CLINICAL PATHOLOGY CORE ROTATION

Faculty:
- Stacy G. Beal, MD
- Sherri Flax, MD
- Neil Harris, MD
- Ken Rand, MD
- William Winter, MD

1. Rotation description
   a. This resident serves as a junior director and assists in many aspects of laboratory directorship alongside the medical directors.
   b. This rotation is an opportunity for residents to acquire a set of tools that will enable them to develop and maintain a level of expertise in clinical pathology that is appropriate to the professional responsibilities undertaken as a practicing pathologist. This could range from understanding the role of the fundamental analytical and quality principles that underlie the laboratory techniques employed in the clinical laboratories (clinical chemistry, hematology, microbiology, and others) to full direction of a clinical laboratory.

2. Broad objectives
   a. Understand how to fully evaluate send-out test requests, contact the treating team, communicate with pathology attendings and solve any logistical issues with laboratory staff.
   b. Be able to independently advise a colleague in another department regarding results obtained in a corresponding laboratory (e.g., microbiology – blood culture results; clinical chemistry – protein electrophoresis).
   c. Understand the role of a pathologist as a medical director of a clinical laboratory (including laboratory management).
   d. Assist laboratory staff with the clinical correlation of a result, logistical issues, such as specimen labeling, or advanced interpretation of a result, such as abnormal findings on a peripheral blood smear.
   e. Serve as a consultant for colleagues in other departments. This includes offering guidance on test selection and interpretation, and answering questions on the operation of a clinical laboratory.
   f. Understand Informatics and how it applies to the clinical laboratory.

3. Goals and objectives
   a. Patient care: Residents will demonstrate the ability to provide effective clinical consultation, specifically to:
      - Gather appropriate and accurate clinical information from all available sources
      - Interpret laboratory test results within a clinical context
      - Develop a diagnosis or differential diagnosis based on laboratory results and clinical information
      - Use information technology to support patient care decisions and practitioner education

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• Use evidence-based medicine and clinical decision-making concepts to interpret results and make informed decisions
• Advise clinicians on the choice of clinically appropriate, cost-effective tests
• Advise clinicians on appropriate follow-up for unexpected test results
• Work with health care professionals and teams to provide patient-focused care

b. **Medical knowledge:** Residents will demonstrate:
   • Knowledge of common laboratory tests and their medical application and correlation
   • Knowledge of the effects of disease, drugs, matrix and preanalytical variables on lab test results
   • General knowledge in the basic and clinical sciences necessary for effective consultation in laboratory medicine
   • Knowledge of the principles and practice of laboratory management
   • The ability to collect and evaluate medical evidence regarding the utility of laboratory tests
   • An investigative and analytic approach to laboratory and clinical questions
   • Ability to use a variety of resources to investigate clinical questions
   • Development of a personal strategy to regularly maintain and update medical knowledge

c. **Practice-based learning and improvement:** The resident will demonstrate:
   • An ability to find, evaluate and assimilate evidence from scientific studies
   • Application of statistical and study design principles in evaluation of evidence
   • Ongoing identification and remediation of gaps in personal medical knowledge
   • An understanding of and ability to apply the principles of quality control and quality assurance
   • The ability to evaluate current and proposed testing methods for analytical performance, clinical utility and cost-effectiveness
   • Aptitude in the use of proficiency-testing results to improve laboratory practice
   • An ability to use laboratory problems and clinical inquiries to identify process improvements to increase patient safety and minimize opportunities for medical errors
   • A use of self-reflection to evaluate and improve personal habits and strategies of practice
   • Active facilitation of the learning of students and health care professionals

d. **Interpersonal and communication skills:** Residents will demonstrate:
   • An ability to work with others as part of a health care team
   • The ability to communicate clearly and effectively with clinicians, medical technologists and other medical personnel
   • Capability in using appropriate modes of communication (e.g., listening, non-verbal, explanatory, questioning)
   • An ability to choose and use appropriate communication mechanisms (e.g., face-to-face, telephone, e-mail, written)
   • Proficiency in expressing ideas and positions clearly and effectively, both verbally and in written documents (and in legible handwriting)
   • Skill in preparing and delivering effective presentations

e. **Professionalism:** Residents will demonstrate:
   • Respect, compassion and integrity
   • Responsiveness to the needs of patients and society that supersedes self-interest

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• Knowledge and understanding of the ethical and privacy issues affecting the clinical laboratory
• Maintenance of confidentiality of patient information
• Consistent performance of all duties in a timely, dependable and responsible manner
• Prompt and courteous response to all pager and telephone calls
• Regular, punctual attendance and participation in rounds, conferences, meetings and rotation responsibilities
• Commitment to excellence and ongoing professional development

f. **Systems-based practice:** Residents will demonstrate an:

• Understanding of the role of the laboratory in the health care system and the importance of reliable, cost-effective and timely laboratory results in clinical decision-making
• Understanding of the interactions of the national health care system, the various types of local and regional health care delivery systems, UF Health and the UF Department of Pathology, Immunology and Laboratory Medicine
• Understanding the developing role of laboratories in preparedness for biological and chemical terrorism
• Ability to work with clinicians, administrators and others to determine the role of the laboratory in specific situations to optimize patient safety and outcomes
• Understanding of CLIA, CAP and JCAHO requirements for clinical laboratories
• Understanding of basic laboratory reimbursement mechanisms and regulatory requirements, including kickbacks and compliance with Medicare/Medicaid “fraud and abuse” avoidance requirements
• Understanding of laboratory information management (see separate Informatics Curriculum)
• Understanding of how to perform cost analyses of laboratory tests
• Understanding of the process of a root-cause analysis (RCA)

4. **Duties and responsibilities**

a. **Call pager:** All calls/e-mails from other physicians and laboratory staff will be directed to the CP Core resident

• With specific knowledge of the individual patient, up to date scientific knowledge (e.g., review of the medical literature, assessment of evidence-based medical practice), and clinical judgment, residents will:
  o Determine the appropriate course of further laboratory evaluation, applying an appropriate decision tree, and oversee progress at each decision level with attention to inappropriate testing and the quality of results
  o Create a differential diagnosis, or specify a single diagnosis, based on the interpretation of laboratory findings, in light of the individual patient case history
  o Recognize the potential effects on this interpretation, as a result of preanalytical factors and an estimate of the likelihood that such effects might affect the interpretation of the findings in the individual patient
  o Counsel and educate the patient’s attending physician(s) and residents concerning proper laboratory evaluation and interpretation of results in that specific case

• Acquiring patient history and physical examination data:
  o When evaluating laboratory data, residents will gather essential and accurate patient information including, the chief complaint and clinical presentation, a history of the present illness and its management, relevant past medical history (e.g., illnesses,
surgeries, immunizations, allergies, medications), family and social history, physical findings and other laboratory and radiological findings. Such information will be obtained through contact with the patient’s physician(s) and radiologist(s); and/or chart review in the electronic medical record.

b. **Review send-outs**
   - Consider the impact of the test result on patient management in light of:
     - The patient’s clinical history, signs/symptoms and other laboratory and radiologic findings
     - The test’s limitations (sensitivity, specificity)
     - The turnaround time for the test
     - The sample type
     - Any other factors based on your discussion with the patient’s care team

c. **Attend rounds with a clinical team once per week**
   - The resident should serve as a consult to the team by providing information about lab testing of the patients
   - Offer to give the team a tour of the laboratory
   - Follow-up on lab results and any unanswered questions after rounds

d. **Core Lab sign-out (chemistry, hematology, urinalysis, electrophoresis)**
   - Pick up from lab review box first thing in the morning and again a few hours later → preview cases
   - Retrieve any new cases from the lab immediately prior to meeting with faculty.
   - Meet faculty every day at 2 p.m. Get the service schedule from faculty.
   - Includes:
     - Peripheral blood smears, body fluids, joint crystals
     - Bethesda inhibitor assay
     - Lupus anticoagulant
     - TEG Interpretation
     - Platelet function test
     - Protein electrophoresis (will likely be available in the late afternoon, after meeting with faculty)
     - Hemoglobin analysis (Tuesdays): On the first two Tuesdays, the resident will be instructed on the interpretation of results and showed how the written consult is constructed. Thereafter, the resident will review all of the Hb electrophoreses and construct interpretations prior to meeting with the attending.
     - Clotting factor assays (if problematic)

e. **Microbiology cases and presentation at Infectious Disease Plate Rounds**
   - Review daily results from the in-lab packet twice per week for the first three weeks of the rotation; choose one case each time to investigate. Choose a variety of organisms and culture/source types (i.e., organism types: bacteria, fungus, acid-fast bacilli (AFB), parasites, viruses; sources: blood, stool, respiratory, etc.; methods: culture, polymerase chain reaction (PCR)).
   - Meet with Drs. Rand and Beal to discuss the six cases at the end of the third week (three weeks x two cases/week = six cases). Together, choose one or two cases to present at Microbiology Plate Rounds during the fourth week.
     - This includes:
a. How the organism was identified - Growth characteristics: media used, time to grow, size/shape/color/smell of colonies, etc.; biochemical tests; confirmatory tests; any additional tests; etc.
b. Patient info - What is going on with the patient? What is the suspected organism? Is it common or uncommon for the patient's presentation? Were they on empiric antibiotic coverage and was it appropriate? How did the result change management? Etc.

f. Informatics: See separate Informatics Curriculum

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Note: PIER Essentials 1 should be covered during the Intro to Lab Rotation. If the resident has already completed that rotation, he/she must perform duties of PIER Essentials 1 during the first CP Core Rotation.

g. Lab management
- Review of quality control and CAP proficiency testing
- Attend quality assurance and other management meetings

h. Meetings: Obtain date/time/location information from Gena
- Lab/IT collaboration (every other week)
- Medical directors (every other week)
- Core Lab management (once per month)
- Microbiology management (once per month)
- Quality assurance (once per month)
- Ad-hoc meetings (e.g., renovation, CAP readiness, etc.)
- Topics with Dr. Winter – Schedule two meetings per week to review topics of interest to the resident

i. Conferences
- Microbiology Plate Rounds – Tuesdays, 9:45 a.m., Micro Lab
- Infectious Diseases Conference – Tuesdays and Fridays, noon, D2-15
- Internal Medicine Grand Rounds – Thursdays, 11 a.m., C1-11 (See Department of Medicine website for topics)

To-Do List
- Set-up rounds with Medicine or other services
- Get ID conference schedule
- Set up time with Dr. Winter to discuss topics
- Hang up contact information in labs
- Ask Gena to add you to all meetings

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