QC) and quality assurance procedures as required.	DL, JC, RM	DO, CL, GR/FE, SE, IWE
Recognize the unique aspects of microbiology/immunology practice as modified by patient age and other patient population characteristics, especially aspects of pediatric and geriatric practice.	DL, JC, DSP, RM, IC	RR, DO, GR/FE, SE, IWE
Demonstrate awareness and understanding of general and test-specific standards for method development and evaluation, such as those promulgated by the Clinical Laboratory Standards Institute (CLSI; formerly NCCLS), CAP, and similar organizations.	DL, RM, LI	DO, GR/FE, SE, IWE
Demonstrate awareness and understanding of proficiency programs, such as those provided by CAP and similar organizations.	DL, RM, LI, OT	DO, GR/FE, SE, IWE
Demonstrate knowledge of the principles of clinical research design, implementation, and interpretation. Understand the various levels of evidence in medicine and their translation into evidence-based practice.	JC, DSP, RM, P	DO, GR/FE, SE, IWE
Be able to design a study that can be used to validate methodologies and parameters of clinical utility for the implementation and continuing use of new evidence-based analytes in the local setting.	DL, JC, DSP, RM, LI, P	DO, GR/FE, SE, IWE
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise and assimilate scientific evidence and improve their patient care practices.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to critically assess the scientific literature.	JC, RM	DO, GR/FE
Demonstrate knowledge of evidence-based medicine and apply its principles in practice.	JC, RM	DO, GR/FE
Use multiple sources, including information technology, to optimize lifelong learning and support patient care decisions.	JC, RM, OT	DO, GR/FE
Develop personally effective strategies for the identification and remediation of gaps in medical knowledge needed for effective practice.	DSP, RM	DO, GR/FE, SE, IWE
Use laboratory problems and clinical inquiries to identify process improvements to increase patient safety.	RM, IC	DO, GR/FE
Demonstrate knowledge of how to establish continuing competency assessment for pathologists as well as for laboratory personnel.	RM, LI	DO, GR/FE
Use proficiency programs to improve laboratory practices.	RM, LI, OT	DO, GR/FE
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Demonstrate interpersonal and communication skills that result in effective information exchange and</i>		

<i>teaming with other health care providers, patients and patients' families.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to provide direct communication to the referring physician or appropriate clinical personnel when interpretation of a laboratory assay reveals an urgent, critical, or unexpected finding and document this communication in an appropriate fashion.	DSP, RM	DO, GR/FE
Conduct both individual consultations and presentations at multidisciplinary conferences that are focused, clear, and concise.	RM, IC	DO, GR/FE
Demonstrate the ability to communicate the vision of the microbiology/immunology service role to other clinicians as well as to other healthcare personnel and administrators to develop clinically advantageous and cost-effective strategies.	RM, IC	DO, GR/FE
Choose effective modes of communication (listening, nonverbal, explanatory, questioning) and mechanisms of communication (face-to-face, telephone, e-mail, written), as appropriate.	RM, IC	RR, DO, GR/FE
Demonstrate skills in educating colleagues and other healthcare professionals: (1) demonstrate the ability to help other residents obtain proficiency in laboratory medicine; (2) demonstrate the ability to work well with technologists and to present laboratory medicine concepts to them effectively in continuing education settings and in the day-to-day laboratory environment; (3) demonstrate the ability to educate non-pathology clinicians and other healthcare workers, including pharmacists, nurses, residents, medical students, and others, about topics such as the fundamental principles of pathophysiology underlying test design/ interpretation and the approach to choosing and interpreting laboratory tests; (4) demonstrate an understanding of the principles one must follow when educating other practicing pathologists through publications or seminars on new testing and therapeutic strategies, research discoveries, and other cutting-edge professional knowledge.	JC, RM, IC	DO, GR/FE
CORE COMPETENCY: PROFESSIONALISM		
Goal: <i>Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate compassion: be understanding and respectful of patients, their families, and the staff and physicians caring for them.	DSP, RM, IC	DO, GR/FE
Interact with others without discriminating on the basis of religious, ethnic, sexual, or educational differences.	DSP, RM, IC	DO, GR/FE
Demonstrate positive work habits, including punctuality, dependability, and professional appearance.	RM	DO, GR/FE
Demonstrate a responsiveness to the needs of patients and society that supersedes self-interest.	DSP, RM	DO, GR/FE
Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.	DL, DSP, RM, IC	DO, GR/FE

Demonstrate knowledge of regulatory issues pertaining to the use of human subjects in research.	DL, OT	GR/FE, SE
Demonstrate a commitment to excellence and ongoing professional development.	RM	DO, GR/FE
Demonstrate interpersonal skills in functioning as a member of a multidisciplinary healthcare team	DSP, RM, IC	DO, GR/FE
CORE COMPETENCY: SYSTEM-BASED PRACTICE		
Goal: <i>Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide pathology services that are of optimal value</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate understanding of the role of the microbiology/immunology laboratory in the healthcare system.	DL, LI, IC	DO, GR/FE
Demonstrate the ability to design resource-effective diagnostic plans based on knowledge of best practices in collaboration with other clinicians.	RM	DO, GR/FE, SE, IWE
Demonstrate knowledge of basic healthcare reimbursement methods.	DL	DO, GR/FE, SE, IWE
Demonstrate knowledge of the laboratory regulatory environment, including licensing authorities; federal, state, and local public health rules and regulations; regulatory agencies such as the Centers for Medicare and Medicaid Services and the US Food and Drug Administration; and accrediting agencies such as The Joint Commission (TJC), CAP, and the ACGME.	DL, FSO, LI, OT	DO, CL, GR/FE, SE, IWE
Understand and implement policies to continually improve patient safety as they relate to the microbiology/immunology laboratory.	RM, LI, P	DO, GR/FE

ADDITIONAL SPECIFIC OBJECTIVES IN MICROBIOLOGY

Skill Level 1

- Be able to discuss and execute general requirements for laboratory safety. [MK, PBL, SBP]
- Know the principles of universal precautions [MK, PBL, SBP]
- Understand preanalytic, analytic and postanalytic factors affecting interpretation of microbiological tests. [PC, MK, PBL]
- Know the commonly occurring clinical bacterial organisms and the appropriate laboratory methods employed for diagnosis. [PC, MK]
- Know what organisms constitute normal flora in various specimen types (sputum, urine, wound, tissue, etc). [PC, MK]
- Recognize the typical Gram stain appearance, colony morphology and growth conditions for Staphylococcus, Streptococcus, E. coli, Proteus, Pseudomonas and Hemophilus. [PC, MK]
- Understand quality control/quality assurance principles for microbiology laboratory procedures (i.e.; media, reagents or kits and antimicrobial susceptibility testing) [PC, MK, PBL]
- Know the test methods (manual and automated) and principle of the following antimicrobial susceptibility testing method: [PC, MK]

- disk diffusion tests
- broth dilution tests
- agar diffusion (E test)
- Automated systems (Vitek, Microscan, Phoenix systems)
- Describe the mechanisms that cause the following resistance in bacteria; methicillin resistance, extended spectrum beta lactamase, penicillin resistance in *Streptococcus* species. [PC, MK]
- Know the commonly occurring infections due to mycobacteria and the appropriate laboratory specimen needed for diagnosis. [PC, MK, SBP]
- Be able to describe the life cycles of intestinal, tissue and blood parasites [PC, MK]
- Understand proper specimen collection, transportation and methods used to detect parasitic infections. [PC, MK]
- Be able to discuss appropriate laboratory methods used for diagnosis of viral diseases. [PC, MK]
- Describe the different methods used for serologic testing such as EIA and Western blot [PC, MK]
- Be able to interpret results of antibody tests for hepatitis viruses, Epstein Barr virus panel, HIV Western blot and other viral pathogens [PC, MK]

Skill Level 2

- Understand and be able to supervise performance of and interpret routine microbiologic staining procedures, including; [PC, MK]
 - Gram stains especially from CSF and sputum
 - Acid-fast stains
 - Wet mounts with and without *Trichomonas*
 - Trichrome stains
 - Malaria smears (pass the competency slide set of 10 various malaria smears)
- Know the common bacterial pathogens that infect various organs and their pathogenesis.
- Be knowledgeable about the laws and regulations governing select agents and how these agents should be identified and handled in a clinical laboratory. [PC, MK, PBL, SBP]
- Understand the principle and interpretation of: [PC, MK]
 - conventional identification systems
 - commercially available identification systems (manual vs. automated)
- Know the commonly occurring infections due to yeasts and fungi. [PC, MK]
- Recognize the gross and microscopic culture characteristics of the following yeast/fungi: [PC, MK]
 - *Cryptococcus neoformans*
 - *Candida albicans*
 - *Histoplasma capsulatum*
 - *Coccidioides immitis*
 - *Aspergillus fumigatus*
 - *Rhizopus spp./Mucor spp.*
 - Dematiaceous fungi
- Understand the methods employed for the identification of yeasts and fungi. [PC, MK]
- Be able to describe specimen processing needed for mycobacterial cultures such as concentration and digestion. Know why and when this is needed. [PC, MK]
- Know the grouping of non-tuberculosis mycobacteria [PC, MK]

- Understand the methodology and the limitations for direct detection of *M. tuberculosis* in clinical specimens. [PC, MK]
- Be acquainted with the NCCLS standards and guidelines for antimicrobial testing and be able to interpret different testing methods [PC, MK, PBL, SBP]
- Understand which variables affect susceptibility testing [PC, MK]
- Be able to recognize incongruent susceptibility results and have a plan for how to verify the results. [PC, MK]
- Describe the mechanisms of the common antiviral agents such as acyclovir, amantidine, oseltamivir, ATZ, gancyclovir and others. [PC, MK]
- Be able to interpret the listed serologic and molecular tests used for diagnosis of viral infections. [PC, MK]
 - HIV testing Western blot
 - HIV viral load detected by PCR
- Understand mechanisms of transmission of nosocomial infections [PC, MK]
- Know the diseases that are required to report to the Kansas State health department [PC, MK, SBP]

ADDITIONAL SPECIFIC OBJECTIVES FOR IMMUNOLOGY

Skill Level 1

- Understand the performance and interpretation of tests for the detection of antigens and antibodies in various body fluids (including the various factors that might interfere with or produce error in the various immunoassay techniques). [PC, MK]
- Recognize the following reasons for a false positives and false negative test result in serological assays [PC, MK]
 - carry over effect
 - prozone effect (antibody and antigen excess)
 - types of antibody reagents (monoclonal vs. polyclonal)
 - stability of reagents (complement)
- Understand and be able to compare and contrast various immunodiagnostic method such as EIA, latex agglutination, nephelometry, immunodiffusion, electrophoresis (protein and nucleic acid) [PC, MK]
- Understand the performance and interpretation of clinically significant antibodies for diagnosis and evaluation of autoimmune disorders. [PC, MK]

Skill Level 2

- Recognize the various patterns associated with disease status when interpreting fluorescent ANA screens and titers [PC, MK]
- Know the methods used to detect Rheumatoid factor (screen and titers) [PC, MK]
- Know the disease states associated the specific antibody epitopes (SSA, SSB, Sm, RNP, dsDNA, ssDNA, SCL70, histones) and be able to interpret various patterns [PC, MK, SBP]
- Be able to interpret selected serologic tests and assays for diagnosis of infectious disease. [PC, MK]

- heterophile antibody detection
- syphilis serology (non-treponemal and treponemal-specific)
- viral hepatitis

PGY SPECIFIC GOALS

PGY 1 GOALS: By the end of the first year:

- The resident should achieve competency in Skill Level 1

PGY 2 GOALS: By the end of the second year:

- The resident should achieve competency in Skill Level 1 and some of Level 2

PGY 3 GOALS: By the end of the third year:

- The resident should achieve competency in Skill Level 1 and most of Level 2

PGY 4 GOALS:

- The resident should be competent in all microbiology and immunology Skill Levels 1 and 2

GENERAL - Throughout the entire duration of residency training the resident must also demonstrate the specific skills for Professionalism, Practice--Based Learning and Improvement, Interpersonal and Communication Skills and System-Based Learning as listed on pages 16 and 17.

Duties and Responsibilities of Residents

- Be present in the laboratory for significant periods of time to allow exposure to routine laboratory work.
- Attend in-patient rounds with Infectious Disease team.
- Meet the general objectives outlined above and complete any work on unknowns, reading assignments or projects assigned during the rotation.
- Attend the weekly teaching session on Wed at 8 AM.
- Attend or present one 30 minute case report at Clinical Pathology Conference (Boley conference room, 12 noon, last Tues each month).

Duties and Responsibilities of Residents

- Be present in the laboratory for significant periods of time to allow exposure to routine laboratory work.
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- Attend the weekly teaching session on Wed at 8 AM.
- Attend or present one 30 minute case report at Clinical Pathology Conference (Boley conference room, 12 noon, last Tues each month).

Resident Evaluation

- The residents must show active participation in the laboratory.
- The resident must show improvement in knowledge of infectious diseases and laboratory skills.

- The resident must be reliable and responsible for clinical case presentations.
- The resident should assist the clinicians, to the extent possible for their level of training, on infectious disease rounds.

General Microbiology Reading List

1. de la Maza L., Pezzlo M., Shigei J.T., Peterson E.M., *Color Atlas of Medical Bacteriology*. American Society of Microbiology, 2004.
2. Isenberg, H.D., Ed. *Essential Procedures for Clinical Microbiology*, 2nd Edition. American Society of Microbiology, 2004.
3. Washington W., Allen S, Janda W, Koneman E, Procop G, Schreckenberger P, Woods G. *Color Atlas and Textbook of Diagnostic Microbiology*, 6th Edition. Lippincott Williams & Wilkins, Philadelphia, 2006.
4. Versalovic, et al Ed. *Manual of Clinical Microbiology*, 10th Edition, American Society for Microbiology, Washington, D.C., 2011.
5. Nath, S.K., Revankar S. G. *Problem-based Microbiology*, Saunders Elsevier, Philadelphia, 2006.

Clinical Immunology Reading List

1. Stevens, C. D. *Clinical Immunology and Serology: A Laboratory Perspective*, 2nd Edition. F.A. Davis Company, 2003.
2. Sheehan, Catherine. *Clinical Immunology: Principles and Laboratory Diagnosis*, 2nd Edition, Lippincott-Raven, 1997
3. Deetrick, B, Folds, J.D., Hamilton RG, Editors. *Manual of Molecular Clinical Laboratory Immunology*, ASM Press, Washington, D.C., 2006.
4. Rose, NR, Hamilton RG, Deetrick, B, Editors. *Manual of Clinical Laboratory Immunology*, 6th edition, ASM Press, Washington, D.C., 2002.

LABORATORY MANAGEMENT

Participation in management and informatics training and activities is an essential part of the resident's curriculum. Management and informatics activities are not limited to this single rotation, but should be considered to span the entire length of the residency. The activities are present in both the laboratory and administrative areas of the Department. Participation in these activities from both perspectives will provide insight into the pathologist's role, and the administrative staff role in the operational aspects of running a Department of Laboratory Informatics.

GOALS AND OBJECTIVES

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal: <i>Residents must demonstrate a satisfactory level of management skills to provide appropriate and effective leadership in anatomic and laboratory medicine</i>		
Objectives:	Learning Activities	Evaluation Activities
Gain knowledge and skill in laboratory organizational management and leadership.	DSP, RM, IC	DO, GR/FE
Gain knowledge and skills in laboratory finances.	DL,DSP, RM, IC	DO, GR/FE, SE, IWE
Develop skills in regulatory issues as they pertain to laboratory medicine.	DL,DSP, RM	DO, GR/FE, SE, IWE
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Demonstrate knowledge about established and evolving biomedical, clinical and cognitive (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to pathology</i>		
Objectives:	Learning Activities	Evaluation Activities
Develop and maintain a knowledge base in the basic and clinical sciences necessary for effective consultation in anatomic and clinical pathology.	DL, JC, DSP, RM, IC	DO, GR/FE, SE
Understand the principles of human resources management, such as: <ul style="list-style-type: none"> • basic job interview skills, • determining staffing requirements and productivity, • ensuring competency of personnel, • strategies for employee recruitment, selection, and retention • procedures for progressive discipline • the termination process, • legal protection of employees covering leave, benefits, retirement, discrimination, affirmative action, civil rights, and disabilities 	DL, JC, DSP, RM, IC	DO, GR/FE, SE
Understand laboratory computer operations, including: <ul style="list-style-type: none"> • processes and content of information flow from order through result reporting, 	DL, JC, DSP, RM, IC	DO, GR/FE, SE

<ul style="list-style-type: none"> laboratory design, layout, and instrument selection and their effect on productivity and cost effectiveness, management of point of care testing, use of policy and procedure manuals, NCCLS guidelines application of constructive conflict resolution and problem solving techniques in responding to concerns about department services principles and practice of quality management and performance improvement (CQI, PI), quality assurance and utilization management 		
<p>Understand finance, accounting and reimbursement terms and their use:</p> <ul style="list-style-type: none"> the role of budgetary planning, managing, and controlling laboratory operations, concepts of profit center, cost center, cost accounting, and capitation, basic accounting including income, expenses, profit, as presented in an operating statement; and, assets and liabilities as presented in a balance sheet, use of benchmark tools for productivity and financial analysis. 	DL, JC, DSP, RM, IC	DO, GR/FE, SE
Demonstrate sufficient knowledge to determine clinically optimal yet cost-effective testing and laboratory-based therapeutic strategies, including issues of turnaround time, test menu construction, and in-house referral diagnostic testing.	DL, JC, RM, IC	DO, GR/FE, SE, IWE
Employ mathematics and statistics as appropriate to laboratory testing; understand and implement quality control (QC) and quality assurance procedures as required.	DL, JC, RM	DO, CL, GR/FE, SE, IWE
Demonstrate awareness and understanding of general and test-specific standards for method development and evaluation, such as those promulgated by the Clinical Laboratory Standards Institute (CLSI; formerly NCCLS), CAP, and similar organizations.	DL, RM, LI	DO, GR/FE, SE, IWE
Demonstrate awareness and understanding of proficiency programs, such as those provided by CAP and similar organizations.	DL, RM, LI, OT	DO, GR/FE, SE, IWE
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise and assimilate scientific evidence and improve their patient care practices.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to critically assess the scientific literature.	JC, RM	DO, GR/FE
Demonstrate knowledge of evidence-based medicine and apply its principles in practice.	JC, RM	DO, GR/FE
Use multiple sources, including information technology, to optimize lifelong learning and support patient care decisions.	JC, RM, OT	DO, GR/FE
Develop personally effective strategies for the identification and remediation of gaps in medical knowledge needed for effective practice.	DSP, RM	DO, GR/FE, SE, IWE
Use laboratory problems and clinical inquiries to identify process	RM, IC	DO, GR/FE

improvements to increase patient safety.		
Demonstrate knowledge of how to establish continuing competency assessment for pathologists as well as for laboratory personnel.	RM, LI	DO, GR/FE
Use proficiency programs to improve laboratory practices.	RM, LI, OT	DO, GR/FE
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with other health care providers, patients and patients' families.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to provide direct communication to the referring physician or appropriate clinical personnel when interpretation of a laboratory assay reveals an urgent, critical, or unexpected finding and document this communication in an appropriate fashion.	DSP, RM	DO, GR/FE
Demonstrate the ability to communicate the vision of the laboratory service role to other clinicians as well as to other healthcare personnel and administrators to develop clinically advantageous and cost-effective strategies.	RM, IC	DO, GR/FE
Choose effective modes of communication (listening, nonverbal, explanatory, questioning) and mechanisms of communication (face-to-face, telephone, e-mail, written), as appropriate.	RM, IC	DO, GR/FE
Demonstrate skills in obtaining informed consent, including effective communication to patients about procedures, alternative approaches, and possible complications of laboratory-based patient care diagnostic and therapeutic activities, such as those related to chemistry.	DSP, RM	DO, GR/FE
Demonstrate skills in educating colleagues and other healthcare professionals: (1) demonstrate the ability to help other residents obtain proficiency in laboratory medicine; (2) demonstrate the ability to work well with technologists and to present laboratory medicine concepts to them effectively in continuing education settings and in the day-to-day laboratory environment; (3) demonstrate the ability to educate non-pathology clinicians and other healthcare workers, including pharmacists, nurses, residents, medical students, and others, about topics such as the fundamental principles of pathophysiology underlying test design/ interpretation and the approach to choosing and interpreting laboratory tests; (4) demonstrate an understanding of the principles one must follow when educating other practicing pathologists through publications or seminars on new testing and therapeutic strategies, research discoveries, and other cutting-edge professional knowledge.	JC, RM, IC	DO, GR/FE
CORE COMPETENCY: PROFESSIONALISM		
Goal: <i>Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate compassion: be understanding and respectful of patients,	DSP, RM, IC	DO, GR/FE

their families, and the staff and physicians caring for them.		
Interact with others without discriminating on the basis of religious, ethnic, sexual, or educational differences.	DSP, RM, IC	DO, GR/FE
Demonstrate positive work habits, including punctuality, dependability, and professional appearance.	RM	DO, GR/FE
Demonstrate a responsiveness to the needs of patients and society that supersedes self-interest.	DSP, RM	DO, GR/FE
Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.	DL, DSP, RM, IC	DO, GR/FE
Demonstrate knowledge of regulatory issues pertaining to the use of human subjects in research.	DL, OT	GR/FE, SE
Demonstrate a commitment to excellence and ongoing professional development.	RM	DO, GR/FE
Demonstrate interpersonal skills in functioning as a member of a multidisciplinary healthcare team	DSP, RM, IC	DO, GR/FE
CORE COMPETENCY: SYSTEM-BASED PRACTICE		
Goal: <i>Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide pathology services that are of optimal value</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate understanding of the role of the laboratory in the healthcare system.	DL, LI, IC	DO, GR/FE
Demonstrate the ability to design resource-effective diagnostic plans based on knowledge of best practices in collaboration with other clinicians.	RM	DO, GR/FE, SE, IWE
Demonstrate knowledge of basic healthcare reimbursement methods.	DL,DSP,RM	DO, GR/FE, SE, IWE
Demonstrate knowledge of the laboratory regulatory environment, including licensing authorities; federal, state, and local public health rules and regulations; regulatory agencies such as the Centers for Medicare and Medicaid Services and the US Food and Drug Administration; and accrediting agencies such as The Joint Commission (TJC), CAP, and the ACGME.	DL, LI, OT	DO, CL, GR/FE, SE, IWE
Understand and implement policies to continually improve patient safety as they relate to the clinical laboratory.	RM, LI, P	DO, GR/FE

ADDITIONAL SPECIFIC OBJECTIVES IN LABORATORY MANAGEMENT

Management and Informatics Organizational and Leadership Skills

Skill Level I

- Understand the fundamental principles of human behavior in organizations, of management structure and function, and of organizational structures. Compare and contrast the structure of

differing practice settings (e.g., hospital-based, specialty practice, independent laboratory, etc.). [PBL, ICS, PRO, SBP]

- Develop the interpersonal skills required to effectively manage, lead, and motivate others, including professional peers. [PBL, ICS, PRO, SBP]
- Develop an understanding of the role of ethics in medical and managerial decision-making. [PBL, PRO, SBP]
- Appreciate the conflicting responsibilities and rewards of pathologists, administrators, and technologists, and even the competing interests within each group as necessary to the positive functioning of the laboratory. [PBL, PRO, SBP]
- Understand the nature of the relationships between pathologists, hospitals, and medical staffs, including a basic understanding of contracts, decision-making, and effective negotiation. [PBL, ICS, PRO, SBP]
- Develop skills to project an environment of patient-oriented and ethical service. [PC, MK, PBL, ICS, PRO, SBP]
- Understand the organization of the laboratory, including preanalytical sample acquisition, accessioning and processing, structure of analytical units, and postanalytical sample resulting. Recognize the different skill sets required of personnel in all of these areas. Be able to analyze work flow in the laboratory. [PC, MK, PBL, PRO, SBP]

Skill Level II

- Understand human resource systems, including effective processes for recruitment, retention, and performance management of technical and professional staff. [PBL, SBP]

Financial Skills

Skill Level I

- Understand the fundamentals of financial data collection and financial statement presentation and analysis. [PBL, SBP]
- Understand the role of the budget process for operational planning, managing, and control. [PBL, SBP]
- Understand how to properly assign Current Procedural Terminology (CPT) codes to procedures in the laboratory. [PC, MK, PBL]

Skill Level II

- Understand how to assess the need for new instrumentation as well as the process of financial justification of capital equipment investments such as these. [PBL, SBP]
- Understand the nature and behavior of costs in the laboratory, including test-cost accounting [PBL, SBP].
- Understand the applicable forms and requirements of reimbursement, particularly Medicare reimbursement, for both clinical laboratories and pathologists. [PBL, SBP]

- Understand how to monitor utilization and become familiar with strategies to effectively manage utilization in a healthcare organization. [PBL, SBP]

Regulatory Skills

Skill Level I

- Become familiar with the accrediting agencies relevant to laboratory certification and licensure [e.g., CAP, AABB, Occupational Health and Safety Administration, CMS, Clinical Laboratory Improvement Amendments (CLIA), and TJC], and participate in at least one CAP “mock” or “self-inspection” of the laboratory. [PC, MK, PBL, ICS, PRO, SBP]
- Become familiar with the “test complexity” models under CLIA for clinical laboratory tests (i.e., high complexity, moderate complexity, waived, and physician-performed microscopy). [PC, MK, PBL, SBP]
- Understand the regulatory and compliance environment for laboratories, including CLIA and the Office of the Inspector General model compliance plan, and the implications that these have for the laboratory management team. [PC, MK, PBL, SBP]
- Become familiar with the patient privacy and data security requirements of the HIPAA, including the use of institutional review board (IRB) protocols for conducting clinical research. [PC, MK, PBL, SBP]
- Understand training, certification, licensing, and competency assessment standards for laboratory professionals, including medical technologists and medical laboratory technicians. [PBL, SBP]
- Understand the importance of a comprehensive laboratory safety policy and program. [PBL, SBP]
- Understand how Standard Operating Procedures (SOPs) are used in the routine operation of clinical laboratories. [PC, MK, PBL, SBP]
- Understand how SOPs are developed, authored, and reviewed and their importance in mandatory laboratory inspection by various accrediting agencies (e.g., CAP, TJC, and AABB). [PC, MK, PBL, ICS, SBP]

Skill Level II

- Understand the role of risk management in the laboratory and become familiar with the nature of medical malpractice, patient safety initiatives, institutional risk mitigation, and forensic testing. [PBL, PRO, SBP]
- Become familiar with the process of long-range planning and strategic management, and the implications that this process has for successful management. [PBL, SBP]
- Become familiar with the fundamental principles of marketing, sales, and a market-oriented service delivery strategy. [PBL, SBP]
- Become familiar with the process for creating and/or critically reviewing a business plan for a new or proposed service. [PBL, SBP]
- Become familiar with the different forms that practice relationships can take (e.g., sole proprietorship, partnership, and corporation), and the advantages and disadvantages of each. [PBL, SBP]

- Participate in the development and authorship, and/or review and revision of SOPs. [PC, MK, PBL, ICS, PRO, SBP]

Quality Assurance, Quality Control, Pre-and Postanalytic Management

Skill Level I

- Understand the role of quality assurance, quality management, and process improvement principles in laboratory operation and planning. [PBL, SBP]
- Understand the role of interlaboratory proficiency surveys, such as the CAP proficiency surveys. [PC, MK, PBL, SBP]
- Be able to develop templates for introduction of new analyte testing in the clinical laboratory, with defined responsibilities at each level of personnel functions. [PC, MK, PBL, ICS, SBP]
- Know fundamental statistical concepts for laboratory diagnostics, including descriptive methods, inference regarding population means, confidence intervals, parametric and nonparametric statistics, measures of variance and error, sources of analytical error, methodologic bias, ROC curves, Bayes theorem, reportable range, analytical range, and linearity. Utilize these methodologies to select and validate new diagnostic tests and analytical methods. [PC, MK, SBP]
- Understand principles of specimen collection (e.g., phlebotomy technique, safety, and specimen tubes) and specimen processing. [PC, MK, SBP]
- Recognize sources of preanalytical variation and the role of biological variability in laboratory assessment. [PC, MK, PBL, SBP]
- Know how to employ appropriate use of delta checks in detecting preanalytical, analytical, and postanalytical errors. [PC, MK, PBL, SBP]
- Understand the principles of postanalytical result processing and data delivery (see also the Informatics section). [PC, MK, PBL]

Skill Level II

- Understand the principles involved in determination of reference ranges and the limitations of reference range determinations. [PC, MK, PBL]
- Understand how to choose, use, and monitor the performance of reference laboratories. [PC, MK, PBL, SBP]

COMPETENCIES SPECIFIC TO LABORATORY MANAGEMENT

Medical Knowledge

- Understand the most common forms of clinical laboratory organizational structure.
- Understand management theory and the difference between leadership and management.
- Understand the general elements of an income statement and balance sheet.
- Understand the basic approach to creating a budget for the clinical laboratory.
- Be able to assign correct CPT codes for common pathology and laboratory medicine procedures.
- Understand the basic elements of the laboratory safety program.

- Understand the essential elements of choosing a reference laboratory.
- Understand the necessary elements of test cost accounting in the laboratory and be able to cost account a common laboratory procedure.
- Understand how to perform a new instrument evaluation and prepare a financial justification analysis.
- Be able to conduct a performance appraisal.
- Understand the necessary elements of a risk management program and be able to describe how to effectively manage an incident.
- Be able to conduct a management meeting within the laboratory.
- Know how to review external proficiency surveys and respond to identified problems or questions.
- Be able to design a program for test evaluation and validation.
- Be able to participate in a quality process improvement project.
- Understand how to seek and obtain IRB approval for clinical research studies.

Practice-Based Learning and Improvement

- Be able to perform a CAP self-inspection or mock inspection.
- Understand the basic elements of the model compliance plan for laboratories.
- Understand the basic elements of the strategic planning process.
- Be able to participate in a quality process improvement process.

Interpersonal and Communication Skills

- Understand how to conduct an interview for a new employee.

Systems-Based Practice

- Understand the differences between different forms of professional practice.
- Understand the essential elements of professional employment and practice group contracts.
- Understand how to develop a business plan, together with a marketing and sales plan for hospital laboratory outreach program.

Laboratory Management Reference Materials:

1. American Medical Association. *Current Procedural Terminology: CPT 2006*. Chicago, IL: American Medical Association, 2005.
2. College of American Pathologists. *Compliance Guidelines for Pathologists*. Northfield, IL: CAP, 1998.
3. College of American Pathologists. *Professional Relations Manual*, 12th ed. Northfield, IL: CAP, 2003.
4. Davis GG. *Pathology and the Law. A Practical Guide for the Pathologist*. New York: Springer, 2004.
5. Farnsworth JR, Weiss RL. *A mentor-based laboratory management elective for residents*. *Am J Clin Pathol* 1999;111:156–60.

6. Garcia LS, Baselski VS, Burke MD, Schwab DA, Sewell DL, Steele JCH Jr, Weissfield AS, Wilkinson DS, and Winn WC Jr, eds. *Clinical Laboratory Management*, Washington: ASM Press, 2004.
7. Horowitz RE, Naritoku W, Wagar EA. *Management training for pathology residents: a regional approach*. Arch Pathol Lab Med 2004;128:59–63.
8. Kurec AS, Schofield S, Waters MC. *The CLMA Guide to Managing a Clinical Laboratory*. Wayne, PA: Clinical Laboratory Management Association, 1995.
9. Sims K, Darcy TA. A leadership-management training curriculum for pathology residents. Am J Clin Pathol 1997;108:90–5.
10. Travers EM. *Clinical Laboratory Management*. Philadelphia: Lippincott, Williams & Wilkins, 1997.
11. Weiss RL. A clinical laboratory management elective for residents. Arch Pathol Lab Med 1992;116:108–10.

INFORMATICS OBJECTIVES

Basic Computer Skills

Skill Level I

- Understand terms and concepts related to computer hardware and software. [PBL, SBP]
- Understand basic computer networking concepts. [PBL, SBP]
- Understand how to use word processing, spreadsheet, presentation graphics, and statistical software. [PBL, SBP]

Laboratory Information System Concepts

Skill Level I

- Understand the major features of a laboratory information system. [PBL, SBP]
- Know the basic data elements of a laboratory information system. [PBL, SBP]
- Be able to extract data from the laboratory information system. [PBL, ICS, SBP]

Security and Privacy

Skill Level I

- Understand HIPAA guidelines for security and privacy of protected health information. [PC, MK, PBL, SBP]

The Internet and World Wide Web

Skill Level I

- Know internet-related terms and concepts. [PBL, ICS, SBP]
- Be able to utilize the internet to –Access internet-based databases; –Perform literature searches. [PC, MK, PBL, ICS, SBP]

Communication and Standards

Skill Level I

- Develop basic understanding of how the laboratory information system shares data with other networked systems within the enterprise. [PBL, ICS, SBP]

Skill Level II

- Develop basic understanding of laboratory instrument interfaces. [PC, MK, PBL, SBP]
- Understand data standards and encoding schemes, such as Health Level Seven (HL7), Logical Observation Identifier Names and Codes (LOINC), Systematized Nomenclature of Medicine by the CAP (SNOMED), International Classification of Diseases (ICD-9 and ICD10), and CPT. [PC, MK, PBL, SBP]

Emerging Technologies

Skill Level II

- Develop a basic understanding of telepathology systems and concepts. [PC, MK, PBL, ICS, SBP]
- Develop a basic understanding of bioinformatics concepts with an emphasis on the critical evaluation of evolving bioinformatics tools. [PC, MK, PBL, ICS, PRO, SBP]
- Develop a basic understanding of evolving multiparameter diagnostic approaches. [PC, MK, PBL, SBP]

Informatics Reference Materials

1. Van Bommel J, Musen MA, eds. *Handbook of Medical Informatics*. New York: Springer, 1997.
2. Wiederhold G, Shortliffe EH, Fagan LM, Perreault LE, eds. *Medical Informatics: Computer Applications in Health Care and Biomedicine*, 2nd ed. New York: Springer

PGY SPECIFIC GOALS

PGY 1 GOALS: By the end of the first year:

- The resident should achieve competency in Skill Level 1

PGY 2 GOALS: By the end of the second year:

- The resident should achieve competency in Skill Level 1 and some of Level 2

PGY 3 GOALS: By the end of the third year:

- The resident should achieve competency in Skill Level 1 and most of Level 2

PGY 4 GOALS:

- The resident should be competent in all Skill Levels 1 and 2 for laboratory management and informatics

GENERAL - Throughout the entire duration of residency training the resident must also demonstrate the specific skills for Professionalism, Practice--Based Learning and Improvement, Interpersonal and Communication Skills and System-Based Learning as listed on pages 16 and 17.

Duties and Responsibilities

Each resident is expected to:

- Become familiar with the schedule of the formal activities cited above and to participate on a regular basis.
- Work with the appropriate faculty/administrative and management staff to become involved in the management and informatics activities in the Department.
- Ascertain the specific management/informatics responsibilities associated with each service and to meet those responsibilities in a timely fashion.
- Attend all administrative meetings with the Laboratory Medical Director.

- Participation in quality assurance and quality improvement activities is an essential part of the resident's curriculum. Quality assurance (QA) and quality improvement (QI) activities are not limited to a single rotation; but rather span the entire length of the residency. Residents in all Clinical Pathology rotations must attend monthly QI meetings. The activities are present in both the medical and administrative areas of the Department. Participation in these activities from both perspectives will provide insight into the pathologist's role and the Department's role in hospital QA/QI programs. During the first three months of starting the residency, a session is held with the Administrative Lab Director. At this time the resident is given an overview of the QA/QI activities of the Department and the expectations of the resident's participation in those activities is outlined.

Brief Description of Computer Operation

The laboratory information system is interfaced with an SMS Action 2000 hospital information system. Admissions, discharges transfers and test requests are transmitted from the Hospital Information System (HIS) across the interface. The Misys modules installed include Anatomic Pathology (CoPath module), General Laboratory and Blood Bank.

Phlebotomy collection lists and labels are generated by the system. Each laboratory department uses worksheets or pending logs to display outstanding tests. Test results are entered by means of a CRT or instrument interfaces. The test data is automatically subjected to normal range, technical range and delta checking, and discrepancies are displayed on a CRT. All test results must be verified before being accepted into the patient files.

INTEGRATED CLINICAL PATHOLOGY (VAMC)

The integrated clinical pathology rotation is offered at the VA Medical Center. It is designed for PGY-2 or higher residents who have had initial rotations in different areas of clinical pathology. The rotation aims to expose the resident to various aspects of management and service work in an integrated clinical pathology laboratory. Residents will assume graded responsibility in subsequent months on this rotation.

GOALS AND OBJECTIVES

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal: <i>Residents must demonstrate a satisfactory level of diagnostic competence and the ability to provide appropriate and effective consultation in the context of clinical laboratory services</i>		
Objectives:	Learning Activities	Evaluation Activities
Gather essential and accurate information about patients using all relevant available modalities.	FSO,DSP, RM, IC	RR,DO, GR/FE
Act as a skilled consultant to other clinicians to develop a diagnostic plan based on specific clinical questions and relevant clinical and pathologic information. This should be accomplished both in the patient-specific setting and the broader context of developing appropriate clinical pathway algorithms for diagnosis.	DL, FSO, DSP, RM, IC	DO, GR/FE, SE, IWE
Gain knowledge and technical skills to recognize, interpret, and explain pathologic processes in the clinical practice of laboratory medicine.	FSO,DL,JC, DSP, RM	DO, GR/FE, SE, IWE
Consult as part of a multidisciplinary healthcare team in developing a therapeutic plan that includes laboratory monitoring of efficacy and toxicity.	DL,JC, DSP, RM, IC	DO, GR/FE, IWE
Provide expert consultation on the interpretation and follow-up of unusual or unexpected test results.	FSO,DL, DSP, RM	DO, GR/FE, SE, IWE
Consult as a clinical expert in laboratory medicine at multidisciplinary conferences.	DSP, RM, IC	DO, GR/FE, PCL
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Demonstrate knowledge about established and evolving biomedical, clinical and cognitive (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to laboratory medicine.</i>		
Objectives:	Learning Activities	Evaluation Activities
Be able to use all relevant information resources to acquire and evaluate evidence-based information. Demonstrate proficiency in evaluating and presenting findings from appropriate peer-reviewed journals.	FSO,DL, JC, DSP, RM, IC	RR, DO, GR/FE, SE, IWE
Develop and maintain a knowledge base in the basic and clinical sciences necessary for effective consultation in hematopathology..	DL, JC, DSP, IC	RR, DO, GR/FE, SE, IWE
Demonstrate sufficient knowledge to determine clinically optimal yet	DL, JC, RM,	RR, DO,

cost-effective testing and laboratory-based therapeutic strategies, including issues of turnaround time, test menu construction, and in-house referral diagnostic testing.	IC,FSO	GR/FE, SE, IWE
Employ mathematics and statistics as appropriate to laboratory testing; understand and implement quality control (QC) and quality assurance procedures as required.	DL, JC, RM	DO, CL, GR/FE, SE, IWE
Recognize the unique aspects of laboratory medicine practice as modified by patient age and other patient population characteristics, especially aspects of pediatric and geriatric practice.	DL, JC, DSP, RM, IC	RR, DO, GR/FE, SE, IWE
Demonstrate awareness and understanding of general and test-specific standards for method development and evaluation, such as those promulgated by the Clinical Laboratory Standards Institute (CLSI; formerly NCCLS), CAP, and similar organizations.	DL, RM, LI	DO, GR/FE, SE, IWE
Demonstrate awareness and understanding of proficiency programs, such as those provided by CAP and similar organizations.	DL, RM, LI, OT	DO, GR/FE, SE, IWE
Demonstrate knowledge of the principles of clinical research design, implementation, and interpretation. Understand the various levels of evidence in medicine and their translation into evidence-based practice.	JC, DSP, RM, P	DO, GR/FE, SE, IWE
Be able to design a study that can be used to validate methodologies and parameters of clinical utility for the implementation and continuing use of new evidence-based analytes in the local setting.	DL, JC, DSP, RM, LI, P	DO, GR/FE, SE, IWE
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise and assimilate scientific evidence and improve their patient care practices.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to critically assess the scientific literature.	JC, RM	DO, GR/FE
Demonstrate knowledge of evidence-based medicine and apply its principles in practice.	JC, RM	DO, GR/FE
Use multiple sources, including information technology, to optimize lifelong learning and support patient care decisions.	JC, RM, OT	DO, GR/FE
Develop personally effective strategies for the identification and remediation of gaps in medical knowledge needed for effective practice.	DSP, RM	DO, GR/FE, SE, IWE
Use laboratory problems and clinical inquiries to identify process improvements to increase patient safety.	RM, IC	DO, GR/FE
Demonstrate knowledge of how to establish continuing competency assessment for pathologists as well as for laboratory personnel.	RM, LI	DO, GR/FE
Use proficiency programs to improve laboratory practices.	RM, LI, OT	DO, GR/FE
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with other health care providers, patients and patients' families.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to provide direct communication to the referring physician or appropriate clinical personnel when interpretation	DSP, RM	DO, GR/FE

of a laboratory assay reveals an urgent, critical, or unexpected finding and document this communication in an appropriate fashion.		
Conduct both individual consultations and presentations at multidisciplinary conferences that are focused, clear, and concise.	RM, IC	DO, GR/FE
Demonstrate the ability to communicate the vision of the laboratory medicine service role to other clinicians as well as to other healthcare personnel and administrators to develop clinically advantageous and cost-effective strategies.	RM, IC	DO, GR/FE
Choose effective modes of communication (listening, nonverbal, explanatory, questioning) and mechanisms of communication (face-to-face, telephone, e-mail, written), as appropriate.	RM, IC	RR, DO, GR/FE
Demonstrate skills in educating colleagues and other healthcare professionals: (1) demonstrate the ability to help other residents obtain proficiency in laboratory medicine; (2) demonstrate the ability to work well with technologists and to present laboratory medicine concepts to them effectively in continuing education settings and in the day-to-day laboratory environment; (3) demonstrate the ability to educate non-pathology clinicians and other healthcare workers, including pharmacists, nurses, residents, medical students, and others, about topics such as the fundamental principles of pathophysiology underlying test design/ interpretation and the approach to choosing and interpreting laboratory tests; (4) demonstrate an understanding of the principles one must follow when educating other practicing pathologists through publications or seminars on new testing and therapeutic strategies, research discoveries, and other cutting-edge professional knowledge.	JC, RM, IC	DO, GR/FE
CORE COMPETENCY: PROFESSIONALISM		
Goal: <i>Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population.</i>		
Objectives:	Learning Activities	Evaluation Activities
Interact with others without discriminating on the basis of religious, ethnic, sexual, or educational differences.	DSP, RM, IC	DO, GR/FE
Demonstrate positive work habits, including punctuality, dependability, and professional appearance.	RM	DO, GR/FE
Demonstrate a responsiveness to the needs of patients and society that supersedes self-interest.	DSP, RM	DO, GR/FE
Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.	DL, DSP, RM, IC	DO, GR/FE
Demonstrate knowledge of regulatory issues pertaining to the use of human subjects in research.	DL, OT	GR/FE, SE
Demonstrate a commitment to excellence and ongoing professional development.	RM	DO, GR/FE
Demonstrate interpersonal skills in functioning as a member of a multidisciplinary healthcare team	DSP, RM, IC	DO, GR/FE
CORE COMPETENCY: SYSTEM-BASED PRACTICE		

Goal: <i>Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide pathology services that are of optimal value</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate understanding of the role of the clinical laboratory in the healthcare system.	DL, LI, IC	DO, GR/FE
Demonstrate the ability to design resource-effective diagnostic plans based on knowledge of best practices in collaboration with other clinicians.	RM	DO, GR/FE, SE, IWE
Demonstrate knowledge of basic healthcare reimbursement methods.	DL	DO, GR/FE, SE, IWE
Demonstrate knowledge of the laboratory regulatory environment, including licensing authorities; federal, state, and local public health rules and regulations; regulatory agencies such as the Centers for Medicare and Medicaid Services and the US Food and Drug Administration; and accrediting agencies such as The Joint Commission (TJC), CAP, and the ACGME.	DL, FSO, LI, OT	DO, GR/FE, SE, IWE
Understand and implement policies to continually improve patient safety as they relate to the clinical laboratory.	FSO, RM, LI, P	DO, GR/FE

ADDITIONAL SPECIFIC OBJECTIVES

Chemistry

Skill Level II

- Understand the general principles of assay calibration, QC, and the need for calibration verification. (PC, MK, PBL)
- Understand the causes of both positive and negative interferences as well as how to detect and avoid them. (PC, MK)
- Identify factors influencing separation and resolution in electrophoresis and chromatography, including mechanism of separation and mobile/stationary phases. (PC, MK)

Hematology

Skill Level II

- Interpret results of automated and manual cell counts and understand the relevant technical limitations. (PC, MK, PBL)
- Recommend appropriate steps for abnormal sample processing, analysis, and result reporting. (PC, MK, PBL, ICS, SBP)
- Review abnormal results and correlate results with peripheral blood smear findings and clinical history. (PC, MK)
- Recognize abnormal RBC, WBC, and platelet morphology; formulate a differential diagnosis; and suggest appropriate laboratory testing for follow-up. (PC, MK)

- Recognize technical artifacts in WBC, RBC, and platelet morphology. (PC, MK)
- Recognize infectious disorders that can be diagnosed by blood smear. (PC, MK)
- Correlate peripheral blood smear findings with bone marrow morphology. (PC, MK)
- Interpret results of body fluid analyses in the appropriate clinical context. (PC, MK, SBP)
- Recognize malignant cells and recommend appropriate confirmatory tests. (PC, MK,)
- Correlate abnormal body fluid cell morphology with cytology, flow cytometry, and other relevant diagnostic test results. (PC, MK, SBP)
- Identify body fluid crystals. Distinguish between urate and calcium pyrophosphate crystals, using polarized light. (PC, MK)
- Understand the pathophysiology, clinical findings, etiology, and expected bone marrow morphology for vitamin deficiency anemias, hemoglobinopathies, thalassemias, aplastic anemia, red cell aplasia, leukemias, myeloproliferative disorders, myelodysplastic syndromes, plasma cell dyscrasias, and mast cell diseases. (PC, MK)
- Integrate morphology, cytochemistry, immunophenotype, and molecular and cytogenetics in the differential diagnosis of acute and chronic leukemia, lymphoma, and myeloproliferative and myelodysplastic diseases. (PC, MK, SBP)
- Integrate peripheral blood smear and bone marrow findings and render a preliminary diagnosis. (PC, MK, PBL, ICS, SBP)
- Know the post-therapy findings seen after treatment for leukemia and the temporal relationships to marrow regeneration post therapy. (PC, MK, SBP)
- Recognize the bone marrow manifestations of infections (e.g., viral, fungal, and hemophagocytic syndromes). (PC, MK)
- Recognize the bone marrow manifestations of noninfectious systemic diseases (e.g., alcoholism, collagen vascular disease, and nonhematologic malignancies) (PC, MK)

Microbiology

Skill Level II

- Know the media used for isolation of less common or fastidious bacteria. (PC, MK)
- Understand the advantages and disadvantages of methods used to identify bacteria, including automated systems and manual methods (including biochemical reactions such as oxidase, catalase, PYR, lactose fermentation, and metabolism of glucose and other carbohydrates). (PC, MK)
- Acquire advanced skills in microscopy, including the ability to read and interpret respiratory and wound Gram stains and fluorescent stains. (PC, MK)

Transfusion Medicine

Skill Level II

- Demonstrate proficiency in evaluating and recommending treatment plans for complex transfusion reactions. (PC, MK, PBL, ICS, PRO, SBP)
- Demonstrate familiarity with the appropriate use of highly specialized blood components. (PC, MK, SBP)

- Compare and contrast the various means of performing blood utilization reviews. (PC, MK, PBL, SBP)

Laboratory Management

Skill Level I

- Appreciate the conflicting responsibilities and rewards of pathologists, administrators, and technologists, and even the competing interests within each group as necessary to the positive functioning of the laboratory. (PBL, ICS, PRO, SBP)
- Understand the nature of the relationships between pathologists, hospitals, and medical staffs, including a basic understanding of contracts, decision-making, and effective negotiation. (PBL, ICS, PRO, SBP)
- Develop skills to project an environment of patient-oriented and ethical service. (PC, MK, PBL, ICS, PRO, SBP)
- Understand the organization for the laboratory, including preanalytical sample acquisition, accessioning and processing, structure of analytical units, and postanalytical sample resulting. (PC, MK)
- Recognize the different skill sets required of personnel in all of these areas. Be able to analyze work flow in the laboratory. (PC, MK, PBL)
- Understand the role of quality assurance, quality management, and process improvement principles in laboratory operation and planning. (PC, MK, PBL, SBP)
- Understand the role of interlaboratory proficiency surveys, such as the CAP proficiency surveys. (PC, MK, PBL, SBP)
- Recognize sources of preanalytical variation and the role of biological variability in laboratory assessment. (PC, MK, PBL, SBP)
- Know how to employ appropriate use of delta checks in detecting preanalytical, analytical, and postanalytical errors. (PC, MK, PBL, SBP)

Skill Level II

- Understand the nature and behavior of costs in the laboratory, including test-cost accounting. (PBL, SBP)
- Understand how to monitor utilization and become familiar with strategies to effectively manage utilization in a healthcare organization. (PBL, ICS, PRO, SBP)
- Be able to participate in a quality improvement process. (PBL, ICS, PRO, SBP)

ADDITIONAL SPECIFIC SKILLS

- Evaluate abnormal peripheral blood smears (Wright-Giemsa stain). (PC, MKP)
- Evaluate abnormal body fluid specimens (Wright-Giemsa stain). (PC, MK)
- Evaluate bone marrow aspiration and biopsy specimens including (PC, MK)
- Wright-Giemsa stained peripheral blood smears, bone marrow aspirate smears, and bone marrow biopsy touch imprints
- H&E stained bone marrow biopsy and aspirate clot sections

- Iron stained aspirate smear and clot section
- Reticulin stained biopsy section
- Other special and/or immunohistochemical stains.
- Prepare a written bone marrow report including results of iron, reticulin, and other special stains, immunohistochemical stains, flow cytometric results, and cytogenetic and molecular genetic results.
- Know the guidelines for utilization of various blood products. (PC, MK)
- Assess appropriateness of blood product orders using MSBOS and blood product utilization guidelines. (PC, MK, PBL, SBP)
- Assess appropriateness of initial requests for leukoreduced, irradiated, CMV-negative, and other special blood products. (PC, MK, SBP)
- Evaluate suspected transfusion reactions. (PC, MK, SBP)
- Prepare a written transfusion reaction report incorporating clinical and laboratory information and provide recommendations. (PC, MK, PBL, ICS, PRO, SBP)
- Evaluate unusual serologic results in the blood bank and recommend further work-up. (PC, MK)
- Understand the function of the Transfusion Committee. (PBL, SBP)
- Work-up and present transfusion audit cases at Transfusion Committee meetings. (PC, MK, PBL, ICS, PRO, SBP)
- Understand the utility and principle of routine media used in the clinical Microbiology Lab. (PC, MK,)
- Understand the rationale for selecting particular media for different specimens. (PC, MK)
- Observe and understand the process of receiving, accessioning and plating a specimen for culture. (PC, MK)
- Understand the principle and procedure for rapid tests used in the clinical Microbiology Lab. (PC, MK)
- Understand principle and procedure for screening sputum specimens for culture. (PC, MK)
- Understand the principle and procedure for Gram stain procedure. (PC, MK)
- Understand the principle of the growth detection system for blood culture bottles. (PC, MK)
- Understand the principle and procedure for performing Vitek identification and susceptibility system. (PC, MK)
- Understand the function of the Infection Control Committee. (PC, MK, PBL, SBP)
- Interpret results of serum and urine protein electrophoresis and immunofixation studies and prepare written reports. (PC, MK, PBL, ICS, SBP)
- Understand the problems encountered in daily practice in various areas of the clinical pathology laboratory. (PC, MK, PBL, SBP)
- Understand the role of the clinical pathology laboratory and the clinical pathologist in providing optimal patient care services in a cost efficient manner. (PBL, SBP)
- Critically analyze laboratory utilization practices and assess appropriateness of reference laboratory (send out) test orders. (PBL, SBP)
- Provide consultation to clinical colleagues about issues related to test ordering, performance characteristics of tests, and interpretation of test results in Hematology, Coagulation, Chemistry, Immunology, Therapeutic Drug Monitoring, and Microbiology. (PC, MK, PBL, ICS, PRO, SBP)

Duties and Responsibilities of Residents

- Be present in the laboratory or be available on pager between 8 am and 5 pm on weekdays.
- Review bone marrow, peripheral smear, and body fluid cases with Staff Pathologist.
- Review electrophoresis results with Staff Pathologist.
- Review transfusion reactions with Staff Pathologist.
- Review reference laboratory test orders for appropriateness and medical necessity.
- Attend Transfusion Committee meeting (monthly) and present transfusion audit cases.
- Attend Infection Control Committee meeting (monthly) and assist Staff Microbiologist in addressing laboratory issues.
- Attend Senior Staff and Supervisors meeting (monthly).
- Attend Pathology-Oncology-Surgery conference (monthly).
- Attend Cancer Conference (weekly).
- Complete learning objectives stated above through participation in laboratory work, attendance at departmental and interdepartmental meetings, review of textbooks and journal articles, and participation in laboratory studies.

Reference Reading List

1. Henry JB ed. *Clinical Diagnosis and Management by Laboratory Methods*, 22nd ed. W B Saunders
2. *Technical Manual*, 17th ed. AABB
3. Koneman EG et al. *Color Atlas and Textbook of Diagnostic Microbiology*, 6th ed. Lippincott Williams & Wilkins
4. Jaffe ES, Harris NL, Stein H, Vardiman JW eds. *Tumors of Hematopoietic and Lymphoid Tissues*. IARC Press.
5. Karen DF. *Protein Electrophoresis in Clinical Diagnosis*. Oxford University Press.

Resident Evaluation

- The resident must show active participation in the functions of the clinical pathology laboratory.
- The resident must be responsible for his/her duties and be available to the laboratory and clinical staff for consultations.
- The resident must show improvement of knowledge in the areas outlined above.

KANSAS CITY VAMC FACULTY

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CYTOGENETICS

INTRODUCTION

The goal of the rotation in the cytogenetics laboratory is to become competent in the interpretation of basic chromosome abnormalities, and to learn consultative skills that aid the clinician in the diagnosis of chromosomal syndromes.

GOALS AND OBJECTIVES

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal: <i>Residents must demonstrate a satisfactory level of interpretive competence in cytogenetics.</i>		
Objectives:	Learning Activities	Evaluation Activities
Correlate chromosomal abnormalities with specific hematologic disorders such as myelodysplastic syndromes, hematologic malignancies, and myeloproliferative disorders.	FSO, RM, OT, DL	DO, GR/FE, IWE
Recognize abnormal karyotyping in prenatal specimens, including, but not limited to, Turner syndrome, Klinefelter syndrome, trisomy 21, trisomy 13 and trisomy 18.	FSO, RM, OT, DL	DO, GR/FE, IWE
Understand the use of fluorescence in situ hybridization (FISH) analysis for common disorders involving aneuploidies, microdeletions, or chromosomal translocations, including hematologic disorders such as acute promyelocytic leukemia and chronic myelogenous leukemia.	FSO, RM, OT, DL	DO, GR/FE, IWE
Recognize the major chromosomal abnormalities and their association with congenital syndromes, human malignancies, and spontaneous abortion.	FSO, RM, OT, DL	DO, GR/FE, IWE
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Demonstrate knowledge about established and evolving biomedical, clinical and cognitive sciences and the application of this knowledge to cytogenetics.</i>		
Objectives:	Learning Activities	Evaluation Activities
Have awareness of sample types, preparation, and storage conditions for cytogenetic tests.	FSO, RM, OT, DL	DO, GR/FE, IWE
Understand sample preparation from peripheral blood, bone marrow, amniocytes, chorionic villi, skin, and products of conception for karyotyping.	FSO, RM, OT, DL	DO, GR/FE, IWE
Understand basic cell and tissue culture techniques, harvesting, slide preparation, banding, staining and microscopic analysis for karyotyping.	FSO, RM, OT, DL	DO, GR/FE, IWE
Have knowledge of different FISH probe strategies (dual fusion, break-apart, etc).	FSO, RM, OT, DL	DO, GR/FE, IWE

Recognize the major chromosomal abnormalities and their association with congenital syndromes, human malignancies, and spontaneous abortion.	FSO, RM, OT, DL	DO, GR/FE, IWE
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise and assimilate scientific evidence and improve their patient care practices.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to critically assess the scientific literature.	JC, RM, OT	DO, GR/FE
Demonstrate knowledge of evidence-based medicine and apply its principles in practice.	FSO, JC, RM, OT	DO, GR/FE
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise and assimilate scientific evidence and improve their patient care practices.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to critically assess the scientific literature.	JC, RM, OT, P	DO, GR/FE
Demonstrate knowledge of evidence-based medicine and apply its principles in practice.	FSO, JC, RM, OT, P	DO, GR/FE
Develop personally effective strategies for the identification and remediation of gaps in medical knowledge needed for effective practice.	DSP, RM, USC	DO, GR/FE
Use laboratory problems and clinical inquiries to identify process improvements to increase patient safety.	FSO, RM, IC	DO, GR/FE
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with other health care providers, patients and patients' families.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to provide direct communication to the referring physician or appropriate clinical personnel when interpretation of a laboratory assay reveals an urgent, critical, or unexpected finding and document this communication in an appropriate fashion.	FSO, DSP, RM	DO, GR/FE
Choose effective modes of communication (listening, nonverbal, explanatory, questioning) and mechanisms of communication (face-to-face, telephone, e-mail, written), as appropriate.	FSO, RM, IC, USC	DO, GR/FE
Conduct both individual consultations and presentations at multidisciplinary conferences that are focused, clear, and concise.	RM, IC, USC	DO, GR/FE
CORE COMPETENCY: PROFESSIONALISM		

Goal: <i>Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate compassion: be understanding and respectful of patients, their families, and the staff and physicians caring for them.	FSO, DSP, RM, IC	DO, GR/FE
Interact with others without discriminating on the basis of religious, ethnic, sexual, or educational differences.	FSO, DSP, RM, IC	DO, GR/FE
Demonstrate positive work habits, including punctuality, dependability, and professional appearance.	FSO, RM	DO, GR/FE
Demonstrate a responsiveness to the needs of patients and society that supersedes self-interest.	FSO, DSP, RM	DO, GR/FE
Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.	DL, FSO, DSP, RM, IC	DO, GR/FE
Demonstrate a commitment to excellence and ongoing professional development.	RM	DO, GR/FE
CORE COMPETENCY: SYSTEM-BASED PRACTICE		
Goal: <i>Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide pathology services that are of optimal value</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate understanding of the role of the laboratory in the healthcare system.	DL, FSO, LI, IC	DO, GR/FE
Show a working knowledge of the basic principles of quality assurance, quality control, continuous quality improvement, and outcomes analysis, as they apply to cytogenetics.	FSO, RM, LI	DO, GR/FE
Demonstrate a familiarity with standards set forth by the CAP and TJC for laboratory certification.	RM, LI, OT	DO, GR/FE

SPECIFIC QUESTIONS TO BE DISCUSSED WITH THE DIRECTOR

- t(9;22) - What diseases is this associated with? What percentage of cases within each disorder is it present? What is the clinical significance when it is present in each disease? What are the genes that are located at the breakpoints? What is the molecular basis of the abnormality? What is the major breakpoint and what is the minor breakpoint? What is Gleevec? What is the mechanism of action of Gleevec?
- t(15;17) - What disease is this associated with? What gene is located at the breakpoint on chromosome 17? How is this disorder treated? What is the prognosis?

- t(8;14) - What disorder(s) is this associated with? What genes are located at each breakpoint? What alternative translocations are associated with the t(8;14)? What is the molecular basis of the abnormality?
- t(8;21) - What disorder is this associated with? What genes are involved? What is the prognosis?
- Inv(16) - What disorder is this associated with? What genes are involved? What is the prognosis?
- t(9;11) - Associated disorder? What gene is located at 11q23? What is the prognosis?
- Inv(3)(q21q26.2) – prognosis?
- t(4;11) - Associated disorders? What is the prognosis?
- What is the most common situation in which *FLT3*, *NPM1*, and *CEBPA* mutation assays are ordered? What is the clinical significance of each mutation?
- *KIT* mutations are clinically significant in AMLs with what cytogenetic abnormalities? How does the *KIT* mutation change the prognosis in AML? What other disorders are *KIT* mutations seen in?
- Describe diseases associated with *PDGFRA* and *PDGFRB* abnormalities.
- t(2;5) - Associated disorder? What is the important gene?
- t(11;14) - Associated disorders? What genes are located at each breakpoint? What are the functions of the genes?
- t(14;18) – What are the associated disorders? What genes are located at each breakpoint? What are the functions of the genes?
- t(11;18) – What is the associated disorder? What is the clinical significance?
- t(12;21) – What is the associated disorder? Associated genes? Prognosis?
- del(5q) – What is(are) the associated disorder(s)? What are the characteristics of the 5q- syndrome? Is 5q- found outside of the 5q- syndrome?
- -7 – What are the associated disorders? What is the prognosis?
- Loss of the Y chromosome - What is the clinical significance when seen in a bone marrow specimen?
- What are the most common additional chromosome abnormalities associated with CML in an accelerated phase or blast crisis?
- What chromosome abnormality is often associated with secondary AML following treatment with topoisomerase II inhibitors?
- What chromosome abnormalities are often associated with secondary AML following chemotherapy with alkylating agents?
- What are the cytogenetic and clinical prognostic factors associated with childhood ALL?
- What are the cytogenetic prognostic factors associated with multiple myeloma? What makes up a MM FISH panel?
- What are the cytogenetic prognostic factors associated with chronic lymphocytic leukemia? What makes up a CLL FISH panel?
- What is the UroVysion FISH assay used for?
- Describe the cytogenetic abnormalities associated with the following solid tumors:
 - Ewings sarcoma
 - Alveolar rhabdomyosarcoma
 - Myxoid liposarcoma
 - Synovial sarcoma

- Alveolar soft part sarcoma
- Clear cell sarcoma
- Extraskkeletal myxoid chondrosarcoma
- What is the clinical significance of deletion of 1p and 19q in oligodendroglioma?
- What is the clinical significance of gene amplification for
 - HER2 in breast carcinoma
 - MYCN in neuroblastoma
- Describe the clinical cytogenetic abnormalities and picture for Down, Edward and Patau syndromes.
- What other cytogenetic abnormality can cause Down syndrome (other than trisomy 21)? What is the importance in differentiating between the two?
- What are the common serum screening tests for Down syndrome?
- What is the incidence in the general population of a balanced translocation carrier? What is the significance to the carrier and to the family?
- Briefly describe the *Cri du Chat* syndrome.
- Briefly describe the deletion 22q11.2 syndrome.
- What is genomic imprinting? Describe how Prader-Willi and Angelman diseases are associated with genomic imprinting? How are ovarian teratomas and partial molar pregnancies related to genomic imprinting?
- Describe the cytogenetic and clinical pictures of Turner and Klinefelter syndrome.
- If a portion of a Y chromosome is present in a Turner patient, what is the patient at risk for developing?
- Describe the clinical, cytogenetic and molecular findings in Fragile X syndrome. What is a pre-mutation?
- Describe the role of chromosome abnormalities in spontaneous abortions.
- What is high resolution chromosome analysis?
- What is comparative genomic hybridization array analysis? How does it complement routine cytogenetic analysis?
- What is a break-apart FISH probe? What is a dual fusion FISH probe?

DUTIES AND RESPONSIBILITIES OF RESIDENTS

- Set up, harvest, and analyze a blood specimen.
- Discuss above questions with director.
- Review each case coming through the lab during the month. Verify the correct test has been ordered and the correct procedure is being performed. Anticipate the possible cytogenetic findings. Be prepared to discuss the clinical significance of the findings. Sign each report below the director's signature line. Be present to discuss each case when director is signing out.
- Check in Hematology and Surgical Pathology for diagnosis on all hematology cases coming through the lab. Be ready to discuss the relationship between the diagnosis and the cytogenetic result.

- Spend as much time as possible in the Cytogenetics Laboratory (if gone to a conference, leave your page number with a tech). You will be assigned a desk in the analysis area where you can do your reading and where you can become involved with cases as they arrive and are being analyzed.
- The resident will be given both a pre-test (first day of rotation) and a post-test (last day of rotation) to determine the increased competency obtained during the rotation.

REFERENCES

1. Gardner RJM, Sutherland GR. *Chromosome Abnormalities and Genetic Counseling*, 3rd ed. New York: Oxford University Press, 2004.
2. Gersen S, Keagle M. *The Principles of Clinical Cytogenetics*. Totowa, NJ: Humana Press, 1999.
3. **Heim S, Mitelman F. *Cancer Cytogenetics***, 2nd ed. New York: Wiley-Liss, 1995.
4. Shaffer LG, Tommerup N, eds. *ISCN 2005: An International System for Human Cytogenetic Nomenclature*. Basel, Switzerland: S Karger, 2005.
5. Therman E, Susman M. *Human Chromosomes*, 4th ed. New York: Springer-Verlag, 2001.
6. Thompson MW, McInnes RR, Willard HF, eds. **Thompson & Thompson: Genetics in Medicine**, 6th ed. Philadelphia: WB Saunders, 2004.
7. **World Health Organization Classification of Tumors: Pathology & Genetics – Tumors of Haematopoietic and Lymphoid Tissues**, Ed. Jaffe, et al. IARC Press, 2008.
8. **World Health Organization Classification of Tumors: Pathology & Genetics – Tumors of Soft Tissue and Bone**, Ed. Fletcher, et al, IARC Press, 2002.
9. <http://www.infobiogen.fr/services/chromcancer/index.html>

MOLECULAR PATHOLOGY

The overall goal of the Molecular Pathology rotation is to become competent in the interpretation of molecular testing and to learn consultative skills that in the areas of molecular pathology, toxicology and histocompatibility testing. One month is spent at Children’s Mercy Hospital (three weeks in the molecular diagnostic laboratory and one week in clinical toxicology lab). Several days are spent in the KU Pathology Molecular Diagnostic Laboratory and/or the KU Hospital Molecular Diagnostic Laboratory (see Microbiology rotation description). And two to four days are spent at the Midwest Transplant Network to learn the testing concepts in histocompatibility testing for transplants.

GOALS AND OBJECTIVES

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal: <i>Residents must demonstrate a satisfactory level of competence in molecular pathology, toxicology and histocompatibility testing</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate a satisfactory level of competence in interpreting molecular test results (list of example molecular tests is below)	FSO, DSP, JC, RM, DL, IC	DO, GR/FE, SE
Demonstrate a satisfactory level of competence in interpreting toxicology test results (list of example molecular tests is below)	FSO, DSP, RM, DL	DO, GR/FE
Demonstrate a satisfactory level of competence in interpreting histocompatibility test results (list of example molecular tests is below)	FSO, DSP, RM, DL	DO, GR/FE
Demonstrate competence in consultation for appropriate molecular pathology testing based on the clinical presentation	FSO, DSP, JC, RM, DL, IC	DO, GR/FE, SE
Demonstrate competence in consultation for appropriate toxicology testing based on the clinical presentation	FSO, DSP, RM, DL	DO, GR/FE
Demonstrate competence in consultation for appropriate histocompatibility testing based on the clinical presentation	FSO, DSP, RM, DL	DO, GR/FE
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Demonstrate knowledge about established and evolving biomedical, clinical and cognitive sciences and the application of this knowledge to molecular pathology</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate basic knowledge in molecular testing techniques.	DL, JC, FSO, DSP, IC	DO, GR/FE, SE
Demonstrate knowledge of common genetic disorders and molecular tests associated with the disorders	DL, FSO, DSP, IC	DO, GR/FE
Demonstrate knowledge of the use of appropriate molecular tests	DL, JC, FSO,	DO, GR/FE,

for neoplastic, infectious, and constitutional disorders	DSP,IC	SE
Demonstrate knowledge of appropriate specimen handling, storage and use for specific molecular, toxicology and histocompatibility testing.	DL,JC,FSO, DSP,IC	DO, GR/FE
Demonstrate knowledge of the use of histocompatibility testing for transplant purposes	DL,JC,FSO, DSP,IC	DO, GR/FE
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise and assimilate scientific evidence and improve their patient care practices.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to critically assess the scientific literature.	JC, RM, OT	DO, GR/FE
Demonstrate knowledge of evidence-based medicine and apply its principles in practice.	FSO, JC, RM, OT	DO, GR/FE
Develop personally effective strategies for the identification and remediation of gaps in medical knowledge needed for effective practice.	DSP, RM	DO, GR/FE, SE
Use laboratory problems and clinical inquiries to identify process improvements to increase patient safety.	FSO, RM, IC	DO, GR/FE
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with other health care providers, patients and patients' families.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to provide direct communication to the referring physician or appropriate clinical personnel when interpretation of a laboratory assay reveals an urgent, critical, or unexpected finding and document this communication in an appropriate fashion.	FSO, DSP, RM	RR, DO, GR/FE
Choose effective modes of communication (listening, nonverbal, explanatory, questioning) and mechanisms of communication (face-to-face, telephone, e-mail, written), as appropriate.	FSO, RM, IC	RR, DO, GR/FE
Conduct both individual consultations and presentations at multidisciplinary conferences that are focused, clear, and concise.	RM, IC	DO, GR/FE
CORE COMPETENCY: PROFESSIONALISM		
Goal: <i>Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate knowledge of regulatory and Health Insurance Portability and Accountability Act (HIPAA) issues pertaining to the use of genetic testing in human research and clinical molecular practice.	FSO, DSP, RM	RR, DO, GR/FE
Demonstrate compassion: be understanding and respectful of	FSO, DSP,	DO, GR/FE

patients, their families, and the staff and physicians caring for them.	RM, IC	
Interact with others without discriminating on the basis of religious, ethnic, sexual, or educational differences.	FSO, DSP, RM, IC	DO, GR/FE
Demonstrate positive work habits, including punctuality, dependability, and professional appearance.	FSO, RM	DO, GR/FE
Demonstrate a responsiveness to the needs of patients and society that supersedes self-interest.	FSO, DSP, RM	DO, GR/FE
Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.	FSO, DSP, RM, IC	DO, GR/FE
Demonstrate a commitment to excellence and ongoing professional development.	RM	DO, GR/FE
Demonstrate interpersonal skills in functioning as a member of a multidisciplinary healthcare team	FSO, DSP, RM, IC	DO, GR/FE
CORE COMPETENCY: SYSTEM-BASED PRACTICE		
Goal: <i>Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide pathology services that are of optimal value</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate understanding of the role of the laboratory in the healthcare system.	DL, FSO, IC	DO, GR/FE
Show a working knowledge of the basic principles of quality assurance, quality control, continuous quality improvement, and outcomes analysis, as they apply to molecular pathology.	FSO, RM	DO, GR/FE
Demonstrate a familiarity with standards set forth by the CAP and TJC for laboratory certification.	RM, OT	DO, GR/FE, SE
Understand the principles involved in public-health perinatal genetic testing paradigms.	RM, OT	DO, GR/FE, SE

SPECIFIC LEARNING OBJECTIVES

Acquisition of Knowledge of Specific Tests Using Molecular Biology Methods

- Understand basic molecular biology concepts.
- Know molecular testing methods for inherited causes for thrombophilia, such as factor V Leiden, prothrombin 20210 mutation, MTHFR, and platelet glycoprotein III polymorphisms (PIA 1/2).
- Understand molecular testing and interpretation for cystic fibrosis diagnosis and screening.
- Understand molecular testing for hematologic malignancies, including non-Hodgkin lymphomas (T- and B-cell gene rearrangements) and chronic myelogenous leukemia (bcr-abl detection and quantitation for therapeutic monitoring), and other translocation detection or quantitation assays.
- Understand molecular diagnostic tests for detection and speciation of pathogenic organisms, including *Chlamydia trachomatis*, *N. gonorrhoeae*, *M. tuberculosis*, high-risk human papillomaviruses, and viruses that cause encephalitis/meningitis (HSV and enteroviruses).
- Understand qualitative and quantitative methods used to determine viral load in human

immunodeficiency virus, cytomegalovirus, Epstein–Barr virus, and hepatitis C virus, as well as human immunodeficiency virus and hepatitis C virus genotyping to direct therapy.

- Be familiar with molecular testing for trinucleotide repeats diseases, such as fragile X.
- Understand pharmacogenomic testing for cytochrome p450 mutations and other mutations that affect sensitivity to chemotherapeutic agents, such as thiopurine methyltransferase (TPMT), or other drugs.
- Be familiar with molecular testing for hereditary hemochromatosis, including the C282Y and H53D polymorphisms.
- Understand the principles behind human identity testing for transplant (see also the Immunology and Immunogenetics section).

Specific Analytical and Technical Training Learning Objectives for Molecular Pathology

- Have awareness of sample types, preparation, and storage for molecular biology tests.
- Understand applicability of testing to samples of blood, bone marrow, body fluids (e.g., CSF, pleural, and peritoneal samples), lymph node, and spleen.
- Understand storage media and conditions for cells, DNA, and RNA.
- Understand DNA extraction and purification from a variety of biological specimens.
- Have knowledge of restriction endonuclease digestion of purified DNA or amplified DNA.
- Understand electrophoretic separation of DNA fragments, native DNA gel electrophoresis for verification of DNA quality, photographic documentation of gels, and capillary electrophoresis methods. [PC, MK]
- Have knowledge of total cellular RNA extraction, quantitation, separation of mRNA, and reverse transcription to generate cDNA.
- Understand southern blot DNA hybridization.
- Understand DNA sequencing.
- Have experience and knowledge of in vitro DNA amplification using the PCR and alternative amplification systems, as well as awareness of methods to prevent contamination.
- Understand varying means of analyzing PCR products, e.g., electrophoresis, sequencing, and restriction enzyme digestion.
- Understand mutation detection and scanning technologies for single-and multiple-mutation platforms.
- Understand real-time quantitative PCR and reverse-transcription-PCR.
- Understand DNA and gene expression microarrays.
- Be aware of the legal, ethical, and social implications of genetic testing.

Consultation and Presentation of Cases Using Molecular Techniques/Data

- Understand and use pedigrees for familial genetic assessments.
- Interpret and report molecular results in association with pathologic and laboratory findings and clinical history to reach a final diagnosis.
- Assess the sensitivity and specificity of testing for an individual patient's disease state.

REFERENCES

1. Association for Molecular Pathology. *Recommendations for in-house development and operation of molecular diagnostics tests*. Am J Clin Pathol 1999;111:449.
2. Burtis CA, Ashwood EA, Bruns DE. *Tietz Textbook of Clinical Chemistry and Molecular Diagnostics*, 4th ed. St. Louis, MO: Elsevier Saunders, 2005.
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4. Killeen AA. *Principles of Molecular Pathology*. Totowa, NJ:, Humana Press, 2004.
5. Leonard DGB. *Diagnostic Molecular Pathology*. Philadelphia: WB Saunders, 2003.
6. Persing DH, Tenover FC, Tang Y-W, Nolte, F.S, Hayden, R.T., van Belkum A, eds. *Molecular Microbiology: Diagnostic Principles and Practice, 2nd Edition*. Washington: ASM Press, 2011.
7. Patrinos GP, and Ansorge WJ. *Molecular Diagnostics, 2nd Edition*. Academic Press, Elsevier, 2010.

Specific Toxicology Learning Objectives:

- Be able to answer the following questions: What is the meaning of comprehensive drug screening? How comprehensive drug screen differ between laboratories? What drugs are identified on a comprehensive drug screen? What is the best sample for drug screening? Why? What are the most common drugs seen in overdose situations (pediatrics vs adults)?
- Understand basic principles of instrumentation/methods used in toxicology laboratory including:
 - Spot tests
 - HPLC
 - GC-FID/MS
 - Atomic Absorption spectrometry
- What is the specimen of choice for different heavy metal testing?
- Learn about lead testing and interpretation of lead levels. Interaction of lead with other metals in the body, particularly iron. Role of Zinc-Protoporphyrin (ZPP) in lead toxicity diagnosis. Advantages and disadvantages of ZPP testing?
- What are commonly abused drugs in adolescents?
- What are the alternate samples for drugs of abuse testing? Saliva, meconium, hair etc. Advantages and disadvantages of alternate samples.
- What are common drugs of abuse?
- What are the forensic/legal issues in laboratory testing for drugs of abuse?
- Understand specific overdoses and their antidotes such as:
 - Alcohols (ethanol, methanol, isopropanol)
 - Ethylene glycol
 - Estimation of ethanol alcohol conc.
 - Various methods (lab Vs breath analyzer)
 - Plasma Vs Whole Blood Vs Urine
 - Management
 - Heavy Metals (Ar, Cd, Fe, Lead, Mercury):
 - Specimen of choice

- Mechanism of action
- Lab tests
- Antidotes (Dimercaprol, EDTA, Penicillamine, Deferoxamine, Succimer)
- Analgesics/ Antipyretic(Acetaminophen, salicylate, Ibuprofen)
- Antidepressants (TCAs, Newer)
- Anticonvulsants (Phenytoin, Phenobarb, Carbamazepine, Valproate etc.)
- Cardiovascular drugs (Digoxin, Beta-blockers, Disopyramide, Quinidine)
- Drugs of abuse
 - Cocaine
 - Amphetamines
 - Marijuana
 - PCP (Phencyclidine)
 - Opiates
 - Propoxyphene
 - Methadone
 - LSD (Lysergic Acid Diethylamide)
- Others: Nitrite, Nitrates, CO, Pesticides, OTCs, Plants, Hydrocarbons

Specific Learning Objectives for Histocompatibility Testing (Midwest Transplant Network)

- Demonstrate an understanding of ethical, socioeconomic and medical/legal issues that affect patient care in organ procurement and histocompatibility testing.
- Use information technology to support patient care decisions, ensure quality assurance, and educate medical professionals and the public concerning histocompatibility testing.
- Observe and understand HLA typing by molecular methods and HLA antigen testing by serology.
- Demonstrate an understanding of crossmatching by flow cytometry using T cells and B cells.
- Perform a crossmatch using the anti-human globulin (AHG) technique.
- Observe and understand VNTR/STR chimerism assays
- Know and apply basic science knowledge to understand basic concepts of histocompatibility testing.

DUTIES AND RESPONSIBILITIES

- Be present in the lab for significant amounts of time to allow exposure to routine molecular laboratory and toxicology work.
- Meet the general objectives outlined above and complete any work on unknowns, reading assignments or project assignments during the rotation.
- Attend required conferences at KUMC and at CMH.

EVALUATION

- The resident must show active participation in the laboratory.
- The resident must show improvement in knowledge of diseases that are diagnosed by molecular and toxicology methods.
- The resident must show improvement in knowledge of molecular and toxicology laboratory skills.

DERMATOPATHOLOGY/NEUROPATHOLOGY

The dermatopathology/neuropathology combined rotation is a one-month elective under the direction of Dr. Garth Fraga and Dr. Kathy Newell. Residents will participate in both areas each day. The description of the dermatopathology portion of the rotation is described first followed by the neuropathology portion of the rotation.

Dermatopathology

The resident participates in the daily sign-out of KUMC and outside dermatology biopsies (approximately 18,000 specimens/year). Sets of glass slides organized by pathogenesis for self-study are available for correlation with the required reading. The resident should take responsibility for management of complicated KUMC cases by ordering appropriate histology studies and obtaining relevant clinical data as indicated by Dr. Fraga. The resident should assist in the preparation of the weekly dermatopathology conference for the dermatology residents and the monthly dermatopathology conference for the pathology residents. Residents are encouraged to pursue a research project that would lead to publication.

GOALS AND OBJECTIVES

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal: <i>Residents must demonstrate a satisfactory level of diagnostic competence in dermatopathology</i>		
Objectives:	Learning Activities	Evaluation Activities
Develop a systematic approach to the pathological analysis of lesions affecting the skin and subcutaneous tissue.	FSO, DSP, RM	RR, DO, GR/FE,
Develop skills in microscopic description of dermatopathology specimens.	FSO, DSP, RM	RR, DO, GR/FE
Microscopically recognize and diagnosis diseases of the skin.	FSO, DSP, RM	RR, DO, GR/FE
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Demonstrate knowledge about established and evolving biomedical, clinical and cognitive sciences and the application of this knowledge to dermatopathology</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate knowledge of normal skin and subcutaneous histology.	FSO, DSP	RR, DO, GR/FE
Develop and maintain a knowledge base in neoplastic and non-neoplastic dermatopathology disorders.	FSO, DSP, IC	RR, DO, GR/FE
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise and assimilate scientific evidence and improve their patient care practices.</i>		
Objectives:	Learning	Evaluation

	Activities	Activities
Demonstrate the ability to critically assess the scientific literature.	JC, RM, OT, P	DO, GR/FE
Demonstrate knowledge of evidence-based medicine and apply its principles in practice.	FSO, JC, RM, OT, P	DO, GR/FE
Develop personally effective strategies for the identification and remediation of gaps in medical knowledge needed for effective practice.	DSP, RM, USC	DO, GR/FE
Use laboratory problems and clinical inquiries to identify process improvements to increase patient safety.	FSO, RM, IC	DO, GR/FE
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with other health care providers, patients and patients' families.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to provide direct communication to the referring physician or appropriate clinical personnel when interpretation of a laboratory assay reveals an urgent, critical, or unexpected finding and document this communication in an appropriate fashion.	FSO, DSP, RM	DO, GR/FE
Choose effective modes of communication (listening, nonverbal, explanatory, questioning) and mechanisms of communication (face-to-face, telephone, e-mail, written), as appropriate.	FSO, RM, IC, USC	DO, GR/FE
Conduct both individual consultations and presentations at multidisciplinary conferences that are focused, clear, and concise.	RM, IC, USC	DO, GR/FE
CORE COMPETENCY: PROFESSIONALISM		
Goal: <i>Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate compassion: be understanding and respectful of patients, their families, and the staff and physicians caring for them.	FSO, DSP, RM, IC	DO, GR/FE
Interact with others without discriminating on the basis of religious, ethnic, sexual, or educational differences.	FSO, DSP, RM, IC	DO, GR/FE
Demonstrate positive work habits, including punctuality, dependability, and professional appearance.	FSO, RM	DO, GR/FE
Demonstrate a responsiveness to the needs of patients and society that supersedes self-interest.	FSO, DSP, RM	DO, GR/FE
Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.	DL, FSO, DSP, RM, IC	DO, GR/FE
Demonstrate a commitment to excellence and ongoing professional development.	RM	DO, GR/FE
CORE COMPETENCY: SYSTEM-BASED PRACTICE		
Goal: <i>Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide pathology services that are of optimal value</i>		

Objectives:	Learning Activities	Evaluation Activities
Demonstrate understanding of the role of the laboratory in the healthcare system.	DL, FSO, LI, IC	DO, GR/FE
Show a working knowledge of the basic principles of quality assurance, quality control, continuous quality improvement, and outcomes analysis, as they apply to dermatopathology.	FSO, RM, LI	DO, GR/FE

ADDITIONAL SPECIFIC LEARNING OBJECTIVES

1. Learn the following common epidermal neoplasms and cysts:
 - Actinic keratosis
 - Solar lentigo
 - Seborrheic keratosis
 - Squamous-cell carcinoma
 - Acanthoma (clear cell, large cell, epidermolytic, acantholytic, dyskeratotic)
 - Epidermoid cyst
 - Pilar cyst
2. Learn the following adnexal neoplasms:
 - Basal-cell carcinoma
 - Trichofolliculoma
 - Trichoepithelioma
 - Syringoma
 - Cylindroma
 - Spiradenoma
 - Sebaceous hyperplasia
 - Sebaceous carcinoma
3. Learn the following melanocytic neoplasms
 - Acquired benign melanocytic nevus
 - Congenital benign melanocytic nevus
 - Blue nevus
 - Lentigo maligna (melanoma in situ)
 - Superficial spreading melanoma
 - Nodular melanoma
 - Acral lentiginous melanoma
4. Learn the criteria used to separate benign melanocytic nevus from melanoma
 - Learn how to manage melanocytic neoplasms with ambiguous histopathology
 - Learn some of the arguments for and against dysplastic nevus
5. Learn the following mesenchymal neoplasms:
 - Dermatofibroma
 - Cherry angioma
 - Kaposi sarcoma
 - Angiosarcoma
 - Dermatofibrosarcoma protuberans
6. Learn the following hematopoietic neoplasms:
 - Mycosis fungoides
 - Marginal zone lymphoma
 - Follicle-center cell lymphoma
 - Mastocytosis
7. Learn the following inflammatory patterns and their prototypes

Spongiotic dermatitis (allergic contact dermatitis, "eczema", pityriasis rosea)
Interface dermatitis (lichen planus, lupus erythematosus)
Blistering dermatitis (pemphigoid, pemphigus)
Granulomatous dermatitis (granuloma annulare, sarcoidosis, necrobiosis lipoidica)
Fibrosing dermatitis (morphea, lichen sclerosus)
Perivascular dermatitis (urticaria, drug exanthem, viral exanthem, vasculitis)
Psoriasiform dermatitis (psoriasis, seborrheic dermatitis, lichen simplex chronicus)
Panniculitis (erythema nodosum)
Disorders of pigmentation (vitiligo)
Follicular disorders (acne vulgaris, hidradenitis suppurativa, folliculitis, rosacea)
Hair loss (alopecia areata, telogen effluvium, androgenetic alopecia, lymphocytic and neutrophilic cicatricial alopecia)

DUTIES AND RESPONSIBILITIES OF THE RESIDENT

The resident is expected to behave in a professional fashion. This rotation is office-based and professional attire rather than "scrubs" are encouraged. The schedule is as follows:

1. The resident should attend the 9:00 AM Tuesday/Friday Sign-out of outside cases in Dr. Fraga's office. If more than one resident is on the rotation (e.g. a pathology resident and a dermatology resident), they will decide among themselves which resident will attend the Tuesday sign-out and which will attend the Friday morning sign-out.
2. The resident is expected to attend the daily noon sign-out of the KUMC cases. It will be the resident's responsibility to obtain the necessary ancillary studies or information on KUMC cases requiring them.
3. The resident should help prepare and attend the weekly 3-5 pm Thursday dermatopathology conference for the dermatology residents.
4. The resident should help prepare and attend the monthly 830 AM Dermatopathology conference for the pathology residents.
5. The resident should read, cover-to-cover, Elston's Dermatopathology and listen to the corresponding podcasts.
6. The resident should attend the monthly 1-6 pm Kansas City Dermatological Society meeting.
7. The resident is encouraged to pursue a research project during the rotation. If a case report is chosen, it should be completed prior to the end of the rotation.

RESIDENT EVALUATION

The resident's professional demeanor, general knowledge, diagnostic ability, communications skills, efficiency, reliability and progress during the rotation will be evaluated by Dr. Fraga.

REFERENCES

1. Elston D, Ferringer T, eds. *Requisites in Dermatology: Dermatopathology*. Edinburgh Saunders-Elsevier, 2008. (**required for the rotation**)
2. Weedon D. *Skin Pathology*. Churchill-Livingston-Elsevier, 2010.
3. Barnhill RL, Crowson AN, eds. *Textbook of Dermatopathology*. New York McGraw-Hill, 2004.
4. Massi G and LeBoit P. *Histological Diagnosis of Nevi and Melanoma*. Wurzburg Steinkopff Verlag Darmstadt 2004.
5. Rapini RP. *Practical Dermatopathology*. Elsevier-Mosby 2005.
6. Ackerman AB, Cerroni L, Kerl H. *Pitfalls in Histopathologic Diagnosis of Malignant Melanoma*. Philadelphia Lea & Febiger 1994.

Neuropathology

The major purpose of the neuropathology rotation is to review the gross and microscopic anatomy of the nervous system, introduce major categories of disease that affect the human nervous system, and to acquire elementary dissection and diagnostic skills using both autopsy and surgical material.

Staff Neuropathologist: Dr. Kathy L. Newell

GOALS AND OBJECTIVES

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal: <i>Residents must demonstrate a satisfactory level of diagnostic competence in neuropathology</i>		
Objectives:	Learning Activities	Evaluation Activities
Development of a systematic approach to the pathological analysis of lesions affecting the human nervous system, including gross examination and dissection with selection of appropriate sections for microscopic examination.	FSO, DSP, RM, IC	RR, DO, GR/FE
Developing skill in description of gross and microscopic anatomy and pathology of the nervous system using appropriate terminology.	FSO, DSP, RM, IC	RR, DO, GR/FE
Recognition and diagnosis of major neoplasms that affect the human nervous system. This includes understanding the clinical settings in which the common tumors arise and the prognostic implications of the diagnoses.	FSO, DSP, RM, IC	RR, DO, GR/FE
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Demonstrate knowledge about established and evolving biomedical, clinical and cognitive sciences and the application of this knowledge to neuropathology</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate knowledge of basic anatomy of the brain and spinal cord	FSO, DSP, IC	RR, DO, CL, GR/FE, SE, PSE, IWE
Demonstrate knowledge of basic gross description of the normal brain	FSO, DSP, IC	RR, DO, CL, GR/FE, SE, PSE, IWE
Demonstrate knowledge of the routine sections to be taken for gross & microscopic examination of the brain and spinal cord	FSO, DSP, IC	RR, DO, CL, GR/FE, SE, PSE, IWE
Demonstrate diagnostic knowledge of the common brain tumors	FSO, DSP, IC	RR, DO, CL, GR/FE, SE, PSE, IWE
Demonstrate knowledge of the common special stains used in	FSO, DSP, IC	RR, DO, CL,

neuropathology		GR/FE, SE, PSE, IWE
Demonstrate knowledge of basic muscle pathology and common enzyme histochemical stains used in muscle biopsy interpretation.	FSO, DSP, IC	RR, DO, CL, GR/FE, SE, PSE, IWE
Demonstrate understanding of the common neurodegenerative diseases	FSO, DSP, IC	RR, DO, CL, GR/FE, SE, PSE, IWE
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise and assimilate scientific evidence and improve their patient care practices.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to critically assess the scientific literature.	JC, RM, OT, P	DO, GR/FE
Demonstrate knowledge of evidence-based medicine and apply its principles in practice.	FSO, JC, RM, OT, P	DO, GR/FE
Develop personally effective strategies for the identification and remediation of gaps in medical knowledge needed for effective practice.	DSP, RM, USC	DO, GR/FE
Use laboratory problems and clinical inquiries to identify process improvements to increase patient safety.	FSO, RM, IC	DO, GR/FE
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with other health care providers, patients and patients' families.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to provide direct communication to the referring physician or appropriate clinical personnel when interpretation of a laboratory assay reveals an urgent, critical, or unexpected finding and document this communication in an appropriate fashion.	FSO, DSP, RM	DO, GR/FE
Choose effective modes of communication (listening, nonverbal, explanatory, questioning) and mechanisms of communication (face-to-face, telephone, e-mail, written), as appropriate.	FSO, RM, IC, USC	DO, GR/FE
Conduct both individual consultations and presentations at multidisciplinary conferences that are focused, clear, and concise.	RM, IC, USC	DO, GR/FE
CORE COMPETENCY: PROFESSIONALISM		
Goal: <i>Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate compassion: be understanding and respectful of patients, their families, and the staff and physicians caring for them.	FSO, DSP, RM, IC	DO, GR/FE
Interact with others without discriminating on the basis of religious,	FSO, DSP,	DO, GR/FE

ethnic, sexual, or educational differences.	RM, IC	
Demonstrate positive work habits, including punctuality, dependability, and professional appearance.	FSO, RM	DO, GR/FE
Demonstrate a responsiveness to the needs of patients and society that supersedes self-interest.	FSO, DSP, RM	DO, GR/FE
Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.	DL, FSO, DSP, RM, IC	DO, GR/FE
Demonstrate a commitment to excellence and ongoing professional development.	RM	DO, GR/FE
CORE COMPETENCY: SYSTEM-BASED PRACTICE		
Goal: <i>Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide pathology services that are of optimal value</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate understanding of the role of the laboratory in the healthcare system.	DL, FSO, LI, IC	DO, GR/FE
Show a working knowledge of the basic principles of quality assurance, quality control, continuous quality improvement, and outcomes analysis, as they apply to neuropathology.	FSO, RM, LI	DO, GR/FE
Demonstrate a familiarity with standards set forth by the CAP and TJC for laboratory certification.	RM, LI, OT	DO, GR/FE

DUTIES AND RESPONSIBILITIES OF RESIDENTS

- The major goal of the rotation is to have the residents gain familiarity with the various categories of neuropathologic disease and to develop the necessary tools to perform a competent postmortem examination of the central nervous system.
- Participate with the attending neuropathologist in the weekly and monthly conferences at the Kansas University Medical Center on gross and microscopic neuropathology for the residents in pathology, neurology, and neurosurgery.
- Attend sign-out of neurosurgical specimens with the attending neuropathologist and the residents on the surgical pathology service who are responsible for dictating the cases.
- Participate in all frozen sections of neurosurgical material.
- Review all neurosurgical consultation cases with the attending neuropathologist.
- Fulfill explicit requests of the attending neuropathologist to review cases of special neuropathological interest from the autopsy, surgical, or consult services.
- Perform computer-based literature searches to review new findings with respect to diagnosis, treatment, or etiology of neuropathological diseases.

Required Conferences and Seminars

Neuro-Oncology Tumor Board

Time/Location: Monday, 5:30 p.m.; Lied Auditorium, KUMC campus.

Primary audience: Neurosurgeons, neuropathologists, radiation oncologists, neuroradiologists, medical oncologists, neurologists, neurosurgery, radiation oncology, neurology, radiology, and pathology residents.

Purpose: Weekly review of new patients with central or peripheral nervous system tumors for preoperative and/or postoperative treatment planning.

Neuromuscular Conference

Time/Location: Second, Third, and Fourth Mondays, 5 p.m.; Surgical Pathology Laboratory, KU Hospital.

Primary audience: Pathologists, neurologists, neurophysiology fellows, pathology and neurology residents.

Purpose: Review and clinicopathological correlation of muscle and nerve biopsies.

Brain-cutting Conference

Time/Location: Wednesday, 2 p.m.; Autopsy room, Basement, KU Hospital.

Primary audience: Pathologists, neurologists, neurosurgeons, pathology, neurology, and neurosurgery residents, medical students.

Purpose: Formal gross neuropathological evaluation and discussion of postmortem brains from the KUMC autopsy service and neuropathology consultations.

Surgical Pathology Unknown Conference

Time/Location: Third Friday, 8:30 a.m.; Surgical Pathology Laboratory, KU Hospital.

Primary audience: Pathologists, pathology residents.

Purpose: Review of classic or unusual cases from current surgical specimens, including consultation cases.

Neurology-Neurosurgery Case Review Conference

Time/Location: Friday, 7 a.m.; Lied Auditorium, KUMC campus.

Primary audience: Neurosurgeons, neurologists, neuroradiologists, neuropathologists, neurosurgery and neurology residents.

Purpose: Weekly clinicopathological correlation conference.

Scholarly Activities and Research During Rotation

Research within the Division of Neuropathology is an option that residents may choose for research elective activities. Incorporation of residents into experimental neuropathological work ongoing in the Division or selection of projects in clinically related research, *e.g.*, immunohistochemistry of tumors or of neurodegenerative disorders are possible avenues of pursuit.

RESIDENT EVALUATION

Evaluations will be based on attendance at conferences and sign-out sessions, clinicopathological correlations, completion of assigned readings relevant to daily cases, and research of new information on neuropathological processes by searching the literature.

Residents will be evaluated on their demonstrated ability to provide useful consultation to the clinical service teams, medical knowledge, application of this knowledge to efficient/quality patient care, and gross and microscopic diagnostic, technical and observational skills. Residents are also evaluated on their interpersonal skills, professional attitudes, reliability, and ethics with members of the teaching faculty, peers, laboratory staff, and clinicians. They are further evaluated on their initiative in fostering quality patient care and use of the medical literature, as it relates to their assigned cases. Their timely completion of assigned interpretive reports is another component of the evaluation. Residents on probation receive a written mid-rotation evaluation.

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ELECTIVES

ANATOMIC PATHOLOGY ELECTIVE

The elective in anatomic pathology is designed to allow a resident to obtain in-depth training in any specific area or subspecialty within anatomic pathology in which a faculty member is willing to provide additional training. Residents must obtain permission from the appropriate faculty member prior to scheduling the elective.

GOALS AND OBJECTIVES

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal: <i>Residents must demonstrate an increased level above the general residency competency within the chosen specific area or subspecialty within anatomic pathology.</i>		
Objective:	Learning Activities	Evaluation Activities
Develop in-depth diagnostic competency within the specific area of choice	FSO, DSP, RM	RR, DO, GR/FE
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Demonstrate knowledge about established and evolving biomedical, clinical and cognitive sciences and the application of this knowledge to specific area of pathology</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate an in-depth knowledge within the specific area of choice	FSO, DSP	RR, DO, GR/FE
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise and assimilate scientific evidence and improve their patient care practices.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to critically assess the scientific literature.	JC, RM, OT, P	DO, GR/FE
Demonstrate knowledge of evidence-based medicine and apply its principles in practice.	FSO, JC, RM, OT, P	DO, GR/FE
Develop personally effective strategies for the identification and remediation of gaps in medical knowledge needed for effective practice.	DSP, RM, USC	DO, GR/FE
Use laboratory problems and clinical inquiries to identify process improvements to increase patient safety.	FSO, RM, IC	DO, GR/FE

CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with other health care providers, patients and patients' families.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to provide direct communication to the referring physician or appropriate clinical personnel when interpretation of a laboratory assay reveals an urgent, critical, or unexpected finding and document this communication in an appropriate fashion.	FSO, DSP, RM	DO, GR/FE
Choose effective modes of communication (listening, nonverbal, explanatory, questioning) and mechanisms of communication (face-to-face, telephone, e-mail, written), as appropriate.	FSO, RM, IC, USC	DO, GR/FE
CORE COMPETENCY: PROFESSIONALISM		
Goal: <i>Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate compassion: be understanding and respectful of patients, their families, and the staff and physicians caring for them.	FSO, DSP, RM, IC	DO, GR/FE
Interact with others without discriminating on the basis of religious, ethnic, sexual, or educational differences.	FSO, DSP, RM, IC	DO, GR/FE
Demonstrate positive work habits, including punctuality, dependability, and professional appearance.	FSO, RM	DO, GR/FE
Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.	DL, FSO, DSP, RM, IC	DO, GR/FE
CORE COMPETENCY: SYSTEM-BASED PRACTICE		
Goal: <i>Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide pathology services that are of optimal value</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate understanding of the role of the laboratory in the healthcare system.	DL, FSO, LI, IC	DO, GR/FE
Show a working knowledge of the basic principles of quality assurance, quality control, continuous quality improvement, and outcomes analysis, as they apply to pathology.	FSO, RM, LI	DO, GR/FE
Demonstrate a familiarity with standards set forth by the CAP and TJC for laboratory certification.	RM, LI, OT	DO, GR/FE

DUTIES AND RESPONSIBILITIES OF THE RESIDENT

These will be related to the specific project and will be determined by the elective mentor.

RESIDENT EVALUATION

The resident will be evaluated by the elective faculty mentor using the global rating faculty evaluation form.

CLINICAL PATHOLOGY ELECTIVE

The elective in clinical pathology is designed to allow a resident to obtain in-depth training in any specific area or subspecialty within clinical pathology in which a faculty member is willing to provide additional training. Residents must obtain permission from the appropriate faculty member prior to signing up for the elective.

GOALS AND OBJECTIVES

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal: <i>Residents must demonstrate an increased level above the general residency competency within the chosen specific area or subspecialty within clinical pathology.</i>		
Objective:	Learning Activities	Evaluation Activities
Develop in-depth diagnostic competency within the specific area of choice	FSO, DSP, RM	RR, DO, GR/FE
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Demonstrate knowledge about established and evolving biomedical, clinical and cognitive sciences and the application of this knowledge to specific area of pathology</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate an in-depth knowledge within the specific area of choice	FSO, DSP	RR, DO, GR/FE
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise and assimilate scientific evidence and improve their patient care practices.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to critically assess the scientific literature.	JC, RM, OT, P	DO, GR/FE
Demonstrate knowledge of evidence-based medicine and apply its principles in practice.	FSO, JC, RM, OT, P	DO, GR/FE
Develop personally effective strategies for the identification and remediation of gaps in medical knowledge needed for effective practice.	DSP, RM, USC	DO, GR/FE
Use laboratory problems and clinical inquiries to identify process improvements to increase patient safety.	FSO, RM, IC	DO, GR/FE
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Demonstrate interpersonal and communication skills that result in effective information exchange and</i>		

<i>teaming with other health care providers, patients and patients' families.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to provide direct communication to the referring physician or appropriate clinical personnel when interpretation of a laboratory assay reveals an urgent, critical, or unexpected finding and document this communication in an appropriate fashion.	FSO, DSP, RM	DO, GR/FE
Choose effective modes of communication (listening, nonverbal, explanatory, questioning) and mechanisms of communication (face-to-face, telephone, e-mail, written), as appropriate.	FSO, RM, IC, USC	DO, GR/FE
CORE COMPETENCY: PROFESSIONALISM		
Goal: <i>Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate compassion: be understanding and respectful of patients, their families, and the staff and physicians caring for them.	FSO, DSP, RM, IC	DO, GR/FE
Interact with others without discriminating on the basis of religious, ethnic, sexual, or educational differences.	FSO, DSP, RM, IC	DO, GR/FE
Demonstrate positive work habits, including punctuality, dependability, and professional appearance.	FSO, RM	DO, GR/FE
Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.	DL, FSO, DSP, RM, IC	DO, GR/FE
CORE COMPETENCY: SYSTEM-BASED PRACTICE		
Goal: <i>Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide pathology services that are of optimal value</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate understanding of the role of the laboratory in the healthcare system.	DL, FSO, LI, IC	DO, GR/FE
Show a working knowledge of the basic principles of quality assurance, quality control, continuous quality improvement, and outcomes analysis, as they apply to pathology.	FSO, RM, LI	DO, GR/FE
Demonstrate a familiarity with standards set forth by the CAP and TJC for laboratory certification.	RM, LI, OT	DO, GR/FE

DUTIES AND RESPONSIBILITIES OF THE RESIDENT

These will be related to the specific area and will be determined by the elective mentor.

RESIDENT EVALUATION

The resident will be evaluated by the elective faculty mentor using the global rating faculty evaluation form.

RESEARCH ELECTIVE

The goal of this rotation is to foster academic research training during the pathology residency so that an individual acquires appropriate research skills, techniques and expertise in designing and carrying out pathology-related research. A one month rotation can be designed to teach research skills and allow a resident time to begin a clinically related research project that will be carried forward during the rest of the training program. A goal of the rotation is to encourage pathology residents to participate in a research project that will result in formal presentation at national meetings and publication in peer-reviewed journals. Research rotations must have a focused research project and must follow the below described process for formalizing the rotation. A longer period of research training is available as elective time for those who wish to pursue an academic career.

GOALS AND OBJECTIVES

See Legends for Learning Activities and Evaluation Methods on Page 5.

CORE COMPETENCY: PATIENT CARE		
Goal: <i>Learn to execute a clinical and/or a basic science research project, including mastering the appropriate technical skills required for completion of the project</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate competence in development of a clinical research project.	P, JC, RM	DO, GR/FE, PF
Demonstrate competence in data collection and organization for subsequent evaluation.	P, JC, RM	DO, GR/FE, PF
Submit project data for presentation at a national meeting and/or submission to a peer-reviewed journal.	P, JC, RM	DO, GR/FE, PF, RR
CORE COMPETENCY: MEDICAL KNOWLEDGE		
Goal: <i>Understand how to design a research project, including formulating a hypothesis and designing an experimental strategy to evaluate it.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate understanding of basic research methodologies.	P, JC, RM	DO, GR/FE, PF
Demonstrate understanding of statistical analysis of data collected	P, JC, RM	DO, GR/FE, PF
Learn to evaluate results for a given project in the context of other work in the research area	P, JC, RM	DO, GR/FE, PF
CORE COMPETENCY: PRACTICE-BASED LEARNING & IMPROVEMENT		
Goal: <i>Demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise and assimilate scientific evidence and improve their patient care practices.</i>		

Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to critically assess the scientific literature.	JC, RM, OT, P	DO, GR/FE
Demonstrate knowledge of evidence-based medicine and apply its principles in practice.	JC, RM, OT, P	DO, GR/FE
Develop personally effective strategies for the identification and remediation of gaps in medical knowledge needed for effective practice.	RM	DO, GR/FE
Use laboratory problems and clinical inquiries to identify process improvements to increase patient safety.	RM, IC	DO, GR/FE
CORE COMPETENCY: INTERPERSONAL & COMMUNICATION SKILLS		
Goal: <i>Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with other health care providers, patients and patients' families.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate the ability to write articulate, legible, and comprehensive yet concise research manuscripts, or posters.	RM	DO, GR/FE, PF
Conduct effective presentations at research conferences or meetings that are focused, clear, and concise.	RM, IC	DO, GR/FE
CORE COMPETENCY: PROFESSIONALISM		
Goal: <i>Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles and sensitivity to a diverse patient population.</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate compassion: be understanding and respectful of patients, their families, and the staff and physicians caring for them.	RM, IC	DO, GR/FE
Interact with others without discriminating on the basis of religious, ethnic, sexual, or educational differences.	RM, IC	DO, GR/FE
Demonstrate positive work habits, including punctuality, dependability, and professional appearance.	RM	DO, GR/FE
Demonstrate a responsiveness to the needs of patients and society that supersedes self-interest.	RM	DO, GR/FE
Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.	RM, IC	DO, GR/FE
CORE COMPETENCY: SYSTEM-BASED PRACTICE		
Goal: <i>Residents must demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide pathology services that are of optimal value</i>		
Objectives:	Learning Activities	Evaluation Activities
Demonstrate understanding of the role of research in the healthcare system.	JC, DL, RM, IC	DO, GR/FE

DUTIES AND RESPONSIBILITIES OF THE RESIDENT

- These will be related to the specific project and will be determined by the research mentor.

RESIDENT EVALUATION

- At the end of the rotation, the research mentor will provide a full comprehensive evaluation of the resident's performance on the rotation and will provide documentation of progress in terms of personal growth and research outcomes.

GUIDELINES AND PROCEDURES

Definition: Research projects may be composed of a variety of styles including, but not limited to those listed below.

- A series of case studies with similar theme or disease process (i.e., hospital acquired pneumonia, or a predicative marker in breast cancer). An individual case report is not considered a research project.
- A quality assurance project that resulted in a change in practices in pathology (i.e., evaluation of testing patterns within certain medical specialty areas)
- Evaluation of new tests or markers when compared to established practice
- A basic science project
- It is understood that many research projects will not be completed within one month and may be continued part time while the resident is on other rotations or may be continued with another research rotation.

Procedure: Listed below are the required procedures for the Research Rotation

- The academic year prior to scheduling a research rotation, the resident should identify a faculty sponsor, have the faculty member sign the attached form stating that they will agree to be the mentor and agree to be responsible for the research activity during the scheduled month.
- At least three months prior to the Research elective month the resident and faculty member are required to submit a short outline of the project that includes a hypothesis, specific aim(s) and general strategy to obtain and analyze data.
- The resident education committee will review the proposal and give final approval for the Research elective.
- At the end of the rotation the resident should submit to the faculty sponsor a short progress report which will be used as part of the evaluation for the month. The faculty sponsor must submit the progress report along with the standard evaluation of the resident to the resident education committee.

ADDENDUM A

SAMPLE EVALUATION FORMS

Faculty Evaluation of Resident
Resident Evaluation of Faculty
Resident Evaluation of Rotation
Resident Evaluation of Program
Support Staff Evaluation of Resident
Faculty Evaluation of Program
Resident Semi-annual Evaluation
Resident Summative Evaluation
Annual Program Outcomes Assessment

Faculty Evaluation of Resident

Abbreviations for ACGME Core Competencies

PC = Patient Care

MK = Medical Knowledge

ICS = Interpersonal / Communication Skills

PBL = Practice-Based Learning and Improvement

P = Professionalism

SBP = Systems-Based Practice

Maintains sound relationships with other health care professionals, respects cultural differences, and can use non-verbal communication skills. (ICS) (Question 1 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Listens, understands, and follows instructions. (ICS) (Question 2 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Communicates well with attending staff, other residents, laboratory personnel, and patients. (ICS) (Question 3 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Participates in and communicates effectively in intradepartmental and interdepartmental conferences. (ICS) (Question 4 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Prepares accurate, timely, concise, and legible reports. (ICS) (Question 5 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Applies an analytical and investigatory approach to case work. (MK) (Question 6 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Demonstrates core knowledge of pathology and medicine. (MK) (Question 7 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Demonstrates knowledge of basic and clinical sciences and its application to pathology. (MK) (Question 8 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Reads textbooks and medical literature to improve knowledge base. (MK) (Question 9 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Develops differential diagnoses and recommends or performs additional studies needed to arrive at a diagnosis. (PC)

(Question 10 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Gathers essential and accurate clinical and laboratory information related to patient specimens and procedures. (PC)

(Question 11 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Generates clinically relevant reports and consultations. (PC) (Question 12 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Performs competently all required laboratory, technical, and invasive procedures. (PC) (Question 13 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Reads textbooks and medical literature to improve knowledge base. (PBL) (Question 14 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Demonstrates the ability to use information technology for service work and education. (PBL) (Question 15 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Facilitates learning of students and other health professionals. (PBL) (Question 16 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Reviews medical literature related to case work. (PBL) (Question 17 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Understands the principles of quality improvement and quality assurance and participates in QI/QA activities, as required. (PBL)

(Question 18 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Abides by university and hospital EEO policies and procedures. (P) (Question 19 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Acknowledges errors and misdiagnoses and takes responsibility for corrective action. (P) (Question 20 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Demonstrates integrity, compassion, respect for colleagues and faculty, responsiveness to patients' needs that supersedes self-interest, and a commitment to excellence and ongoing professional development. (P) (Question 21 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent

0	1	2	3	4	5
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Is accountable to patients, colleagues, faculty and the profession. (P) (Question 22 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Maintains confidentiality of patient information, informed consent and business practices. (P) (Question 23 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Takes responsibility for case work and its implications for patient care. (P) (Question 24 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Assists health care professionals in appropriate utilization of laboratory services. (SBP) (Question 25 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Understands and follows relevant medical guidelines and regulations (i.e. CLIA'88, JCAHO, HIPAA, CAP, etc.) (SBP)
(Question 26 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Understands the impact of pathology reports, consultations, and verbal communication on patient care and health care systems. (SBP) (Question 27 of 28 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

PLEASE WRITE ABOUT STRENGTHS, WEAKNESSES AND AREAS FOR IMPROVEMENT (Question 28 of 28)

Comment:

Review your answers in this evaluation. If you are satisfied with the evaluation, click the [SUBMIT](#) button below. Once submitted, evaluations are no longer available for you to make further changes.

Resident Evaluation of Faculty

Resident Evaluation of Attending

Interpersonal and Communication Skills (Question 1 of 14 - Mandatory)

Asks questions in a non-threatening manner

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Is approachable/available for help (Question 2 of 14 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Effectively communicates knowledge (Question 3 of 14 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Emphasizes problem-solving (though processes leading to decisions) (Question 4 of 14 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Medical Knowledge (Question 5 of 14 - Mandatory)

Knowledge of specialty

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Patient Care (Question 6 of 14 - Mandatory)

Diagnostic skills

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Explains diagnostic decisions (Question 7 of 14 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Practice-Based Learning and Improvement (Question 8 of 14 - Mandatory)

Encourages self-education

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Encourages evidence-based approaches to care (Question 9 of 14 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Professionalism (Question 10 of 14 - Mandatory)

Uses time with residents effectively

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Sufficient resident teaching during sign-out or other clinical duties (Question 11 of 14 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Respects all members of the health care team (Question 12 of 14 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Systems-Based Practice (Question 13 of 14 - Mandatory)

Discusses availability, cost and utility of system resources

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Summary (Question 14 of 14 - Mandatory)

Overall contributions to your training

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Review your answers in this evaluation. If you are satisfied with the evaluation, click the SUBMIT button below. Once submitted, evaluations are no longer available for you to make further changes.

Resident Evaluation of Rotation

Quality of material encountered while on service. (Question 1 of 7 - Mandatory)

PATHOLOGY Program Competencies; Educational Experience

Unable to Assess	Unsatisfactory	Marginal	Satisfactory	Very Good	Excellent
0	1	2	3	4	5

Facilities and Physical Plant (Question 2 of 7 - Mandatory)

PATHOLOGY Program Competencies; Facilities

Unable to Assess	Unsatisfactory	Marginal	Satisfactory	Very Good	Excellent
0	1	2	3	4	5

Educational Resources (books, study sets, etc) (Question 3 of 7 - Mandatory)

PATHOLOGY Program Competencies; Learning and Teaching Material

Unable to Assess	Unsatisfactory	Marginal	Satisfactory	Very Good	Excellent
0	1	2	3	4	5

Quality of Technical Preparation (Question 4 of 7 - Mandatory)

PATHOLOGY Program Competencies; Procedures and Practical Experience

Unable to Assess	Unsatisfactory	Marginal	Satisfactory	Very Good	Excellent
0	1	2	3	4	5

Conferences (frequency and quality) (Question 5 of 7 - Mandatory)

PATHOLOGY Program Competencies; Supervision and Teaching

Unable to Assess	Unsatisfactory	Marginal	Satisfactory	Very Good	Excellent
0	1	2	3	4	5

Ancillary help (secretarial, administrative, other) (Question 6 of 7 - Mandatory)

PATHOLOGY Program Competencies; Support and Ancillary Services

Unable to Assess	Unsatisfactory	Marginal	Satisfactory	Very Good	Excellent
0	1	2	3	4	5

PLEASE WRITE ABOUT STRENGTHS AND AREAS FOR IMPROVEMENT (Question 7 of 7)

Comment:

Review your answers in this evaluation. If you are satisfied with the evaluation, click the SUBMIT button below. Once submitted, evaluations are no longer available for you to make further changes.

Resident Evaluation of Program

Annual Resident Evaluation of Program

The goals and objectives for each rotation are clearly communicated to residents. (Question 1 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The evaluation process of the residents is constructive (computerized faculty evaluations of residents, daily clinical feedback to residents, RISE, mid-year exam and Director's semi-annual resident meeting with residents). (Question 2 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Residents are provided ample opportunities to participate in clinical research. (Question 3 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The size, diversification and availability of faculty are all adequate for the training program. (Question 4 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The knowledge of faculty is current and appropriate. (Question 5 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Available resources necessary (library and computer) to obtain current medical information and scientific evidence are adequate and accessible. (Question 6 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Facilities are adequate with regard to support services (PA, technical, and clerical) and space for teaching and clinical work. (Question 7 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The Program Director communicates effectively with residents. (Question 8 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Chief Residents communicate effectively with residents. (Question 9 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The Program Coordinator communicates effectively with residents. (Question 10 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The Program Director provides effective leadership of the residency program. (Question 11 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

There is adequate departmental support for residency education. (Question 12 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Faculty adequately supervise residents clinical work. (Question 13 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The evaluation system (E*Value) is easy to use. (Question 14 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Residents are exposed to a sufficient variety and number of clinical specimens. (Question 15 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Residents are given sufficient responsibility for decision making. (Question 16 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Faculty interactions with residents (sign out session, conferences, etc.) are conducted professionally and efficiently.

(Question 17 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Support staff interactions with residents are conducted professionally. (Question 18 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The program is responsive to feedback from residents. (Question 19 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Residents experience an appropriate balance of educational and clinical responsibilities. (Question 20 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Faculty teach and supervise in ways that facilitate learning. (Question 21 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The didactic sessions provide core knowledge of the field. (Question 22 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The number and subspecialty type of unknown slide conferences is appropriate. (Question 23 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The morale of the residents is good. (Question 24 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The morale of the faculty is good. (Question 25 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Overall, I am satisfied with the training our program provides. (Question 26 of 27 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Recommendations: What changes in the training program would you suggest to better prepare residents for their careers?
(Question 27 of 27 - Mandatory)

Review your answers in this evaluation. If you are satisfied with the evaluation, click the SUBMIT button below. Once submitted, evaluations are no longer available for you to make further changes.

Faculty Evaluation of Program

Annual Faculty Evaluation of Program

The core competency expectations for residents in training are adequately communicated to the faculty. (Question 1 of 21 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The evaluation process of the residents is constructive (computerized faculty evaluations of residents, daily clinical feedback to residents, RISE, mid-year exam and Director's semi-annual resident meeting with residents). (Question 2 of 21 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Residents are provided ample opportunities to participate in clinical research. (Question 3 of 21 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The size, diversification and availability of faculty is adequate for the training program. (Question 4 of 21 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Faculty have ample opportunities to develop areas of personal and professional growth. (Question 5 of 21 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Faculty are provided the resources to develop teaching, leadership and management skills. (Question 6 of 21 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The Program Director communicates effectively with faculty. (Question 7 of 21 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The Program Director provides effective leadership of the residency program. (Question 8 of 21 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The Program Coordinator communicates effectively with faculty. (Question 9 of 21 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

There is adequate departmental support for residency education. (Question 10 of 21 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The evaluation system (E*Value) is easy to use. (Question 11 of 21 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Residents are exposed to a sufficient variety and number of clinical specimens. (Question 12 of 21 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Residents are given appropriate clinical responsibilities. (Question 13 of 21 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The program is responsive to feedback from residents. (Question 14 of 21 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The program is responsive to feedback from faculty. (Question 15 of 21 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Residents experience an appropriate balance of educational and clinical responsibilities. (Question 16 of 21 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The didactic sessions provide core knowledge of the field. (Question 17 of 21 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The morale of the residents is good. (Question 18 of 21 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

The morale of the faculty is good. (Question 19 of 21 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Overall, I am satisfied with the training our program provides. (Question 20 of 21 - Mandatory)

Unable to Assess	Unsatisfactory	Fair	Satisfactory	Good	Excellent
0	1	2	3	4	5

Recommendations: What changes in the training program would you suggest to better prepare residents for their careers?
(Question 21 of 21 - Mandatory)

Review your answers in this evaluation. If you are satisfied with the evaluation, click the SUBMIT button below. Once submitted, evaluations are no longer available for you to make further changes.

Support Staff Evaluation of Resident

Professionalism *(Question 1 of 5 - Mandatory)*

Attitude and Demeanor: How is this doctor at being courteous and respectful?

Cannot Evaluate	Poor	Fair	Good	Very Good	Excellent
0	1	2	3	4	5

Professionalism

(Question 2 of 5 - Mandatory)

Responsiveness: Is this doctor timely at responding to pages and calls?

Cannot Evaluate	Poor	Fair	Good	Very Good	Excellent
0	1	2	3	4	5

Professionalism

(Question 3 of 5 - Mandatory)

Punctuality: How is this doctor at being punctual for patient appointments?

Cannot Evaluate	Poor	Fair	Good	Very Good	Excellent
0	1	2	3	4	5

Professionalism

(Question 4 of 5 - Mandatory)

Administrative: How is this doctor at completing paperwork on time?

Cannot Evaluate	Poor	Fair	Good	Very Good	Excellent
0	1	2	3	4	5

Comments *(Question 5 of 5 - Mandatory)*

Comments

Review your answers in this evaluation. If you are satisfied with the evaluation, click the **SUBMIT button below. Once submitted, evaluations are no longer available for you to make further changes.**

RESIDENT SEMI-ANNUAL EVALUATION: July 20__

RESIDENT: Dr. _____

SUMMATION:

Monthly Evaluations:

Conference Attendance:

RISE or Midyear Exam:

In summary,

RESIDENT'S SUMMARY AND EVALUATION OF PROGRESS:

See attached portfolio.

Program Improvement Suggestions

Self-Evaluation for past 6 months:

Areas of strength:

Areas for improvement:

Plan for next 6 months:

RESIDENT SIGNATURE: _____

PROGRAM DIRECTOR SIGNATURE: _____

DATE: _____

RESIDENT FINAL EVALUATION

(EXAMPLE)

Date: _____

RESIDENT: Dr. _____

ASSESSMENT OF FINAL PERIOD OF TRAINING:

During the period of January 1, 20__ through June of 20__ Dr. ____ successfully completed his rotations and received excellent scores on the majority of evaluations from the faculty.

He continued to improve his fund of knowledge and diagnostic skills and received positive comments on performance evaluations.

Dr. ____ performance on the 20__ RISE exam was at the ____ average national percentile and was satisfactory for a PGY4.

Overall, his performance during the last six months of his residency was very good.

SUMMATIVE EVALUATION:

Dr. ____ joined the residency program July 1, 20__. He completed the combined anatomic and clinical pathology training program at KUMC on June 30th, 20__. He spent a total of 48 months in rotations in anatomic and clinical pathology.

____ progressed well through the program and received very good evaluations throughout his four years. He was selected to serve as one of two Chief residents during his PGY4 year. He performed his duties as Chief resident in an efficient and productive manner. He interacted very well with faculty, fellow residents and staff, and was an active mentor to junior residents. He was well-liked by all who worked with him.

During his residency he became competent in all ACGME competency areas, including patient care, medical knowledge, practice-based learning and improvement, system-based practice, inter-personal and communication skills, and professionalism. ____ took full responsibility for the work assigned to him and communicated with everyone in a highly professional manner.

His excellent background in research allowed him to continue to be actively involved in scholarly activity including publication of five manuscripts and presentation of abstracts at five national or local meetings. Dr. ____ was in good standing during the entire four years in the program and performed at a very high level throughout his training.

Dr. ____ will begin a ____ Fellowship at the _____ Medical Center in July, 20__. The department wishes him the best in his future career as a pathologist.

RESIDENT: Dr. _____

Patient Care	Competency Met _____	Competency NOT Met _____
Medical Knowledge	Competency Met _____	Competency NOT Met _____
Practice-Based Learning & Improvement	Competency Met _____	Competency NOT Met _____
Interpersonal & Communication Skills	Competency Met _____	Competency NOT Met _____
Professionalism	Competency Met _____	Competency NOT Met _____
System-based Practice	Competency Met _____	Competency NOT Met _____

Comments:

1. Were there any malpractice actions taken towards this resident? Yes____ No____

Comments: _____

2. Was physician subject to any disciplinary action, such as imposition of consultation requirements, suspension, or termination or probation? Yes____ No____

Comments: _____

3. Has physician ever shown signs of any behavior, drug, or alcohol problems? Yes____ No____

Comments: _____

4. Has the physician ever shown signs of any mental or physical health problems? Yes____ No____

Comments: _____

Dr. _____ has successfully completed the Anatomic and Clinical Pathology Residency Program, having demonstrated sufficient competence to enter practice without direct supervision.

RESIDENT SIGNATURE: _____

PROGRAM DIRECTOR SIGNATURE: _____

DATE: _____

The University of Kansas School Of Medicine

Graduate Medical Education

Mail Stop 1060
3901 Rainbow Boulevard
Kansas City, Kansas 66160-7234
FAX 913-588-0240

June 7, 2011

Dear Program Director:

The ACGME requires an annual evaluation of the Program and its outcomes (see Common Program requirements). The Program outcomes with respect to **PROGRAM QUALITY, RESIDENT PERFORMANCE, FACULTY DEVELOPMENT and GRADUATE PERFORMANCE** are to be evaluated by the Program's Resident Education Committee, which must include a resident member. This Committee should consist of representative Teaching Faculty and chaired by the Program Director. Involvement by the Division or Department Chair is also desirable. From this review, an Annual Program Improvement Action Plan (last section of this form) is to be developed to improve deficit areas. This has been a frequent Citation for Programs during recent ACGME Site Visits and it is also fulfills one of the Common PIF questions.

In order to facilitate compliance with this ACGME Common Program requirement, please annually complete the following attached **ANNUAL PROGRAM OUTCOMES ASSESSMENT & ACTION PLAN REPORT**.

1. Please complete the "purple" sections of this report. Feel free to add/expand "other" sections to this report depending on your ACGME Specialty-Specific requirements, but the core sections include "data" that your Program should be already collecting annually as part of the ACGME Common requirements. All aspects of the core sections should be reviewed and addressed as this is what the ACGME expects to be reviewed annually at a minimum according to the Common Program Requirements and what has been cited previously.
2. Areas that need to be filled in by the Program Director are in **RED**.
3. The "REVIEWED MATERIALS" checklist is what materials should be reviewed at a minimum during this annual review. All these items should be reviewed and the corresponding box checked next to the item. In contrast, the items listed as "if applicable" or "if available" are suggestions as other outcome measures that can be reviewed in each of the 4 areas that the ACGME has divided this review requirement into (i.e., Program Quality, Resident Performance, Faculty Development and Graduate Performance). You can also add other items reviewed that are pertinent to the Program.
4. The Next sections are the formal Annual Review Report. Under PROGRAM QUALITY, the first section addresses ACGME site visit citations and the left hand column should contain the typed-in citation description as stated on the latest ACGME Notification Letter. The corresponding right-hand boxes should contain the interval progress made during the year on this particular citation and then a decision on the ACTION PLAN with regards to this specific citation (i.e., citation rectified, continue present rectification vs. new Action Plan). If a new Action Plan is needed, this should be added to the end of the corresponding box and also cut-and-pasted into the PROGRAM IMPROVEMENT PLAN section at the end of the report under Program Quality.
5. Similarly, for subsequent boxes in all reviewed areas, PLEASE DESCRIBE ANY PROBLEMS OR DEFICITS IN THE TOP OF THE RIGHT HANDED COLUMN BOX and proposed ACTION PLAN IN THE BOTTOM OF THIS RIGHT-HANDED COLUMN BOX. Also, cut-and-paste the ACTION PLAN into the PROGRAM IMPROVEMENT PLAN section at the end of the report under the appropriate Section (i.e., Program Quality, Resident Performance, Faculty Development and Graduate Performance).
6. Thus, the PROGRAM IMPROVEMENT PLAN section in the end serves as a clean list of all the ACTION PLANS that need to be enacted this coming academic year to address identified problems.
7. The Program Director should sign the report on the last page once completed.

Annual Program Outcomes Assessment & Action Plan Report

8. The ACGME requires that there is communication with all participating institution site directors for your program. As a way of documenting this annually, **please have all institutional site directors sign this report as well.**

This should be completed in June of each academic year and a **copy** for the form should be submitted to the GME Office prior to September 30th as part of the Institutional oversight. You should add this Report to your Resident Education Committee meeting minutes, since addressing all the areas on this form should ensure compliance with this important ACGME requirement. Your ACGME Site Visitor and GME Internal Reviewer will want to see these documents as well. Additionally, you should use this PROGRAM IMPROVEMENT PLAN to effect improvement in the Program throughout the ensuing academic year.

Please let me know if the GME Office can provide any assistance.

Terry Tsue, MD FACS
Associate Dean of Graduate Medical Education
Douglas A Girod MD Professor of Head and Neck Surgical Oncology
Department of Otolaryngology-Head and Neck Surgery
University of Kansas School of Medicine

ANNUAL PROGRAM OUTCOMES ASSESSMENT & ACTION PLAN REPORT

PROGRAM	<<FILL IN WORDING>>
PROGRAM DIRECTOR	<<FILL IN WORDING>>
DATE OF PROGRAM RESIDENT EDUCATION COMMITTEE (REC) MEETING	<<FILL IN WORDING>>
REC MEMBERS PRESENT	<ul style="list-style-type: none"> • <<FILL IN WORDING>>, Program Director • <<FILL IN WORDING>>, Associate Program Director • <<FILL IN WORDING>>, Chair • <<FILL IN WORDING>>, Program Coordinator • <<FILL IN WORDING>>, Resident(s) • <<FILL IN WORDING>>, Faculty
REVIEWED MATERIALS	<p>PROGRAM QUALITY</p> <ul style="list-style-type: none"> <input type="checkbox"/> ACGME Common & Specialty RRC Requirements <input type="checkbox"/> ACGME Institutional Requirements <input type="checkbox"/> ACGME Accreditation Letter & Correspondence <input type="checkbox"/> Most Recent GMEC Internal Review Report (MM/DD/YYYY) <input type="checkbox"/> Previous Annual Program Outcomes Assessment & Action Plan Reports <input type="checkbox"/> Overall Educational Goals for Program <input type="checkbox"/> Competency-based Goals & Objectives for each rotation assignment at each PGY-level <input type="checkbox"/> Department Policy and Procedure Manual <input type="checkbox"/> KUMC GME Policy and Procedure Manual <input type="checkbox"/> Program Letters of Agreements <input type="checkbox"/> Department Curriculum with Conference and didactics schedule <input type="checkbox"/> Annual Program, Rotation & Curriculum Evaluations by Residents <input type="checkbox"/> Annual Program, Rotation & Curriculum Evaluations by Faculty <input type="checkbox"/> Duty Hour Violation Reports/Duty hour Monitoring System <input type="checkbox"/> ACGME and GME Resident/Fellow Survey Summary Data Report and National Percentile results <input type="checkbox"/> Program-specific patient care performance improvement indicators (See ACGME Prog Req VI.A.5.g) <input type="checkbox"/> NRMP Match results (if applicable)

- Press-Ganey Patient Satisfaction Survey results (if applicable)
- Hospital Patient Safety and Quality Data Reports (if applicable)
- Unmatched resident applicant surveys (if available)

RESIDENT PERFORMANCE

- End-of-rotation competency-based Resident Evaluations by Faculty
- 360-degree Evaluations of Residents
- Individual Resident Patient Case and/or Procedure logs
- Reports of Semi-annual Program Director Evaluative Meetings with Residents
- Final summative evaluations of graduating residents
- In-training examination results (if applicable)

FACULTY DEVELOPMENT

- Faculty Evaluations by Residents
- Annual Program Director Evaluative Reviews of Faculty
- Annual Faculty & Resident/Fellow publication list
- Annual Faculty & Resident/Fellow presentation list
- Annual Faculty & Resident/Fellow peer-reviewed grant list
- Annual Faculty & Resident/Fellow National Committee & Educational Organization Participation list
- CME Conferences/Training (if applicable)
- Maintenance of Certification requirements (if applicable)

GRADUATE PERFORMANCE

- Board certification examination first attempt pass rate
- Recent graduate surveys (if available)
- Graduate mentor/employer evaluations/surveys (if available)

OTHER

<<FILL IN WORDING>>

PROGRAM QUALITY	
ACGME SITE VISIT CITATIONS: THE LAST ACGME NOTIFICATION LETTER WAS REVIEWED AND PROGRESS TOWARDS CORRECTION OF LISTED CITATIONS WAS ASSESSED.	
Citation #1 Description: <<FILL IN WORDING>>	Annual Interval Program Progress: <<FILL IN WORDING>> ACTION PLAN: <input type="checkbox"/> Citation rectified, no further intervention required <input type="checkbox"/> Continuation of current efforts adequate, no new actions necessary <input type="checkbox"/> New Action Plan necessary (also enter into Program Improvement Plan below): <<FILL IN WORDING>>
Citation #2 Description: <<FILL IN WORDING>>	Annual Interval Program Progress: <<FILL IN WORDING>> ACTION PLAN: <input type="checkbox"/> Citation rectified, no further intervention required <input type="checkbox"/> Continuation of current efforts adequate, no new actions necessary <input type="checkbox"/> New Action Plan necessary (also enter into Program Improvement Plan below): <<FILL IN WORDING>>
Citation #3 Description: <<FILL IN WORDING>>	Annual Interval Program Progress: <<FILL IN WORDING>> ACTION PLAN: <input type="checkbox"/> Citation rectified, no further intervention required <input type="checkbox"/> Continuation of current efforts adequate, no new actions necessary <input type="checkbox"/> New Action Plan necessary (also enter into Program Improvement Plan below): <<FILL IN WORDING>>
Citation #4 Description: <<FILL IN WORDING>>	Annual Interval Program Progress: <<FILL IN WORDING>> ACTION PLAN: <input type="checkbox"/> Citation rectified, no further intervention required

Annual Program Outcomes Assessment & Action Plan Report

	<input type="checkbox"/> Continuation of current efforts adequate, no new actions necessary <input type="checkbox"/> New Action Plan necessary (also enter into Program Improvement Plan below): <<FILL IN WORDING>>
Citation #5 Description: <<FILL IN WORDING>>	Annual Interval Program Progress: <<FILL IN WORDING>> ACTION PLAN: <input type="checkbox"/> Citation rectified, no further intervention required <input type="checkbox"/> Continuation of current efforts adequate, no new actions necessary <input type="checkbox"/> New Action Plan necessary (also enter into Program Improvement Plan below): <<FILL IN WORDING>>
Citation #6 Description: <<FILL IN WORDING>>	Annual Interval Program Progress: <<FILL IN WORDING>> ACTION PLAN: <input type="checkbox"/> Citation rectified, no further intervention required <input type="checkbox"/> Continuation of current efforts adequate, no new actions necessary <input type="checkbox"/> New Action Plan necessary (also enter into Program Improvement Plan below): <<FILL IN WORDING>>
(If you need to add additional rows, please contact the GME office to obtain an unlocked version of this document)	

<p>GMEC INTERNAL REVIEW (IR) CONCERNS: THE LAST GMEC IR REPORT WAS REVIEWED AND PROGRESS TOWARDS CORRECTION OF LISTED CONCERNS WAS ASSESSED.</p>	<p>Continued IR Concerns: <<FILL IN WORDING>></p> <p>ACTION PLAN:</p> <ul style="list-style-type: none"> <input type="checkbox"/> All Concerns rectified, no further intervention required <input type="checkbox"/> Continuation of current efforts adequate, no new actions necessary (enter into Program Improvement Plan below) <input type="checkbox"/> New Action Plan necessary (also enter into Program Improvement Plan below): <<FILL IN WORDING>>
<p>THE ACGME COMMON, SPECIALTY & INSTITUTIONAL PROGRAM REQUIREMENTS WERE REVIEWED FOR NEW REQUIREMENTS REQUIRING PROGRAMMATIC CHANGE.</p>	<p>New Requirements requiring Programmatic Change: <<FILL IN WORDING>></p> <p>ACTION PLAN:</p> <ul style="list-style-type: none"> <input type="checkbox"/> No Program changes required <input type="checkbox"/> New Action Plan necessary (also enter into Program Improvement Plan below): <<FILL IN WORDING>>
<p>THE PREVIOUS ANNUAL PROGRAM OUTCOMES ASSESSMENT & ACTION PLAN REPORTS WERE REVIEWED AND PROGRESS TOWARDS PREVIOUS ACTION PLANS WAS ASSESSED.</p>	<p>Continued Action Plan Concerns: <<FILL IN WORDING>></p> <p>ACTION PLAN:</p> <ul style="list-style-type: none"> <input type="checkbox"/> All Concerns rectified, no further intervention required <input type="checkbox"/> Continuation of current efforts adequate, no new actions necessary (enter into Program Improvement Plan below) <input type="checkbox"/> New Action Plan necessary (also enter into Program Improvement Plan below): <<FILL IN WORDING>>
<p>OVERALL EDUCATIONAL GOALS FOR PROGRAM AND COMPETENCY-BASED G&O FOR EACH ROTATION ASSIGNMENT AT EACH PGY-LEVEL WERE REVIEWED IN LIGHT OF CURRENT PROGRAM STRUCTURE AND ACGME COMPETENCIES.</p>	<p>Program changes prompting changes in Overall Goals and/or Rotation G&O (i.e., new rotations): <<FILL IN WORDING>></p> <p>ACTION PLAN:</p> <ul style="list-style-type: none"> <input type="checkbox"/> No changes required in Overall Goals or G&O <input type="checkbox"/> New Overall Goals and/or G&O necessary to meet Program Changes/ACGME Competencies (also enter into Program Improvement Plan below):

	<p><<FILL IN WORDING>></p>
<p>GME AND DEPARTMENT/PROGRAM POLICY AND PROCEDURE MANUAL REVIEWED FOR CURRENT APPLICABILITY.</p>	<p>New or inaccurate Policy and Procedures (i.e., inconsistency between Institutional & Program policy): <<FILL IN WORDING>></p> <p>ACTION PLAN:</p> <p><input type="checkbox"/> No changes required in Policy & Procedure Manual</p> <p><input type="checkbox"/> New Policy or Procedure necessary (also enter into Program Improvement Plan below):</p> <p><<FILL IN WORDING>></p>
<p>CURRENT INTACT PROGRAM LETTERS OF AGREEMENT REVIEWED FOR ACCURACY.</p>	<p>Missing or inaccurate PLA(s) (i.e., new Institutional Program Director or Faculty, PLA expired): <<FILL IN WORDING>></p> <p>ACTION PLAN:</p> <p><input type="checkbox"/> No changes required in current PLAs</p> <p><input type="checkbox"/> New PLAs necessary (also enter into Program Improvement Plan below):</p> <p><<FILL IN WORDING>></p>
<p>DEPARTMENT CONFERENCE & DIDACTICS CURRICULUM, PROGRAM EVALUATIONS REVIEWED.</p>	<p>Aspects of Program, Rotations & Curriculum that require change as prompted by evaluation feedback: <<FILL IN WORDING>></p> <p>ACTION PLAN:</p> <p><input type="checkbox"/> No changes required in Program</p> <p><input type="checkbox"/> Changes in Program, Rotations & Curriculum prompted by evaluation feedback (also enter into Program Improvement Plan below):</p> <p><<FILL IN WORDING>></p>
<p>CURRICULUM ATTENDANCE RECORDS REVIEWED</p>	<p>Specific areas that need improvement: <<FILL IN WORDING>></p> <p>ACTION PLAN:</p> <p><input type="checkbox"/> No changes required in Program</p> <p><input type="checkbox"/> Changes in Program to address Resident and Faculty Curriculum attendance (also enter into Program Improvement Plan below):</p> <p><<FILL IN WORDING>></p>

<p>ACGME RESIDENT SURVEY SUMMARY DATA REVIEWED WITH NATIONAL PERCENTILE DATA</p>	<p>List of major ACGME Resident Survey NON-COMPLIANT issues (i.e., grey-shaded areas): <<FILL IN WORDING>></p> <p>ACTION PLAN:</p> <p><input type="checkbox"/> No changes prompted by Survey results</p> <p><input type="checkbox"/> Program changes required to address Survey NON-COMPLIANT areas (also enter into Program Improvement Plan below): <<FILL IN WORDING>></p>
<p>DUTY HOUR VIOLATION REPORTS AND PROGRAM DUTY HOUR MONITORING SYSTEM REVIEWED</p>	<p>Specific duty hour rule violations that require Program change to address: <<FILL IN WORDING>></p> <p>ACTION PLAN:</p> <p><input type="checkbox"/> No changes required</p> <p><input type="checkbox"/> Program Changes to improve duty hour compliance (also enter into Program Improvement Plan below): <<FILL IN WORDING>></p>
<p>REVIEW OF PROGRAM EDUCATIONAL RESOURCES AND FINANCIAL SUPPORT.</p>	<p>Specific deficits in resources and Program support: <<FILL IN WORDING>></p> <p>ACTION PLAN:</p> <p><input type="checkbox"/> No changes required</p> <p><input type="checkbox"/> Program and Department Changes to improve Program support (also enter into Program Improvement Plan below): <<FILL IN WORDING>></p>
<p>REVIEW OF PROGRAM-SPECIFIC PATIENT CARE PERFORMANCE IMPROVEMENT INDICATORS</p>	<p>Specific areas of concern in Performance Indicators: <<FILL IN WORDING>></p> <p>ACTION PLAN:</p> <p><input type="checkbox"/> No changes required</p> <p><input type="checkbox"/> Program and Department Changes to improve Program-Specific Patient Care Performance Improvement Indicators: <<FILL IN WORDING>></p>

<p>REVIEW OF OTHER AVAILABLE PROGRAM SURVEYS (I.E., NRMP MATCH RESULTS, RESIDENT ATTRITION, PRESS-GANEY, KUH QUALITY REPORTS, RESIDENT APPLICANT SURVEYS)-IF APPLICABLE</p>	<p>Specific issues revealed in survey results: <<FILL IN WORDING>></p> <p>ACTION PLAN:</p> <p><input type="checkbox"/> No changes required</p> <p><input type="checkbox"/> Program changes in response to survey results (also enter into Program Improvement Plan below): <<FILL IN WORDING>></p>
<p>RESIDENT PERFORMANCE</p>	
<p>REVIEW OF GRADUATING RESIDENT EVALUATIONS, INCLUDING LAST PERIOD OF TRAINING.</p>	<p>Specific graduating resident issues to be addressed with resident: <<FILL IN WORDING>></p> <p>ACTION PLAN:</p> <p><input type="checkbox"/> “the resident has demonstrated sufficient competence to enter practice without direct supervision” (no action plan necessary)</p> <p><input type="checkbox"/> Specific issues to be discussed with individual resident prior to graduation and/or included in final summative evaluation (also enter into Program Improvement Plan below): <<FILL IN WORDING>></p>
<p>RESIDENT EVALUATIONS & SEMI-ANNUAL PD MEETING DOCUMENTS REVIEWED IN LIGHT OF EXPECTED PGY-LEVEL G&O AND MILESTONES.</p>	<p>Specific resident issues to be addressed with resident (i.e., not meeting expected PGY-level milestones, disciplinary issues, attrition and transfer rate level): <<FILL IN WORDING>></p> <p>ACTION PLAN:</p> <p><input type="checkbox"/> Residents progressing appropriately and meeting PGY-level milestones (no action plan necessary)</p> <p><input type="checkbox"/> Specific issues to be discussed with individual residents and/or included in resident evaluation (also enter into Program Improvement Plan below): <<FILL IN WORDING>></p>
<p>RESIDENT CASE-PROCEDURE LOGS REVIEWED WITH NATIONAL PERCENTILE DATA-IF APPLICABLE</p>	<p>Specific case-procedure areas significantly below national averages: <<FILL IN WORDING>></p> <p>ACTION PLAN:</p> <p><input type="checkbox"/> No changes required in Program</p>

	<input type="checkbox"/> Changes in Program and/or Resident rotations/focus to address case-procedure deficits (also enter into Program Improvement Plan below): <<FILL IN WORDING>>
IN-TRAINING EXAMINATION RESULTS REVIEWED WITH NATIONAL PERCENTILE DATA-IF APPLICABLE	Specific areas significantly below national average requiring Programmatic change: <<FILL IN WORDING>> ACTION PLAN: <input type="checkbox"/> No changes required in Program <input type="checkbox"/> Changes in Program to address above-identified deficits (also enter into Program Improvement Plan below): <<FILL IN WORDING>>
FACULTY DEVELOPMENT	
FACULTY EVALUATIONS, PD ANNUAL EVALUATIONS OF FACULTY, AND SOM FACULTY TENURE AND PROMOTIONS/APPLICATIONS REVIEWED.	Specific faculty issues to be addressed with faculty:: <<FILL IN WORDING>> ACTION PLAN: <input type="checkbox"/> Faculty development progressing appropriately (no action plan necessary) <input type="checkbox"/> Specific issues to be discussed with individual faculty and/or included in annual faculty evaluation (also enter into Program Improvement Plan below): <<FILL IN WORDING>>
DEPARTMENT SCHOLARLY ACTIVITY REVIEWED	Specific areas of Scholarly Activities that do not meet Program Requirements or Faculty Development expectations: <<FILL IN WORDING>> ACTION PLAN: <input type="checkbox"/> Scholarly activity meets Program Requirements and appropriate Faculty Development (no action plan necessary) <input type="checkbox"/> Changes in Program to enhance Scholarly Activity & Faculty Development (also enter into Program Improvement Plan below): <<FILL IN WORDING>>
FACULTY DEVELOPMENT TRAINING & MENTORING	Specific areas of deficit: <<FILL IN WORDING>>

	<p>ACTION PLAN:</p> <p><input type="checkbox"/> No changes required in Program</p> <p><input type="checkbox"/> Changes in Faculty Development needed (also enter into Program Improvement Plan below):</p> <p><<FILL IN WORDING>></p>
<p>GRADUATE PERFORMANCE</p>	
<p>FIRST-ATTEMPT BOARD CERTIFICATION PASS RATE COMPARED TO NATIONAL PASS RATE</p>	<p>Specific areas significantly below national average requiring Programmatic change:</p> <p><<FILL IN WORDING>></p> <p>ACTION PLAN:</p> <p><input type="checkbox"/> No changes required in Program</p> <p><input type="checkbox"/> Changes in Program to address above-identified deficits (also enter into Program Improvement Plan below):</p> <p><<FILL IN WORDING>></p>
<p>REVIEW OF OTHER GRADUATE SURVEY TOOLS AND ASSESSMENTS-IF APPLICABLE</p>	<p>Specific issues revealed in survey results:</p> <p><<FILL IN WORDING>></p> <p>ACTION PLAN:</p> <p><input type="checkbox"/> No changes required</p> <p><input type="checkbox"/> Program changes in response to survey results (also enter into Program Improvement Plan below):</p> <p><<FILL IN WORDING>></p>

PROGRAM IMPROVEMENT ACTION PLAN

PROGRAM QUALITY:

- 1.
- 2.
- 3.

RESIDENT PERFORMANCE:

- 1.
- 2.
- 3.

FACULTY DEVELOPMENT:

- 1.
- 2.
- 3.

GRADUATE PERFORMANCE:

- 1.
- 2.
- 3.

I have discussed this report as it pertains to each Participating Institution with each Participating Institutional Site Director.

We are currently actively involved in a PRACTICE-BASED IMPROVEMENT PROJECT with resident involvement. The title of this ongoing project is **<<FILL IN TITLE>>**.

We have reviewed the program's clinical assignments and discussed and/or made improvements that will minimize the number of caregiver handoffs/transitions (See ACGME common program requirement VI.B.1).

<<FILL IN PD NAME>>, MD
Program Director