ACGME COMPETENCIES IN NEUROPATHOLOGY FELLOWSHIP TRAINING
A report by the Professional Affairs Committee
of the American Association of Neuropathologists
December, 2002

INTRODUCTION: THE SIX CORE COMPETENCIES AND TOOLS FOR ASSESSING THEM

The six core competencies of the ACGME (patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice) are described on the ACGME website (www.acgme.org). The ACGME definitions of each competency are either quoted directly in the subsequent sections or modified slightly to clarify how they apply to training and practice in neuropathology. The ACGME website also provides a "toolbox" containing specific recommendations for how each competency should be assessed. The "toolbox" contains thirteen assessment tools:

1. *360-degree evaluation instrument:* A rating form to be completed by superiors, peers, subordinates, patients, and families. Neuropathologists would add technicians and office staff in place of patients and families.
2. *Chart-stimulated recall oral examination (CSR):* A standardized oral examination on clinical cases that covers reasons behind the work-up, diagnosis, interpretation, and/or treatment plan. Each case takes 5-10 minutes; total examination time is about 2 hours. In clinical medicine, a "case" might be the chart for one patient encounter. In neuropathology, a "case" might be one autopsy or surgical pathology report.
3. *Checklist evaluation of live or recorded performance:* A list of behaviors or actions is to be checked off as "yes/no", "total/partial/incorrect", etc. Standards need to be set for pass/fail performance or excellent/good/fair/poor performance. Items on a neuropathology list might include "fetal brain removed intact, frozen section properly cut and stained, correct special stains ordered, reports completed in a timely fashion".
4. *Global rating of live or recorded performance:* A questionnaire evaluating general categories (patient care skills, interpersonal skills) using general descriptors (superior/satisfactory/ unsatisfactory). These are often used in monthly evaluations for each rotation.
5. *Objective structured clinical examination (OSCE):* In clinical medicine, the trainee rotates through 12-20 separate standardized patient encounter stations. Each encounter takes about 10-15 minutes. In lieu of actual patient examinations, the clinical trainee may be given clinical scenarios with mannequins, data interpretation exercises (ECGs, etc.). In neuropathology, the trainee might be given selected slides, photographs, or images with directed questions for each. Different fellows within or across years would all take the same examination. (If one provides all components of a case, the exercise would probably be better categorized as a "standardized patient" examination as discussed below.)
6. *Procedure, operative, or case log:* Case logs document the types and numbers of cases (autopsies, surgical specimens) seen by the trainee.
7. *Patient survey:* These assessments require patients to evaluate their satisfaction with care, their impression of physician competency, etc. In neuropathology, it would generally be more appropriate to survey the clinicians and any pathologists who provide regular referrals.
8. *Portfolio:* A portfolio is a collection of "products" prepared by the trainee that provides evidence of learning and achievement. A portfolio may include written documents, photographs, or other

materials. Reflecting upon (and writing about) what has been learned is an important aspect. Portfolios must be reviewed by an attending.

9. *Record review:* Medical records are pulled, reviewed and rated according to a specific protocol and coding form. In neuropathology, the records would be autopsy, consult, and surgical pathology reports, to be evaluated for specific components of accuracy, completeness, timeliness, etc. Interpretation of this exercise is complic ated by the fact that the final patient record has already been checked and possibly corrected by an attending.

10. *Simulations and models:* These may include paper-and-pencil activities, computerized simulations, or anatomical models. Such activity should include a wide array of options resembling reality, allow examinees to reason through a clinical problem with little or no cueing, permit examinees to make life-threatening errors without hurting a real patient, and provide instant feedback so trainees can correct a mistaken action. In pathology, "simulations and models" are quite similar to OSCEs. For example, "frozen section diagnoses" may be made in both settings.

11. *Standardized oral examination:* This performance assessment uses realistic patient cases with a trained examiner questioning the trainee. The same cases are used for multiple trainees. Each case scenario takes 3-5 minutes; the entire examination takes about 2 hours.

12. *Standardized patient examination (SP):* In a clinical SP examination, a healthy person is trained to simulate a medical condition in a standardized way. The equivalent in neuropathology would be a complete surgical or autopsy case including history, gross photographs or description, and all glass slides including special stains and immunostains. This exercise is distinguished from the OSCE above by the completeness of the case and the corresponding extent of the answer(s).

13. *Written examination (MCQ):* A written or computer-based multiple -choice question should sample medical knowledge and understanding, not just factual or easily recalled information.

The prospect of teaching and documenting the learning of the core competencies is initially quite daunting. However, it is important to recognize two things. First, while the formal expression and formal requirement for documentation of the core competencies are new, the required knowledge and behaviors have in fact been taught, albeit informally, for many years and are part of the standard practice of neuropathology. Second, many of the suggested activities and documentation methods can be combined into comprehensive training/evaluation exercises that can fit well into busy schedules. For example, the same exercise (OSCE, checklist, etc.) may be used to document multiple competencies if the tool has been carefully designed and if the program director keeps track of which answers apply to which competencies.

The ACGME recommends certain tools for subcomponents of each competency; this recommendation is summarized in a table on their website (www.acgme.org/Outcome/assess/ToolTable.pdf). The most applicable tools for neuropathology are listed and interpreted in the following pages. ***Please note that while each subcomponent must be evaluated in some way, the program director or institution is not expected to use all the tools that have been described, and different tools may be more applicable in some training programs.*** *Examples of specific evaluation tools that would apply in neuropathology fellowship training are included in the Appendix.*

COMPETENCY #1: PATIENT CARE IN NEUROPATHOLOGY

Fellows must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. In the context of neuropathology, this means recognizing one's personal responsibility to provide clear, accurate, and timely consultations in the context of a medical team. Fellows are expected to do the following:

- **Communicate effectively and demonstrate caring and respectful behaviors when interacting with patients and their families**. **For example, the fellow must be available to explain the findings to the patient and/or next of kin in a sympathetic and understandable way and must recognize the private nature of all personal health information.**

  Assessment Tools:

  OSCE: Opportunities to meet with families and access to standardized patients are often limited in a pathology training program. In the absence of these opportunities, one may utilize role-playing in which the resident provides information to a member of the clerical staff about a hypothetical situation.

  Checklist: Observe the resident's behavior for respectful interactions in the following or similar circumstances:

  > Provides lay language answers to questions from families
  > Observes discretion during awake surgical procedures
  > Observes the right of privacy about personal health information in public places
  > (elevator, hall, cafeteria conversations)

- **Gather essential and accurate information about their patients**. **For example, pertinent clinical history, imaging data, and laboratory results must be available at sign-out.**

  Assessment Tools:

  Checklists: Verify that essential history, imaging studies, and laboratory results are available at sign-out (meets minimal standards).

  Portfolio: The fellow collects checklists and reflects on potential significance of missing information on cases (should show improvement over time).

  OSCE: Give test slide to fellow and ask what extra information is needed to formulate differential diagnosis (minimal standards).

- **Make informed diagnoses that incorporate patient information, pathological/clinical judgment, and up-to-date scientific evidence. For example, formulation of the surgical neuropathologic diagnosis should include knowledge of the diagnostic and therapeutic implications for the individual patient. Formulation of the autopsy neuropathologic diagnosis should include consideration of the clinical history and the implications, if any, of the diagnosis for surviving family members.**

  Assessment Tools:

Chart stimulated recall: Pull 10 reports, including frozen section cases and autopsy cases. Discuss the implications of each diagnosis for management   Discuss the significance of differences between frozen section diagnosis and final diagnosis to assure that the resident understands the different circumstances under which each was rendered. This tutors the resident on his/her understanding of the art of rendering a frozen section diagnosis.

Literature portfolio*:* As the resident progresses, he/she should show significant improvement in the ability to find and apply key literature with regard to a specific patient. This activity may also be used to document improvement in use of information technology over time.

- **Make informed selections of diagnostic tests, counsel the clinician on the appropriateness of test selection, and take responsibility for the cost and ethical implications of the tests ordered.**

  Assessment Tools:

  Chart stimulated recall: Pull cases with genetic and/or special tests. Query resident on the utility of the additional tests and the implications of the tests for patient/third party/departmental costs, further treatment, and disease prognosis.

  Checklist: The fellow should bring a written list of recommended special stains to signout. After signout, compare tests on the list to tests actually ordered and determine the appropriateness of the suggested studies.

  Portfolio: Collect information above over time to determine progress.

- **Counsel and educate patients and their families. The fellow should be able to explain the importance of medical tests in an understandable manner and be available for counseling on the results of tests.**

  Assessment Tools:

  OSCE: Direct interactions with patients and families are often limited in pathology. However, one may utilize role-playing in which the resident provides information to a member of the clerical or technical staff about a hypothetical situation such as a new diagnosis of inherited or possibly inherited disease (such as Duchenne's muscular dystrophy, Alzheimer's disease, hemangioblastoma) or a misdiagnosed brain tumor. The staff member then completes a brief questionnaire on the fellow's effectiveness (enough information given, information understandable, fellow encouraged questions, etc.).

- **Use information technology to support patient care decisions and patient education. In neuropathology, this includes searching the current literature and the Web for help in difficult diagnostic situations.**

  Assessment Tools:

  Literature portfolio: Difficult and unusual cases frequently require literature searches for complete evaluation. Such cases can be used in a portfolio method to evaluate both information technology skills and improvement in these skills over time. The faculty member should provide a direct assessment of the pertinence of the literature collected and also give feedback as to

inclusion of both recent and classic papers. This can be done on a scale of 1 (most pertinent and/or current) to 5 (irrelevant and/or obsolete).

Record Review: Review appropriateness of citations in 10 neuropathology consults.

OSCE: Case conferences offer an excellent opportunity for fellows to perform literature searches, prepare reviews, and teach others. Conference evaluations may be kept to fulfill this requirement.

- **Perform competently all dissection and sectioning skills necessary to perform diagnostic services. For example, the fellow must be able to remove brains at autopsy, localize pertinent brain regions, cut frozen sections on a cryostat, provide complete and accurate descriptions of gross and microscopic features, and provide appropriate descriptions of special stains and their results.**

  Assessment Tools:

  OSCE: Give the fellow a test slide and have him/her describe and photograph the diagnostic features. This exercise can also be performed in the context of preparing for a case conference. Document an assessment of the trainee's initial conference preparation (choice of images, inclusion of proper diagnostic fields and special stains, etc.) and not just the final presentation, as the latter may reflect "coaching" by the attending.

  Checklist: Observe the fellow as s/he cuts brains, prepares frozen sections, makes touch preps, etc. Evaluate surgical and autopsy gross descriptions for specimen size, weight, etc. according to organ- and disease-specific standards developed by the hospital or outside agencies.

- **Provide health care services aimed at preventing health problems or maintaining health. For example, the fellow may demonstrate the ability to counsel the clinician and the patient on the implications of DNA testing and can provide general health education on preventive neurological health maintenance (decreasing stroke risk, etc.).**

  Assessment Tools:

  OSCE or oral examination: Opportunities to teach the patient directly are often limited in pathology training and practice. In the absence of such opportunities, one may utilize role-playing in which the resident provides information to a member of the clinical staff about a hypothetical situation. Alternatively, one may provide clinical scenarios and ask for either a verbal or a short essay answer.

  Checklist: Observe the resident's interactions with the clinicians.

- **Work with health care professionals, including those from other disciplines, to provide patient-focused care. In the context of neuropathology this includes ordering appropriate tests, keeping the patient's welfare at the forefront, and recognizing the sanctity of the human body in the context of autopsies, the operating room, and the laboratory.** These behaviors incorporate aspects of professionalism, ethical behavior, and interpersonal communication skills that are also tested in the other competencies.

Assessment Tools:

360° evaluation: Determine that the fellow is taking personal responsibility for clinical consultations in the context of a health-care team. An instrument for this purpose is under development by ACGME staff (4/29/02).

Checklist: A yes-no checklist for fellows on surgical neuropathology rotations might include appropriate tests ordered, cases brought to sign-out in a timely manner, outside slides ordered in a timely fashion and followed up in a timely fashion, surgeon contacted and feedback elicited, reports completed in a timely and complete manner, resident available and prepared for discussions at interdisciplinary conferences.

Global assessment: Document these behaviors in a qualitative assessment at the end of each month on service.

COMPETENCY #2: MEDICAL KNOWLEDGE IN NEUROPATHOLOGY

Fellows must demonstrate knowledge about established and evolving biomedical, clinical and cognate (e.g.. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care in neuropathology. Fellows are expected to do the following:

- **Demonstrate an investigatory and analytical thinking approach to clinical situations.** From time to time in their training neuropathology fellows will be confronted with difficult diagnostic problems that require extensive research of the medical literature and, in some cases, experimental laboratory investigation. The fellow's ability to appropriately investigate the medical and scientific questions raised by these cases will often result in the advancement of medical science through publications in the peer-reviewed literature.

- **Know and apply the basic and clinically supportive sciences that are appropriate to the practice of neuropathology.** A large part of the fellow's training will be the mastery of the large body of clinical, histologic, and scientific knowledge that constitutes modern neuropathology. Teaching that material and its application to diagnostic neuropathology is the primary mission of a neuropathology fellowship program and is something most training programs have traditionally done very well. Only the required degree of documentation is new.
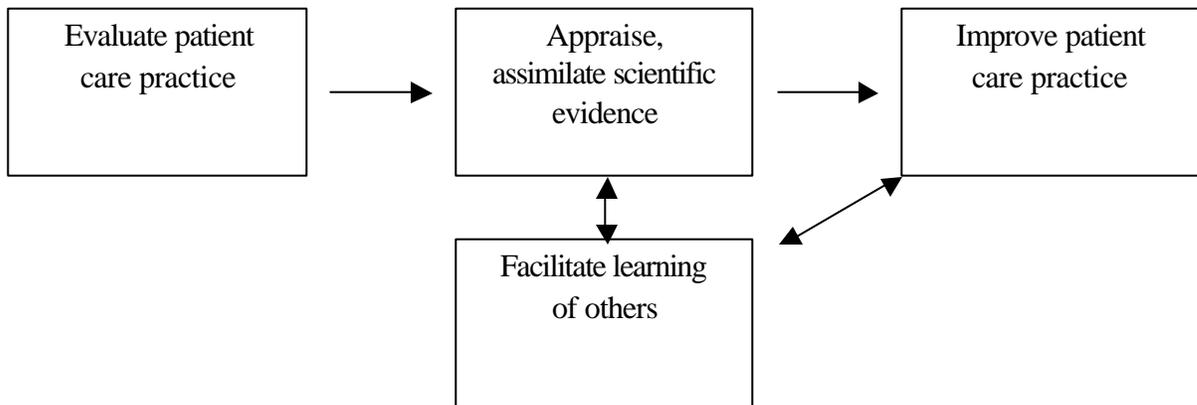
   Assessment tools:

   Oral examination: Possibly the most efficient assessment tool for evaluating the competency of a neuropathology fellow in medical knowledge will be the regular use of oral examinations. Conducted informally on a daily basis in the context of case sign-outs and brain cuttings, these conversations provide both the fellow and the mentor with regular feedback about the fellow's progress through the program. These informal examinations should trigger the provision of immediate informal remedial instruction. For this teaching style to be counted as an assessment tool, the mentor must document both the results of the examinations and the subsequent instruction. In many programs it will also be desirable to conduct more formal oral examinations at regular intervals to assess and document the fellow's progress through the program and his/her ultimate mastery of neuropathology.

   Multiple-choice examination: This tool is a traditional way to monitor the fellow's progress and to prepare him for the board examination. Large collections of excellent questions are available at many institutions and are freely circulated over the Internet.

   Portfolio: Finally, a portfolio of presentations at scientific meetings and published papers is an excellent way of assessing and documenting the fellow's competency in the use of investigatory and analytical thinking in the analysis of clinical situations.

COMPETENCY #3: PRACTICE-BASED LEARNING AND IMPROVEMENT IN NEUROPATHOLOGY

Fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practice. Fellows in neuropathology are expected to do the following:

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┌──────────────────┐        ┌──────────────────┐        ┌──────────────────┐
│ Evaluate patient │        │    Appraise,     │        │ Improve patient  │
│  care practice   │ ─────▶ │ assimilate       │ ─────▶ │  care practice   │
│                  │        │ scientific       │        │                  │
│                  │        │ evidence         │        │                  │
└──────────────────┘        └──────────────────┘        └──────────────────┘
                                      ▲  │
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                            ┌──────────────────┐
                            │ Facilitate learning │
                            │    of others      │
                            └──────────────────┘
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- **Analyze practice experience and perform practice-based improvement activities using a systematic methodology. Tools listed on the ACGME website for this subcompetency include questionnaires for patients and colleagues about practice habits. Some general pathology curricula suggest a management project (quality assurance or continuing quality improvement project). The neuropathology fellow is similarly expected to analyze his/her own practice in a systematic way for needed improvements (administrative, behavioral, or knowledge-based) and then make the improvements in a systematic way.**

  Assessment tool:

  Hybrid tool combining record review, chart-stimulated recall, OSCE, and/or portfolio formats: The fellow or the faculty member can select current or standardized cases for the fellow to evaluate using a questionnaire similar to that below. The faculty will then evaluate the answers and provide feedback to the fellow. These forms can also be incorporated into the fellow's portfolio for further reflection and assessment and for documenting improvement over time.

    Sample Practice-Based Learning Case Work-Up Questionnaire:
    1. What are the critical issues in this case?
    2. Do you have enough information to make a final diagnosis?
    3. What information do the clinicians want and need with respect to this case?
    4. What do you need to be able to complete this case?
    5. How do you go about obtaining what you need and finalizing the case?

- **Locate, appraise and assimilate evidence from scientific studies related to patient material in neuropathology cases. This includes knowing how to utilize hospital information systems (patient records, pathology records, radiology records), how to do a literature search, how**

to evaluate the validity and reliability of data, how to critically review a scientific study, and how and when to incorporate scientific data into everyday practice.

- **Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness.**

- **Use information technology to manage information, assess online medical information and support their own educations.**

Assessment tools for the above three subcompetencies:

Hybrid tool combining record review, chart-stimulated recall, OSCE, checklist, and/or portfolio formats: Identify an academic activity (departmental conference, classroom lecture, journal club, or other formal or informal presentation) where the fellow will have had to review the literature and make a presentation. Complete an anchored rating form documenting that the fellow performed an appropriate literature search, is able to critically analyze the studies, accurately synthesize new information from the literature, and appropriately judge the applicability of this information to neuropathology practice. For convenience, appropriate questions may simply be added to the written case-based hybrid tool described above. The following items could be incorporated:

> Additional Questions for Practice-Based Learning Case Work-Up Questionnaire
> 1. The learner performed an appropriate literature search for this activity.
> 2. The learner is able to critically analyze the studies.
> 3. The learner is able to synthesize new information from the literature.
> 4. The learner is able to appropriately judge the applicability of this information.

Portfolio: The fellow keeps the above rating forms for reflection and documentation of improvement over time.

- **Facilitate the learning of students and other healthcare professionals. Fellows should participate in divisional/departmental teaching activities, actively involve and guide rotating students and housestaff in service activities, and present appropriate information to clinicians and other healthcare professionals regarding optimal patient management.**

Assessment tool:

Anchored 360° global rating: A sample form for evaluating and assessing competence in facilitating learning is attached in the Appendix. Such a form is recommended as a routine exit survey for rotators. Pertinent questions should also be incorporated into the faculty's monthly evaluation of each fellow.

COMPETENCY #4: INTERPERSONAL AND COMMUNICATION SKILLS IN NEUROPATHOLOGY

Neuropathology fellows must be able to demonstrate excellent interpersonal and communication skills that result in effective information exchange and teaming with patients, patients' families, colleagues, technicians, secretaries, other residents, and students. Fellows are expected to:

- **Be able to explain diagnoses, procedures, results to be expected, costs associated with neuropathologic studies of autopsy and neurosurgical specimens to another person in a manner that will create ethically sound relationships with patients and their families.**

- **Promote a constructive working relationship with a colleague, resident/student, or subordinate during the study of a specific case and ensure that results are obtained in a timely and cost effective manner.**

  Assessment tools:

  Portfolio: The fellow's portfolio should document the following:

  Formal presentations of clinical cases at pathology and interdisciplinary conferences
  Scientific and clinical papers
  Scientific and clinical presentations at professional meetings
  Communication of findings in clinical cases to clinicians, family, and others (including samples of reports, letters, and notes about telephone calls)
  Communication with other members of the pathology laboratory team
  Analysis of the quality of the communication (attendings, administration, legal affairs, and resident)
  Modification of the communication as indicated

  360-degree evaluation instrument: Clinicians, clerical and technical personnel, and attendings rate the fellow's interpersonal and communication skills. An anchored checklist would be an appropriate format. Such a checklist would include a list of desired behaviors or skills that are evaluated on a 5-point scale with verbal "anchors" describing the meaning of the scale. For example:

  Skill: Able to explain diagnosis and its implications for therapy
  Anchors: Rate from "Unable to provide understandable information" (1) to "Always provides clear and concise information" (5)

  Skill: Able to write diagnoses and reports in Standard English
  Anchors: Rate from "Unable to write intelligible reports" (1) to "Writes well organized, grammatically correct reports" (5)

  Skill: Able to work with technicians to solve problems
  Anchors: Rate from "Acts in ways that inhibit problem-solving in laboratory" (1) to "Always works effectively as a member of the laboratory team in problem-solving" (5)

COMPETENCY #5: PROFESSIONALISM IN NEUROPATHOLOGY

Fellows must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to diverse populations. It is recognized that neuropathologists interact only occasionally with patients and their families. More frequent interactions include those with colleagues in pathology, colleagues in neurology and neurosurgery, laboratory technicians, secretaries, other residents and students. Fellows are expected to:

- **Carry out their duties in an altruistic, ethical, respectful and timely manner.   This includes demonstrating a commitment to ethical principles pertaining to confidentiality of patient information, informed consent and business practices**

- **Show sensitivity when interacting with those who are different from them in educational level, cultural background, age, gender and disability status.**

- **Adopt practices that promote their own personal well being, both physical and mental, so that they can better perform their professional duties.**

  Assessment tools:

  OSCE: Neuropathology fellows will be asked to respond to open-ended queries based on a case scenario with professional/ethical choices. Multiple competencies may be tested from a single scenario. Scenarios may be presented in their entirety or adapted for progressive disclosure. Case scenarios may be formulated for oral, written, or computer-based testing.

  Example #1: You are the neuropathology autopsy resident at brain cutting. You read the consent for the autopsy and read that all organs were to be returned to the body after the autopsy. The brain is now before you on the table. What do you tell the family?

  Example #2: A brain tumor support group asks you to speak at their next meeting. They request you to discuss the grading of astrocytomas to their lay audience. Outline your talk. A month later you are asked to participate in a CPC of a patient with an anaplastic astrocytoma. One section of your discussion will concern the grading systems of astrocytomas. Please outline your discussion.

  Example #3 with progressive disclosure:

  You are a pathology fellow assigned to surgical neuropathology. A therapeutic abortion specimen (approximately 18 weeks gestational age) is received. The specimen is referred to neuropathology due to a possible meningomyelocele. The attending is meeting with the dean but is available for urgent consultation.

  The OB chief resident calls. Tissue from that fetus is immediately needed for Professor X's stem cell project. He requests that tissue for this fetus be sent to Professor X's lab. What will you do?

  The district attorney calls. The pregnancy allegedly was the result of a rape. He wants immediate information about the specimen. What do you tell him?

  The family calls 2 weeks later. Although they had spoken with their OB attending, they wanted to ask a neuropathologist about meningomyelocele. Should you speak with them? They found a story about fetal surgery for meningomyelocele and they weren't told about such surgery.

Portfolio: The fellow's portfolio should document the following:

Events where professional behavior was observable
Analysis of the quality of the behavior (attendings, administration, legal affairs, and resident)
Modification of the behavior as indicated

360-Degree Evaluation Instrument: The fellow's professionalism is evaluated by technicians, clerical staff, attendings, administration, and legal affair (if indicated). An anchored checklist would be an appropriate format. For example:

Attitude or behavior: Respect for others
Anchors: "Treats others with disdain and disrespect" (1) to "Always highly respectful" (2)

Attitude or behavior: Altruism
Anchors: "Never inconveniences self for others" (1) to "Invariably helpful; delays personal wants to finish professional work" (5)

Attitude or behavior: Able to admit and correct mistakes
Anchors: "Never admits to making mistakes" (1) to "Actively moves to admit and correct mistakes" (5)

COMPETENCY #6: SYSTEMS-BASED PRACTICE IN NEUROPATHOLOGY

Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care. In neuropathology, the fellow must be able to provide effective guidance to the clinicians directly responsible for making treatment decisions and calling on system resources. The fellow must be aware of the consequences to the patient of the diagnosis and play an active role in assuring that the appropriate care is provided. Fellows are expected to:

- **Understand how their diagnostic opinions and other professional practices affect other health care professionals, the health care organization, and the larger society and how these elements of the system affect their own practice.** For example, neuropathology fellows need to be aware of the specific deadlines faced by the clinical services that rely on their diagnostic information and to know the consequences of their turnaround times. At the same time fellows need to know the costs of various tests both in terms of financial cost to the institution and in terms of the effort required by the technical and secretarial staff.

- **Know how types of medical practice and delivery systems differ from one another, including methods of controlling health care costs and allocating resources.** Neuropathology fellows need to understand the financial realities faced by health care system administrators and be sympathetic to decisions that result in what they may perceive as inadequate support of their services.

- **Practice cost-effective health care and resource allocation that does not compromise quality of care.** Neuropathology fellows must demonstrate knowledge of the availability of outside resources (such as genetic testing labs, outside opinions, etc) and show good judgment in choosing when to use such resources.

- **Advocate for quality patient care and assist the clinicians in dealing with system complexities.** Neuropathology fellows should be aware of the appropriate clinical protocols for treating the patients they diagnose, especially when there are diagnostic uncertainties in a particular case, and be prepared to provide guidance to other health care professionals. For example, in a glioma where grading is difficult, the fellow should be able to provide some guidance as to how a specific patient should be treated. The fellow should understand the importance of using only CLIA-approved laboratories for diagnostic testing and be able to refer specimens to appropriately certified reference laboratories for specialized testing (e.g., genetic or other "boutique" testing).

- **Know how to partner with health care managers and health care providers to assess, coordinate and improve health care and know how these activities affect system performance.** Neuropathology fellows should know how to provide quality assurance (QA) on resource management in a pathology laboratory and be able to assure that their laboratory is conducting appropriate but not excessive special studies. Fellows should know how to prepare a laboratory for inspection by the College of American Pathologists (CAP), the Joint Commission on Accreditation of Health Care Organizations (JCAHO), or a similar accrediting agency.

Assessment tools:

360° evaluation instrument: The most effective assessment tool for evaluating the competency of a neuropathology fellow in Systems Based Practice may be a 360° global rating. This need not be a lengthy questionnaire requiring substantial institution investment in staff time and effort. As long as the results of the assessment are rigorously documented, a simple questionnaire or even a telephone interview could suffice. For example, in one institution the residents are evaluated at the end of the monthly anatomic pathology (AP) section meeting by the attending staff with input from the senior technologist, the physicians' assistants, and the senior transcriptionist. Additional input in a neuropathology setting could be obtained from neurosurgeons and neurologists. In such an evaluation, open-ended questions like "Tell me about your interactions with Dr. X this month" may be the most effective way of eliciting the desired information.

OSCE: The objective structured clinical examination is usually modified for a neuropathology setting by replacing the patient encounters with a description of a clinical scenario and an examination of pathologic material (slides or gross tissue). Questions pertaining to Systems-Based Practice may be included along with more "traditional" questions on diagnosis.

Multiple-choice examination: Written multiple-choice questions could be another effective tool for evaluating some aspects of competency in Systems Base Practice. For example a fellow should know the amount billed for a test like an immunohistochemical stain and how little reimbursement the institution actually receives from Medicare or a private insurance company. Questions about the financial health of the fellow's own institution and department are also appropriate (are they operating in the black this year or not?), and the fellow should be aware of the major contractual arrangements of the institution with insurance companies, HMO's, and the like.

Clinician survey: Since the primary interaction of a neuropathologist is with the referring neurosurgeon or neurologist rather than the patient, a survey of referring neurosurgeons or neurologists may be used in lieu of a patient survey. This tool could be very effective in the assessment of competency in neuropathology Systems Base Practice. For example, the referring physician might be asked, "Does Dr X often act as an advocate for the patient (play an active role

in insuring that the patient receives appropriate treatment or is enrolled on an appropriate protocol)".

Record review and chart stimulated recall: These are less effective ways of assessing competency of a fellow's own Systems Based Practice because in most training programs the attending neuropathologist makes the decisions reflected in the record or chart. However, they may be used as "springboards" for discussions with the fellow.

TRAIT	LOW				HIGH
Able to explain diagnosis and implications for therapy	Unable to provide understandable information	Often is not effective in such explanations	Sometimes has difficulty in explaining diagnosis and therapy	Usually provides clear and concise information	Always provides clear and concise information
Able to explain how to perform a diagnostic test (e.g., muscle and nerve biopsies, brain biopsy, brain autopsy)	Unable to explain methodology for tests	Often is unable to explain methodology for tests	Sometimes has difficulty explaining methodology for test	Usually is able to provide clear and relevant information	Always provides clear and relevant information
Able to write diagnoses and reports in standard English	Unable to write intelligible reports	Often is unable to write intelligible reports	Sometimes has difficulty creating clear, grammatically correct reports	Usually is able to write well-organized grammatically correct reports	Writes well-organized grammatically correct reports
Able to work with technicians to solve problems	Acts in ways that inhibit problem-solving in the laboratory	Often acts in ways that inhibit problem-solving in the laboratory	Sometimes works effectively as a member of the laboratory team in problem-solving	Usually works effective as a member of the laboratory team in problem-solving	Always works effectively as a member of the laboratory team in problem-solving
Is able to present clinical findings in patient-related conferences	Presentations lack accuracy and clinical relevance.	Presentations often display significant gaps, errors, or disorganization	Presentations fairly adequate but may lack organization or necessary clinical correlation	Presentations usually well-organized and clinically relevant	Presentations always well-organized, concise, and pertinent to patient management
Is able to present clinical and research data at professional meetings	Fails to show the interest or ability necessary to present at professional meetings	Usually fails to present projects or cases at professional meetings	Present a few projects or cases at professional meeting	Often presents projects at professional meeting	Displays the interest, diligence, and ability to consistently and effectively present at professional meetings
Is able to publish clinical or research papers in peer-reviewed journals	Fails to write	Usually unable or unwilling to perform the activities necessary to complete papers	Publishes an occasional paper.	Publishes consistently solid clinical or research papers	Displays the requisite interest and diligence to consistently and effectively publish noteworthy papers

APPENDIX 2:
SAMPLE ASSESSMENT FOR COMPETENCY #5
PROFESSIONALISM IN NEUROPATHOLOGY

ATTITUDE OR BEHAVIOR	LOW				HIGH
Respect for others	Treats others with disdain and disrespect	Often treats others in a disrespectful	Respect is inconsistent	Usually treats others with respect	Always highly respectful
Honesty and integrity	Cannot never trusted	Often behaves in a dishonest fashion	Honesty and integrity are inconsistent	Usually is honest and acts with integrity	Always honest
Tolerance, sensitivity to differences	Cannot handle differences	Often has problems with tolerance and sensitivity	Tolerance and sensitivity are displayed inconsistently	Usually shows tolerance and sensitivity	Very capable of accepting differences
Altruism	Never inconveniences self for others	Rarely inconveniences self for others	Sometimes inconveniences self for others	Usually is helpful to others and puts professional work in front of personal wants	Invariably helpful; delays personal wants to finish professional work
Dutifulness	Always late with reports and assigned duties	Often late with reports and assigned duties	Not reliable in meeting deadlines	Usually meets deadlines	Assigned duties always completed on time
Able to admit and correct mistakes	Never admits to making mistakes	Often fails to admit mistakes	Not reliable about admitting mistakes or taking corrective action	Usually admits mistakes and moves to correct mistakes	Actively admits and moves to correct mistakes
Successfully represents field of pathology	Never participates in pathology professional affairs	Rarely participates in pathology professional affairs	Occasionally participates in pathology professional affairs	Usually participates in pathology professional affairs	Active participant in professional affairs and an advocate for the importance of pathology
Professional development	Professionally stagnant	Rarely seeks out additional professional experience	Occasionally seeks out additional professional experience	Often seeks out additional professional experience	Actively seeks out additional professional experience
Society	Breaks contemporary standards of behavior	Often breaks contemporary standards of behavior	Occasionally shows the professional and personal behavior of a good citizen	Usually shows the professional and personal behavior of a good citizen	Professional and personal actions are those of a good citizen