Dear Colleagues

As an outcome of a workshop at the 2009 APC/PRODS meeting, we, a group of volunteers from PRODS, APF, and ASCP have met to draft a Laboratory Management Curriculum for pathology residents. If you have browsed the program for the 2010 meeting you will see this topic and draft curriculum scheduled to be discussed at a joint plenary session and 2 APC/PRODS workshops on Wednesday, and as a report back to PRODS on Thursday.

Please take some time to look over the attached curriculum draft, as well as a preamble to the draft. The Thursday PRODS session will be designed to gather your feedback, which will be necessary to be sure we are on the right path. If you are not attending the meeting in Seattle, but would like to offer comments and suggestions, please feel free to contact any of us.

In Seattle we also hope to demonstrate a trial Wiki site for sharing and exchanging ideas and resources for laboratory management education.

Thank you,

The ASCP/APF/PRODS Workgroup on Laboratory Management Education for Pathology Residents

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The assertion that training in laboratory management is an important component of pathology resident education is not new, but has been a recurring part of consensus documents about pathology resident education. In 1987 the Graduate Medical Education Committee of the Association of Pathology Chairs (APC) met in Park City, Utah, and listed management principles as an important component of resident education. Similarly, the 1993 ASCP Colorado Springs Conference on curriculum reform led to the Graylyn Conference, a combined effort of Academy of Clinical Laboratory Scientistis (ACLPS), the American Society for Clinical Pathology (ASCP), APC, and the College of American Pathologists (CAP), that concluded, among other things, that residents should become capable of managing clinical laboratories. As a result, the large majority of residency programs in the US and Canada have stated that they incorporate laboratory management training into their curricula, although the extent and manner are quite variable. However, despite these longstanding efforts to achieve some degree of competence in the skills required to direct a laboratory, evidence suggests we are falling short of our stated goals. Surveys of pathologists in practice by Horowitz in 1998 and 2005 found dissatisfaction with the management, communication, and interpersonal skills of newly trained pathologists. A survey conducted by APC and CAP in 2009 confirmed that these perceptions persist.

If management, communication and interpersonal skills have been important and lacking for the past few decades, despite efforts of residency program directors to enhance curricula with such training, why does this deserve additional attention now? Every organization that has looked at the future of pathology has reached similar conclusions. Today and in the future, even more than in the past, the profession needs practitioners who are exert their influence beyond the laboratory. The ASCP has conducted two task forces on the future of pathology. Among other things, these task forces have concluded that it is essential for pathologists to change the way in which we relate to patients, physicians, and the wider health care community, establishing ourselves as an indispensable source of information and guidance. In similar language, the CAP’s Transforming Pathologists initiative stresses the importance of repositioning pathologists as the center of the health care team. Clearly, the future of the profession depends on just those skills that pathologists seem to be lacking, at least as they emerge from their graduate medical education.

A Workgroup of PRODS members, with staff and volunteer support from the American Pathology Foundation (APF) and ASCP, has developed the following Laboratory Management curriculum, following a workshop conducted by PRODS, APF, and ASCP at the 2009 APC meeting. In addition to the curriculum itself, a number of principles emerged from the discussions at the APC meeting and thereafter;
1. The skills needed to successfully direct a laboratory and move the profession forward include not only knowledge of management content and principles, but also informatics, communication skills, professional work habits, interpersonal skills and “good citizenship” attributes.

2. Acquisition of laboratory management skills will promote personal career development and advancement for our trainees, distinguishing not only the individual but the program in which he/she trained.

3. Management training cannot be accomplished based only on didactic presentations, but requires practical, hands-on experience, ideally including long-term projects, junior directorships, and other opportunities for horizontal learning.

4. Management training applies to all areas of pathology education: clinical pathology, anatomic pathology, and research pathology.

5. Mentoring has a key role in pathology education, including management education.

6. A successful laboratory management curriculum depends upon the enthusiastic support of departmental faculty, especially departmental leadership.

7. Recruitment of experts from outside of pathology departments can significantly enhance management training.

8. Effective resident education in management will require the development of new evaluation tools. Evaluating the effectiveness of the program requires tools to measure outcomes by assessing graduates in their practices.

9. This curriculum, like any standardized curriculum, is best viewed as a resource for each individual residency program to develop its own unique curriculum, and is not a mandate.
Pathology and Laboratory Medicine Management
Curriculum and Competencies

Laboratory Management is the integration and coordination of organizational resources to provide quality laboratory services as efficiently and effectively as possible. Success requires a vast array of skills founded on sound principles of management science.

1. Management: General Principles

- **Leadership and management models**
  Competency: Medical Knowledge
  - Describe management theory.
  - Differentiate between leadership and management
    1. Tasks and tools of management
      a. Organizing daily operations
      b. Directing personnel
      c. Controlling performance
      d. Time management
    2. The role and responsibilities of the Medical Laboratory Director
      a. CLIA requirements
      b. CAP and JCAHO Standards
    3. Emotional intelligence of leadership

- **Planning**
  Competency: Practice Based Learning and Improvement
  - List the basic elements of the strategic processes
  Competency: Systems Based Practice
  - Develop a business plan, including operations, marketing and sales
    1. Strengths, Weaknesses, Opportunities, Threats (SWOT) analysis
    2. Scenario planning
    3. Disaster Planning

- **Organizational structure**
  Competency: Medical Knowledge
  - Identify the most common forms of clinical laboratory and pathology practice organizational structures.
  Competency: Systems Based Practice
  - Recognize the different forms of professional practice Laboratory models (academic medical center, community hospital-based and independent)
  - Describe Pathology group practice arrangements
Communication

Competencies: Interpersonal and Communication Skills

- Create an effective presentation and to conduct a management meeting.
  1. Interpersonal communication tools and strategies
  2. Presentation skills
  3. Meetings management
- Recognize the role of continuing education activities in the practice of Pathology
  4. The Pathologist as educator
     a. Staff continuing education
     b. Tumor Board and other medical staff functions

2. Analyze public relations as it relates to the practice of pathology
   1. Dealing with the media
   2. Advocacy

3. Describe business development activities as they relate to the practice of pathology
   1. Laboratory outreach management
      a. Marketing
         i. Market analysis and planning
         ii. Advertising and promotions
      b. Sales
         i. Basics of selling your services
         ii. Client services
   2. Logistics and communications
      a. Specimen pickup
      b. Result reporting
   3. Research activities
      a. Principles of research
      b. Grant applications and administration
      c. Funding agencies and entities
         i. Government
         ii. Institutional
         iii. Industry

Biomedical ethics and Institutional Review Board requirements

Competency: Medical Knowledge

- List the steps involved in obtaining IRB approval for clinical research studies.
  1. Informed consent and study patient protections
  2. Conflicts of interest
**Personal Career Development**

**Competency: Systems-Based Practice**

- Identify the essential elements of professional employment and career development
  1. Preparation for the job/fellowship market (or, How to find a job, keep it and what is expected of the newly graduated pathologist in practice?)
    a. Preparing your CV/resume
    b. Networking
    c. Interviewing skills, presentation and etiquette
    d. Understanding the job market characteristics
    e. Being a member of a pathology group or academic practice

4. Describe the importance of maintaining good Medical Staff Relations
   1. Being a member, in good standing, of the medical staff of a hospital
   2. Medical staff committee participation

5. Analyze the role of the pathologist/pathology group from the hospital administrator’s perspective
   1. Hospital Relations

**Principles of Human Resource Management**

**Competency: Systems-Based Practice**

6. List relevant labor laws
   1. Fair Labor Standards Act
      1. Exempt and non-exempt employees
   2. Affirmative action, discrimination, sexual harassment
   3. Americans With Disabilities Act
   4. Family Medical Leave Act
   5. Collective bargaining agreements and labor unions

- Describe the different job classifications and job descriptions
  1. Training and certification of medical laboratory sciences professionals
  2. Competency assessment
  3. Work force trends

**Recruiting, interviewing and new employee selection**

**Competency: Interpersonal and Communication Skills**

1. Conduct an interview for a new employee
2. List the principles of compensation and benefits management
**Performance Evaluations**

*Competency: Interpersonal and Communication Skills*

3. Recognize the importance of a performance appraisal as a motivational tool.
4. Conduct a performance appraisal
5. Recognize the importance of setting performance expectations.
6. Describe progressive discipline, and its documentation as an effective communications tool
   1. Performance evaluation
   2. Counseling
   3. Progressive discipline
   4. Conflict resolution and dismissal

- List employee retention strategies
- Evaluate the role of teamwork and consensus building

**Laboratory Operations Management**

*The laboratory test directory*

*Competency: Medical Knowledge*

- Create a test menu
- Design a program for test evaluation and validation
- List the essential elements of choosing and monitoring reference laboratories
  1. Use of reference laboratories
  2. Request for Proposal process
  3. Monitoring performance

- Apply workforce staffing models
  1. Complex-based standards and job responsibilities

- Analyze workflow management
  1. Specimen management
  2. Instrument maintenance
  3. Automation (task-targeted, sub-total, total laboratory automation)
  4. Bar code and RFID technologies
**Service Standards and Standard Operating procedures ("The Procedure Manual")**

**Competency: Practice-based Learning and Improvement**
- Prepare a laboratory SOP for a test procedure or process
- Prepare a laboratory report
  1. Report format (in the LIS, HIS, web portal and EMRs)
  2. Utilization management
- Identify productivity measures
  1. Benchmarking (internally and externally) metrics
- Describe managing physician office laboratories (POL)
- Define POC, Waived and Provider Performed testing
  1. Proficiency and competency requirements

**Financial Management of the Pathology Practice and the Laboratory**

**Basic accounting and financial reporting**

**Competency: Medical Knowledge**
- List the general elements of an income statement and balance sheet
- Interpret an income statement and balance sheet
  1. Financial statements and variance analysis Banking and credit
  2. Auditing
  3. Cash flow analysis
  4. The Revenue Cycle

**Sources of pathology and laboratory revenue**

**Competency: Medical Knowledge**
- Identify the general forms of reimbursements for pathology and laboratory services
  1. Insurance and Medicare
  2. Forms of reimbursement
  3. Medicare and Medicaid
    a. Overview of CMS
    b. Part A services and the DRG (in-patient)
    c. Part B services (out-patient and out-reach)
      a. Technical Component (TC)
      b. Clinical Laboratory Fee Schedule
    d. Professional Component (PC)
      1. RBRVS
      2. Physician Fee Schedule
  4. Part C (Medicare Advantage) and Part D
  5. Medicaid and federal and state funding
**Categories of laboratory expenses**

*Competency: Medical Knowledge*

- List the necessary elements of test cost accounting
- Cost account a common laboratory procedures
  1. Test cost accounting and price setting
  2. Total cost, fixed cost, variable cost, average cost and marginal test cost analysis.

**Laboratory equipment and supply chain management**

*Competency: Medical Knowledge*

- Demonstrate a new instrument evaluation
- Prepare a justification for its acquisition
  1. Technology assessment
  2. Equipment acquisition
  3. Financial justification process
  4. Purchase, lease and reagent rental agreements

**Supply chain management**

- 1. Vendor and supplier relationships
- 2. Inventory management
- 3. Group Purchasing Organizations (GPO)

**Budget preparation**

*Competency: Medical Knowledge*

- Identify basic elements of preparing a budget for pathology and laboratory services,
- Describe the role of a budget in planning, managing and controlling operations

**Coding, billing and collections**

*Competency: Medical Knowledge*

- Assign correct CPT codes for common Pathology and Laboratory Medicine procedures.
  2. Diagnosis coding (SNOMED, ICD-9/10)
  3. Client billing, third party billing
     a. Contracted billing services arrangements
  4. Accounts Receivable (days outstanding), Bad debt, billing benchmarks
  5. Pension funds, insurance and tax planning
Quality Systems, Regulatory Compliance and Safety
Quality control, Quality Assurance and Quality Improvement
Competency: Medical Knowledge
- Describe the laboratory testing process
  1. The laboratory testing process (pre-analytic, analytic, and post-analytic work)
  2. The quality system plan and structure
  3. CLSI Quality Systems Plan

Quality control principles
Competency: Practice-Based Learning and Improvement
- Analyze QC data for a common laboratory procedure
- Interpret QC data for a common laboratory procedure
  1. Levy-Jennings plots, Westgaard Rules

Quality assurance and quality improvement
Competency: Practiced-Based Learning and Improvement
- Participate in a quality improvement activity
  1. General principles
  2. CAP Q-Prosbes
- Process improvement and industrial engineering principles
  1. LEAN, Six Sigma

Proficiency testing
Competency: Medical Knowledge
- Demonstrate ability to review external proficiency surveys
- Respond to identified problems or questions
  1. CAP Proficiency Test Surveys and others
  2. Anatomic pathology PT

Compliance
Competency: Practice based learning and Improvement
- List the basic elements of the model compliance plan
  1. Model Compliance Plans for Hospital Laboratories
     Privacy (HIPAA)
  2. Laboratory certification and accreditation
     a. CLIA certification
     b. Analytical complexity (Waived, Medium, High)
     c. CAP, COLA, JCAHO accreditation
Laboratory inspections

Competency: Practice-Based Learning and Improvement

- Perform a CAP self-inspection or mock inspection or participate in a CAP inspection of another facility as a Team member
  1. AABB for blood banks
  2. ISO 15189

Facility Safety

Competency: Medical Knowledge

- Describe the basic elements of the laboratory safety program
  1. OSHA regulations
  2. Laboratory safety plans
     a. Chemical hazards, MSDS
     b. Radiation safety
     c. Biological hazards and Universal precautions
     d. Electrical safety

- Recognize the importance of Patient safety
  1. Patient safety principles
  2. Laboratory errors management

Informatics

Competency: Practice-Based Learning and Improvement

Personal computing

- Analyze scientific and financial data using a spreadsheet program
- Describe scientific and financial data presented using a spreadsheet program
  1. Word processing, spreadsheets, presentations, scheduling, and other productivity tools

Pathology; an information specialty

- Identify different features of laboratory reports that affect physician comprehension and behavior
  1. Reporting
  2. Consultations
  3. Education

Digital imaging

- Describe the role of digital imaging in Pathology
- Analyze the processes involved in preparing digital images and their use.
  1. Slide scanning, viewing, image storage
  2. Remote microscopy
  3. Image analysis
Public health reporting
Competency: Systems Based Practice
- List state reporting laws
- Describe the laboratory’s role regarding reportable diseases

Statistics
Competency: Practice Based Learning
- Given tests results linked to appropriate clinical data, calculate sensitivity, specificity, ROC curve, positive predictive value, negative predictive value, and likelihood ratio at any given result threshold
  1. Basic parametric and non-parametric descriptive statistics
  2. Predictive values, likelihood ratios and ROC curves
  3. Regression analysis

Management of IT systems
Competency: Practice-Based Learning and Improvement
- Productively engaging with and supporting IT managers purchase, build and maintain major IT systems in the laboratory and hospital.
  1. Vendor relationships, contracting
  2. Security (HIPPA)

Transactional databases, data warehouses
Competency: Practice-Based Learning and Improvement
- Evaluate the role of transactional databases and data warehouses in the everyday practice of pathology.
  1. Retrieval of database information
  2. Tumor registries
  3. Biorepository data bank

Laboratory information systems (LIS)
Competency: Practice-Based Learning and Improvement
- Describe Laboratory Information Systems and their use in daily practice
  1. Functionalities
  2. Integration (interfaces) with other systems (HIS, EMR)
  3. HL7 basics and LOINC
  4. Selection process
**Integrated patient centered support**

*Competency: Practice-Based Learning and Improvement*

- Describe Integrated patient centered support
- Evaluate all elements involved in Integrated Patient Centered Support
  1. Electronic health record (EHR)
  2. Electronic medical record (EMR)
  3. Internet resources and linkages

**Legal Affairs and Risk Management**

**Legal Affairs**

**Contracts and Negotiations**

*Competency: Medical Knowledge*

- List the basic elements of a contract
- Demonstrate the ability to negotiate a contract employment
  1. Essential elements of a contract
  2. Employment contracts
  3. Hospital contracts with pathology groups
  4. Managed care contracts
  5. Negotiation techniques and strategies

**Risk Management**

*Competency: Medical Knowledge*

- Identify the elements of a risk management program.
- Demonstrate the ability to effectively manage an incident
  1. Medical Malpractice and professional negligence
     a. Personal liability and malpractice insurance
     b. Vicarious liability of the pathologist and medical laboratory director
     c. Occurrence reporting
     d. The process of litigation
        i. Notice, discovery, and trial
        ii. Legal counsel
        iii. Material and expert witnesses
        iv. Document maintenance