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# THE UNIVERSITY OF KANSAS MEDICAL CENTER

## DEPARTMENT OF NEUROLOGY Vascular Neurology Fellow Handbook

### ACADEMIC YEAR 2020-2021

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## **WELCOME FROM THE VASCULAR NEUROLOGY FELLOWSHIP TRAINING PROGRAM**

Welcome to the University of Kansas Vascular Neurology fellowship program. This handbook serves as a useful resource throughout your fellowship. It describes the overall goals and objectives of the program as well as the individual rotations. It also describes the conferences and didactic sessions available.

This is an ACGME-accredited fellowship that spans one-year at the University of Kansas Medical Center. Neurologists successfully completing the program, once certified in Neurology, will be eligible for certification by the American Board of Psychiatry and Neurology in Vascular Neurology.

This handbook encompasses the basic information for our vascular neurology fellowship program, is updated annually and is in harmony with the GME Policy and Procedure Manual (<http://www.kumc.edu/school-of-medicine/gme/policies-and-procedures.html>).

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### **MISSION STATEMENT, GOALS & OBJECTIVES**

#### **MISSION STATEMENT**

The mission of the Department of Neurology is to provide the best possible clinical care for patients and the best possible education for medical students, residents and fellows while engaged in world-class research in the neurosciences. These goals are accomplished through the high caliber faculty and support staff employed by the department and with the support of the University of Kansas Medical Center.

#### **DEPARTMENTAL GOALS AND OBJECTIVES**

- To provide general and subspecialty neurology clinical services to patients from the greater Kansas City metropolitan area and the surrounding region
- To provide the training needed for our house officers to excel in clinical care and in research
- To provide instruction in the basic and clinical neurosciences to medical students, allied health students, and to house officers in other disciplines
- To promote and support basic science and clinical research in the neurosciences
- To achieve national recognition of our clinical and research endeavors

#### **EDUCATIONAL MISSION STATEMENT**

The educational mission of the Vascular Neurology Fellowship in the Department of Neurology is to provide an optimal educational environment to prepare the fellow for the independent practice of vascular neurology. An experienced faculty with Board certification by the American Board of Psychiatry and Neurology assures, through close supervision, that vascular neurology fellows receive extensive experience to the basics of vascular neurology and clinical skills. The Program Director and faculty ensure that patient care responsibilities are balanced with teaching to enhance the educational experience of the vascular neurology fellow. Our fellows are trained to communicate effectively with their patients and families in a caring and respectful manner. Fellows are trained to apply knowledge of study designs and statistical methods to the appraisal of clinical studies, assessing diagnostic and therapeutic effectiveness. They learn how to practice cost-effective health care and allocate resources without compromising care quality.

#### **EDUCATIONAL GOALS**

The educational goals of the Vascular Neurology fellowship program are to:

- Train clinicians for the independent practice of vascular neurology
- Provide the educational background for lifelong learning in vascular neurology

- Encourage participation in clinical research during training and throughout the careers of our graduates, and
- Train our fellows to provide compassionate care for their patients, and the families of their patients

### **EDUCATIONAL OBJECTIVES**

The vascular neurology fellow will:

- Through supervised clinical work, become proficient in the care of the vascular neurology patient
- Assume increasing responsibility for the evaluation and management of vascular neurology patients in the hospital and in the clinic
- Through lectures, and independent study, develop a foundation of knowledge in the basics of vascular neurology

### **OVERALL PROGRAM OBJECTIVES**

The purpose of training in vascular neurology is to prepare the neurologists to provide optimal care for:

- Emergency/critically ill patients with stroke
- Inpatients and outpatients who require stroke treatment, prevention, and diagnostic evaluation

The overall objective for specialty training in vascular neurology is to provide the skills and knowledge necessary to meet the following goals:

- Provide high quality clinical care and assessment of patients with vascular neurological disorders, including diagnostic evaluation, treatment, management, counseling, and social intervention
- Work effectively with multidisciplinary teams oriented to the care of these patients
- Develop the capacity to pursue an academic/research career focusing on vascular neurology patients
- Provide a solid foundation for pursuit of additional training in interventional neuroradiology, if desired

At the end of the fellowship, the fellow will be very proficient in the evaluation and treatment of any patient with cerebrovascular disease. The fellow will be proficient in doing and interpreting ultrasound of carotids, intracranial circulation, and will also have a working knowledge regarding the conduction of clinical trials on stroke. The fellow will satisfy the requirements for fellowship education in Vascular Neurology as published by the Accreditation Council for Graduate Medical education. The fellow will be ready to embark in a lifelong career in providing the best care of patients with stroke or at risk of being stroke victims.

### **GENERAL GOALS**

The vascular neurology fellowship program is aimed at providing comprehensive subspecialty training for graduates of neurology residency-programs in the field of Vascular Neurology.

The training lasts a total of 12 months, which is distinct from and follows after three years of training in an accredited neurology residency program. During the 12 months, the PGY-5 level fellow is expected to progressively gain the knowledge and skills necessary for the prevention, evaluation and treatment of a wide range of disease that result in vascular injury to the nervous system. These conditions include:

- All types of ischemic stroke
- Intracerebral hemorrhage
- Aneurysm subarachnoid hemorrhage (SAH)
- Complications of vascular disease, including raised intracranial pressure, sepsis, respiratory failure and venous thrombosis
- Cerebral venous thrombosis
- Intravascular coagulation, thrombotic thrombocytopenic purpura
- Antibody syndromes
- Cerebrovascular disorders
- Hypertensive encephalopathy
- Vascular malformations and fistulas

The goals and objectives of the program meet the six ACGME competencies:

1. Patient care
2. Medical knowledge
3. Practice-based learning and improvement
4. Interpersonal and communication
5. Professionalism
6. Systems-based practice

#### **PATIENT CARE**

- A. Vascular neurologists will demonstrate the following abilities:
  1. Perform and document a relevant history and examination on culturally diverse patients to include, as appropriate:
    - a. chief complaint
    - b. history of present illness
    - c. past medical history
    - d. a comprehensive review of systems
    - e. a biological family history
    - f. a sociocultural history
    - g. a developmental history (especially for children)
    - h. a situational germane general and neurological examination
  2. Delineate appropriate differential diagnoses
  3. Evaluate, assess and recommend effective management of patients
- B. Based on a comprehensive neurological assessment, vascular neurologists will demonstrate the following abilities:
  1. Determine:
    - a. if a patient's symptoms are the result of a vascular disease affecting the central/vascular nervous system or are of another origin (e.g., of a systemic, psychiatric or psychogenic illness)
    - b. a formulation, differential diagnosis, laboratory investigation, and management plan
  2. Develop:
    - a. perform lumbar puncture
    - b. identify and describe abnormalities seen in common vascular disorders on radiographic testing, including plain films, arteriography, CT, MRI, and TCD or carotid duplex studies
    - c. evaluate the application and relevance of investigative procedures and interpretation in the diagnosis of neurological disease, including the following:
      - i. electroencephalogram and evoked potentials
      - ii. perimetry
      - iii. psychometry
      - iv. CSF analysis
      - v. vascular imaging (duplex, transcranial Doppler)
      - vi. radiographic studies as outlined above
    - d. identify and describe gross and microscopic specimens taken from the normal
  3. Recognize and treat vascular neurological disorders in both adults and children

#### **MEDICAL KNOWLEDGE**

Fellows will gain the medical knowledge necessary to be an outstanding Vascular Neurologist. This program will allow fellows to develop critical investigatory and analytic thinking in diagnosis and treating vascular disease.

- A. Vascular neurologists will demonstrate the following:
  1. Knowledge of major vascular diseases, including considerations relating to age, gender, race and ethnicity, based on the literature and standards of practice to include:
    - a. the epidemiology of the disorder

- b. the etiology of the disorder, including medical, genetic, and sociocultural factors
    - c. the phenomenology of the disorder
    - d. an understanding of the impact of physical illness on the patient's functioning
    - e. the experience, meaning, and explanation of the illness for the patient and family, including the influence of cultural factors and culture-bound syndromes
    - f. effective treatment strategies
    - g. course and prognosis
  - 2. Knowledge of healthcare delivery systems including patient and family counseling
  - 3. Ability to reference and utilize electronic systems of access medical, scientific and patient information
- B. Vascular neurologists will demonstrate knowledge of the following:
- 1. Basic science aspects of vascular neurology
  - 2. Stroke pathophysiology
    - a. cerebral blood flow
    - b. blood-brain barrier in stroke
    - c. coagulation cascade
    - d. metabolic and cellular consequences of ischemia
    - e. inflammation and stroke
    - f. brain edema and increased intracranial pressure
    - g. recovery following stroke
    - h. secondary consequences from intracranial bleeding
  - 3. Neuropathology of stroke
    - a. pathological-imaging-clinical correlations
  - 4. Pharmacology
    - a. anti-platelet agents – prevention, acute treatment
    - b. anticoagulants – prevention, acute treatment
    - c. thrombolytic agents
    - d. neuroprotective agents and other acute treatments
    - e. cardioactive agents
    - f. medications to prevent stroke by treating risk factors
    - g. medication to treat auto-immune diseases and vasculitis
    - h. medications to treat complications of stroke
    - i. medications to improve or restore neurologic function or to augment rehabilitation
    - j. medications to prevent re-bleeding or vasospasm following hemorrhage
    - k. anti-migraine medications
    - l. vitamins
    - m. interactions between medications
    - n. drugs that cause stroke, including drugs of abuse
  - 5. Patient evaluation and treatment selection, including:
    - a. the nature of the patient's history and physical findings and the ability to correlate the findings with a likely localization for neurological dysfunction
    - b. likely diagnoses and differential diagnoses
    - c. potential risks and benefits of potential therapies, including surgical procedures
  - 6. Employment of principles of quality improvement in practice
- C. Prevention, risk factors and epidemiology
- 1. Populations at risk for stroke
  - 2. Modifiable risk factors for stroke
  - 3. Infections predisposing to stroke
  - 4. Genetic factors predisposing to stroke
  - 5. Stroke as a complication of other medical illness
  - 6. Special populations at risk for stroke
  - 7. Stroke education programs and regional health services
  - 8. Concepts of clinical research

9. Outcomes
  - a. Prognosis
  - b. mortality and morbidity of subtypes of strokes
- D. Clinical features of cerebrovascular diseases
  1. Neuro-otologic signs and symptoms
  2. Neuro-ophthalmologic signs and symptoms
  3. Transient ischemic stroke
  4. Ischemic stroke syndromes – cerebral hemispheres
  5. Ischemic stroke syndromes – brain stem and cerebellum
  6. Ischemic stroke syndromes of the spinal cord
  7. Vascular dementia and vascular cognitive syndromes
  8. Features differentiating hemorrhagic and ischemic stroke
  9. Intracerebral bleeding
  10. Subarachnoid hemorrhage/saccular aneurysms
  11. Vascular malformations
  12. Primary intraventricular hemorrhage
  13. Subdural or epidural hematoma
  14. Spinal cord hemorrhage or infarction
  15. Carotid cavernous or dural fistulats
  16. Pituitary apoplexy
  17. Hypertensive encephalopathy and eclampsia
  18. Clinical presentations of primary and multisystem vasculitides
  19. Hypoxia – ischemia
  20. Brain death
  21. MELAS and metabolic disorders causing neurologic symptoms
  22. Non-stroke presentations of vascular disease
  23. Cardiovascular disease
  24. Vascular presentations of other diseases of central nervous systems
  25. Migraine
- E. Evaluation of the patient with cerebrovascular disease
  1. Evaluation of the brain and spinal cord
    - a. computed tomography of the brain
    - b. computed tomography of spine and spinal cord
    - c. magnetic resonance imaging of brain
    - d. PET and SPECT
    - e. electroencephalography and evoked potentials
    - f. examination of the CSF
    - g. ICP monitoring
    - h. evaluation of the vasculature – occlusive or non-occlusive
    - i. arteriography and venography
    - j. extracranial ultrasonography
    - k. intracranial ultrasonography
    - l. CT angiography
    - m. MR antigraphy
  2. Evaluation of the heart and great vessels
    - a. Electrocardiography
    - b. transthoracic echocardiography and transesophageal echocardiography
    - c. other chest imaging studies
  3. Other diagnosis studies
    - a. hematologic studies
    - b. immunological studies
    - c. biochemical studies
    - d. urine tests

- e. biopsies
- f. evaluation of the complications of stroke
- g. evaluation of the consequences of stroke
- h. genetic testing

F. Causes of stroke

1. Atherosclerosis – ischemic stroke
2. Non-atherosclerotic vasculopathies – ischemic stroke
  - a. non-inflammatory
  - b. infectious
  - c. inflammatory, non-infectious
3. Migraine
4. Other causes of ischemic stroke
5. Genetic and metabolic causes of stroke
6. Drug abuse and toxicities
7. Cerebral amyloid angiopathy – infarction and hemorrhage
8. Cardioembolic causes of stroke
9. Pro-thrombotic causes of stroke
  - a. Inherited
  - b. Acquired
  - c. autoimmune causes of thrombosis
  - d. iatrogenic/drugs/toxins
10. Bleeding diatheses
  - a. Inherited
  - b. Acquired
  - c. systemic diseases
  - d. iatrogenic/drugs/toxins
11. Aneurysms
12. Vascular malformations
13. Trauma and intracranial bleeding
14. Moyamoya disease and syndrome
15. Hypertensive hemorrhage
16. Other causes of hemorrhage
17. Genetic diseases causing hemorrhage stroke
18. Complications of stroke
  - a. early neurologic complications
  - b. early medical complications
  - c. chronic neurologic sequelae
  - d. chronic medical sequelae

G. Treatment of patients with stroke

1. Outpatient management
2. Medical therapies to prevent stroke
3. Hyperacute treatment of ischemic stroke
  - a. emergency department
  - b. hospitalization
  - c. ICU
  - d. neurosurgical management
4. Chronic care
5. Prevention of recurrent stroke
6. Treatment of venous thrombosis
7. Treatment of spinal cord vascular disease
8. Professionalism, ethics, system-based practice
  - a. palliative care
  - b. end-of-life decisions

- c. advanced directives, informed consent, regulations
  - d. other
- H. Recovery, regenerative approaches, and rehabilitation

### **PRACTICED-BASED LEARNING AND IMPROVEMENT**

Fellows are provided with an annually update KU Stroke Handbook that is required to apply knowledge of current evidence and guidelines in stroke care. In addition, this handbook provides study designs and statistical methods for the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness. The use of evidence from scientific studies is required to carry out, analyze and facilitate learning in the field of vascular neurology.

The Vascular Neurology fellow will possess the following in terms of practice-based learning and improvement:

- A. Vascular neurologists will recognize limitations in their own knowledge base and clinical skills, and understand and address the need for lifelong learning
- B. Vascular neurologists will demonstrate appropriate skills for obtaining and evaluating up-to-date information from scientific and practice literature and other sources to assist in the quality of care for patients. This will include, but is not limited to:
  - 1. Use of medical libraries
  - 2. Use of information technology including internet-based searches and literature databases (e.g., Medline)
  - 3. Use of drug information databases
  - 4. Active participation, as appropriate, in educational courses, conferences, and other organized educational activities both at the local and national levels
- C. Vascular neurologists will evaluate caseload and practice experience in a systematic manner. This may include:
- D. Case-based learning
- E. Use of best practices through practice guidelines or clinical pathways
- F. The review of medical records
- G. Obtaining evaluations from patients (e.g., outcomes and patient satisfaction)
- H. Employment of principles of quality improvement in practice
- I. Obtaining appropriate supervision and consultation
- J. Maintaining a system for examining errors in practice and initiating improvements to eliminate or reduce errors
- K. Vascular neurologists will demonstrate the ability to:
  - 1. Review and critically assess scientific literature to determine how quality of care can be improved in relation to one's practice (e.g., reliable and valid assessment techniques, treatment approaches with established effectiveness, practice parameter adherence). Within this aim vascular neurologists will be able to assess the generalizability or applicability of research findings to one's patients in relation to their sociodemographic and clinical characteristics
  - 2. Develop and pursue effective remediation strategies that are based on critical review of the scientific literature

### **INTERPERSONAL AND COMMUNICATION SKILLS**

Fellows will be required to be compassionate, caring, and respectful at all times to patients and their families. Fellows must possess listening skills and work effectively as part of a health care team in order to provide the best care available to patients.

- A. Vascular neurologists will demonstrate the following abilities:
  - 1. Listen and understand patients and to attend to nonverbal communication
  - 2. Communicate effectively with patients using verbal, nonverbal and written skills as appropriate
  - 3. Develop and maintain a therapeutic alliance with patients by instilling feelings of trust, honesty, openness, rapport, and comfort in the relationship with the physician

4. Partner with patients to develop an agreed upon healthcare management plan
  5. Transmit information to patients in a clear and meaningful fashion
  6. Transmit the impact of the physician's own feelings and behavior so that it does not interfere with appropriate treatment
  7. Communicate effectively and work collaboratively with allied healthcare professionals and with other professionals involved in the lives of patients and families
  8. Educate patients, their families, and other professionals about medical, psychosocial and behavioral issues
- B. Vascular neurologists will demonstrate the ability to obtain, interpret and evaluate
- C. consultations from other medical specialties. This will include:
1. Knowledge of when to solicit consultation and having sensitivity to assess the need for consultation
  2. Formulating and clearly communicating the consultation question
  3. Discussing the consultation findings with the consultant
  4. Discussing the consultation findings with the patient and family
- D. Vascular neurologists will serve as an effective consultant to other medical
- E. specialists, mental health professionals, and community agencies by demonstrating the abilities to:
1. Communicate effectively with the requesting party to refine the consultation question
  2. Maintain the role of consultant
  3. Communicate clear and specific recommendations
  4. Respect the knowledge and expertise of the requesting professionals
- F. Vascular neurologists will demonstrate the ability to communicate effectively with patients and their families by:
1. Gearing all communication to the educational levels of patients and their families
  2. Demonstrating sociocultural sensitivity to patients and their families
  3. Providing explanations of psychiatric and neurologic disorders and treatment that are jargon-free and geared to the educational/intellectual level of patients and their families
  4. Providing preventive education that is understandable and practical
  5. Respecting the patient's cultural, ethnic, religious and socioeconomic background
  6. Developing and enhancing rapport and a working alliance with patients and their families
  7. Ensuring that the patient and/or family understand the communication
- G. Vascular neurologists will maintain up-to-date medical records and write legible
- H. prescriptions. These records must capture essential information while simultaneously respecting patient privacy, and they must be useful to health professionals outside psychiatry and neurology
- I. Vascular neurologists will demonstrate the ability to effectively lead a multidisciplinary treatment team, including being able to:
1. Listen effectively
  2. Elicit needed information from team members
  3. Integrate information from different disciplines
  4. Manage conflict
  5. Clearly communicate an integrated treatment plan
- J. Vascular neurologists will demonstrate the ability to communicate effectively with patients and their families while respecting confidentiality. Such communication may include:
1. The results of the assessment
  2. Use of informed consent when considering investigative procedures
  3. Genetic counseling and palliative care when appropriate
  4. Consideration and compassion of the patient in providing accurate medical information and prognosis
  5. The risks and benefits of the proposed treatment plan, including possible side effects of medications and/or complications of nonpharmacologic treatments
  6. Alternative (if any) to the proposed treatment plan
  7. Appropriate education concerning the disorder, its prognosis, and prevention strategies

## **PROFESSIONALISM**

Only individuals who are respectful and possess ethically sound practices will be considered for this program. Fellows must possess the following:

- A. Vascular neurologists will demonstrate responsibility for the care of their patients, including:
  - 1. Responding to communication from patients and health professionals in a timely manner
  - 2. Establishing and communicating back-up arrangements, including how to see emergent and urgent care when necessary
  - 3. Using medical records for appropriate documentation of the course of the illness and its treatment
  - 4. Providing coverage if unavailable (e.g., when out of town or on vacation)
  - 5. Coordinating care with other members of the medical and/or multidisciplinary team
  - 6. Providing for continuity of care, including appropriate consultation, transfer or referral, as necessary
- B. Vascular neurologists will demonstrate ethical behavior, integrity, honesty, compassion and confidentiality in the delivery of care, including matters of informed consent/assent, professional conduct, and conflict of interest
- C. Vascular neurologists will demonstrate respect for patients and their families, and their colleagues as persons, including their age, cultures, disabilities, ethnicities, gender, socioeconomic backgrounds, religious beliefs, political leanings, and sexual orientation
- D. Vascular neurologists will demonstrate understanding of, and sensitivity to, end of life care and issues regarding provision of care
- E. Vascular neurologists will review their professional conduct and remediate when appropriate
- F. Vascular neurologists will participate in the review of the professional conduct of their colleagues
- G. Vascular neurologists will be aware of safety issues, including acknowledging and remediating medical errors should they occur

## **SYSTEMS-BASED PRACTICE**

This fellowship will demonstrate the importance of knowing about practice and delivery systems and the importance of practicing cost-effective health care

- A. Vascular neurologists will have a working knowledge of the diverse systems involved in treating patients of all ages and understand how to use the systems as part of a comprehensive system of care in general and as part of a comprehensive, individualized treatment plan. This will include:
  - 1. Use of practice guidelines
  - 2. Ability to assess community, national and allied health professional resources that may enhance the quality of life of patients with chronic psychiatric and neurological disease
  - 3. Demonstration of the ability to lead and delegate authority to healthcare teams needed to provide comprehensive care for patients with psychiatric and neurological disease
  - 4. Demonstration of skills of the practice of ambulatory medicine including time management, clinical scheduling, and efficient communication with referring physicians
- B. Vascular neurologists will have a working knowledge of the diverse systems involved in treating patients of all ages, and understand how to use the systems as part of a comprehensive system of care in general and as part of a comprehensive, individualized treatment plan. This will include:
  - 1. Use of practice guidelines
  - 2. Ability to assess community, national and allied health professional resources that may enhance the quality of life of patients with chronic psychiatric and neurologic disease
  - 3. Demonstration of the ability to lead and delegate authority to healthcare teams needed to provide comprehensive care of patients with psychiatric and neurological disease
  - 4. Demonstration of skills of the practice of ambulatory medicine including time management, clinical scheduling and efficient communication with referring physicians
  - 5. Use of appropriate consultations and referral mechanisms for optimal clinical management of patients with complicated medical illness
  - 6. Demonstration of awareness of the importance of adequate cross-coverage

7. Use of accurate medical data in the communication with, and effective management of, patients
- C. In the community system, vascular neurologists will:
    1. Recognize the limitation of healthcare resources and demonstrate the ability to act as an advocate for patients within their sociocultural and financial constraints
    2. Demonstrate knowledge of the legal aspects of vascular neurological diseases as they impact patients and their families
    3. Demonstrate an understanding of risk management
  - D. Vascular neurologists will demonstrate knowledge of and interact with managed care systems including:
    1. Participating in utilization review communications and, when appropriate, advocating for quality patient care
    2. Educating patients concerning such systems of care
  - E. Vascular neurologists will demonstrate knowledge of community systems of care and assist patient to access appropriate care and other support services. This requires knowledge of treatment settings in the community which include ambulatory, consulting, acute care, partial hospital, skilled care, rehabilitation, and substance abuse facilities; halfway houses; nursing homes and home care; and hospice organizations. Vascular neurologists shall demonstrate knowledge of the organizations of care in each relevant delivery setting and the ability to integrate the care of patients across such settings

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## SUPERVISION OF FELLOWS

### Introduction

- 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.

### A. Supervision of Residents

- Each patient must have an identifiable, appropriately credentialed and privileged attending physician (or licensed independent practitioner as specified by each Review Committee) who is responsible and accountable for that patient’s care. VI.A.2.a).(1)
- This information must be available to residents, faculty members, other members of the health care team, and patients. VI.A.2.a).(1)(a)
  - 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 must inform patients of their respective roles in each patient’s care when providing direct patient care. VI.A.2.a).(1)(b)
- The program must demonstrate that the appropriate level of supervision in place for all residents is based on each resident’s level of training and ability, as well as patient complexity and acuity. Supervision may be exercised through a variety of methods, as appropriate to the situation. VI.A.2.b).(1)

**B. Methods of Supervision.**

- Supervision may be exercised through a variety of methods.
- 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 appropriate availability of the supervising faculty member, fellow or senior resident physician, and either on site or by means of telecommunication technology. Some activities require the physical presence of the supervising faculty member. In some circumstances, supervision may include post-hoc review of resident delivered care with feedback. VI.A.2.b)
- The program must demonstrate that the appropriate level of supervision in place for all residents is based on each resident’s level of training and ability, as well as patient complexity and acuity.
- Supervision may be exercised through a variety of methods, as appropriate to the situation. VI.A.2.b).(1)
- The Review Committee may specify which activities require different levels of supervision. VI.A.2.b).(1)
- The program must define when physical presence of a supervising physician is required. (Core) VI.A.2.b).(2)

**C. Levels of Supervision Defined**

To promote appropriate resident supervision while providing for graded authority and responsibility, the program must use the following classification of supervision:

**Direct Supervision:**

- **Direct A:** The supervising physician is physically present with the resident during the key portions of the patient interaction or, VI.A.2.c).(1).(a) PGY-1 residents must initially be supervised directly only as described in VI.A.2.c).(1).(a) [The Review Committee may describe the conditions under which PGY-1 residents progress to be supervised indirectly]
- **Direct B:** The supervising physician and/or patient is not physically present with the resident and the supervising physician is concurrently monitoring the patient care through appropriate telecommunication technology. [The Review Committee must further specify if VI.A.2.c).(1).(b) is permitted] [The Review Committee will choose to require either VI.A.2.c).(1).(a), or both VI.A.2.c).(1).(a) and VI.A.2.c).(1).(b)] VI.A.2.c).(1).(b)

**Indirect Supervision:**

The supervising physician is not providing physical or concurrent visual or audio supervision but is immediately available to the resident for guidance and is available to provide appropriate direct supervision. VI.A.2.c).(2)

**Oversight:**

- The supervising physician is available to provide review of procedures/encounters with feedback provided after care is delivered. VI.A.2.c).(3)

The privilege of progressive authority and responsibility, conditional independence, and as supervisory role in patient care delegated to each resident must be assigned by the program director and faculty members. VI.A.2.d)

Per Program Specific RRC	<b>Each patient must have an identifiable and appropriately-credentialed and privileged attending physician (or RRC APPROVED LICENSED INDEPENDENT PRACTITIONER SUPERVISOR) who is responsible and accountable for the patients care, and this information must be available to the residents, faculty members, other members of the health care team and patients. (PR VI.A.2.a (1)</b>
	<b>VI.A.2.a).(1)</b> Each patient must have an identifiable and appropriately-credentialed and privileged attending physician (or licensed independent practitioner as specified by the applicable Review Committee) who is responsible for the patient’s care. <sup>(core)</sup>
	<b>VI.A.2.a).(1).(a)</b> This information must be available to fellows, faculty members, other members of the health care team, and patients. <sup>(core)</sup>

<p><b>VI.A.2.a).(1).(b)</b> Fellows and faculty members must inform each patient of their respective roles in that patient’s care when providing direct patient care. <sup>(core)</sup></p>
<p>All members of the health care team introduce themselves to the patients and describe their role and identify the attending physician and other important team members.</p>
<p><b>Residents and Faculty members must inform each patient of their respective roles in patient care, when providing direct patient care. VI.A.2.a). (1).(b.)</b></p>
<p><i>All members of the health care team introduce themselves to the patients and describe their role and identify the attending physician and other important team members.</i></p>
<p><b>PGY-1 residents must initially be supervised directly only as described in VI.A.2.c).(1).(a) [The Review Committee may describe the conditions under which PGY-1 residents progress to be supervised indirectly] VI.A.2.c).(1).(a).(i)</b></p>
<p><b>VI.A.2.b)</b> Supervision may be exercised through a variety of methods. For many aspects of patient care, the supervising physician may be a more advanced fellow. Other portions of care provided by the fellow can be adequately supervised by the appropriate availability of the supervising faculty member or fellow, either on site or by means of telecommunication technology. Some activities require the physical presence of the supervising faculty member. In some circumstance, supervision may include post-hoc review of fellow-delivered care with feedback.</p>
<p><b>VI.A.2.b).(1)</b> The program must demonstrate that the appropriate level of supervision in place for all fellows is based on each fellow’s level of training and ability, as well as patient complexity and acuity. Supervision may be exercised through a variety of methods, as appropriate to the situation. <sup>(core)</sup></p>
<p><b>VI.A.2.b).(2)</b> The program must define when physical presence of a supervising physician is required. <sup>(core)</sup></p>
<p><b>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. (PR VI.A.2.d).(1,2,3)</b></p>
<p><b>VI.A.2.d).(1)</b> The program director must evaluate each fellow’s abilities based on specific criteria, guided by the Milestones. <sup>(core)</sup></p>
<p><b>VI.A.2.d).(2)</b> Faculty members functioning as supervising physicians must delegate portions of care to fellows based on the needs of the patient and skills of each fellow <sup>(core)</sup></p>
<p><b>VI.A.2.d).(3)</b> Fellows should serve in a supervisory role to junior fellows and residents in recognition of their progress toward independence, based on the needs of each patient and the skills of the individual resident or fellow. <sup>(detail)</sup></p>
<p><b>RARE CIRCUMSTANANCES WHEN RESIDENTS may elect to stay or return to the clinical site: (PR VI.F.4.a.)</b></p>
<p><b>VI.F.4.a)</b> In rare circumstances, after handing off all other responsibilities, a fellow, on their own initiative, may elect to remain or return to the clinical site in the following circumstances:</p>
<p><b>VI.F.4.a).(1)</b> to continue to provide care to a single severely ill unstable patient; <sup>(detail)</sup></p>
<p><b>VI.F.4.a).(2)</b> humanistic attention to the needs of a patient or family; or, <sup>(detail)</sup></p>
<p><b>VI.F.4.a).(3)</b> to attend unique educational events. <sup>(detail)</sup></p>
<p><b>VI.F.4.b)</b> These additional hours of care or education will be counted toward the 80-hour weekly limit. <sup>(detail)</sup></p>
<p><b>DEFINED MAXIMUM NUMBER OF CONSECUTIVE WEEKS OF NIGHT FLOAT AND MAXIMUM NUMBER OF MONTHS PER YEAR OF IN-HOUSE NIGHT FLOAT (PR VI.F. 6.)</b></p>

**VI.F.6** Night float must occur within the context of the 80-hour and one-day-off-in-seven requirements. <sup>(core)</sup>

**VI.F.7** Fellows must be scheduled for in-house call no more frequently than every third night (when averaged over a four-week period). <sup>(core)</sup>

**Program-specific guidelines for circumstances and events in which residents must communicate with appropriate supervising faculty (PR VI.A.2.e)**

1. Admission to Hospital
2. Transfer of patient to a higher level of care
3. Clinical deterioration, especially if unexpected
4. End-of-life decisions
5. Change in code status
6. Red Events
7. Change in plan of care, unplanned emergent surgery or planned procedure that does not occur
8. Procedural complication
9. Unexpected patient death

**VI.A.2.e).(1)** Each fellow must know the limits of their scope of authority, and the circumstances under which the fellow is permitted to act with conditional independence. <sup>(outcome)</sup>

<b>PGY 1</b>	
<b>LEVEL of SUPERVISION</b>	<b>ACTIVITIES /PROCEDURES (as defined by RRC &amp; Program)</b>
DIRECT A	N/A
DIRECT B	N/A
INDIRECT	N/A

<b>All OTHER RESIDENTS</b>	
<b>LEVEL of SUPERVISION</b>	<b>ACTIVITIES /PROCEDURES (as defined by RRC &amp; Program)</b>
DIRECT A	Consultation, research visits
DIRECT B	N/A
INDIRECT	Lumbar punctures
OVERSIGHT	N/A

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## ROTATIONS

The vascular neurology fellowship consists of rotations in inpatient vascular neurology, Neuro intensive care unit rotations, Radiology, Research and a post-stroke care rotation labeled “Rehabilitation.” It is strongly encouraged to only schedule 3 months in a row or less for the inpatient vascular neurology rotation, separated by other required rotations. The rotation schedule for this academic year is enumerated below:

### Rotation Schedule

Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Site	KUMC	KUMC	KUMC	KUMC	KUMC	KUMC	KUMC	KUMC	KUMC	KUMC	KUMC	KUMC
Rotation Name	Radiology	Vascular	Vascular	Research	Vascular	NICU	Research	Vascular	Rehab	Rehab	Vascular	Radiology

### Inpatient Vascular Neurology

**General description:** The Vascular Neurology fellow will spend six to seven months doing inpatient vascular rotations at the University of Kansas Hospital. During this time, the fellow will be working with vascular neurologists caring for Vascular Neurology inpatients in both a neurology inpatient setting (where the vascular neurologist and vascular fellow are the primary team caring for the patient) and in a Vascular Neurology consulting role with patients either in an emergency room setting or admitted to a medical or surgical service

**Preceptor:** The primary preceptor during the University of Kansas Hospital inpatient rotations will be Dr. Colleen Lechtenberg. Drs. Yunxia Wang, Gary Gronseth, Lee Rosterman, Laith Maali, Aparna Pendurthi, Abid Qureshi, and Sabreen Slavin will also serve as attending faculty physicians.

**Logistics:** The Vascular Neurology inpatient rotations are organized into a primary inpatient service and Vascular consult service. At the University of Kansas Hospital, the inpatient responsibilities primarily occur in the morning. Multidisciplinary huddle occurs at 9:30 AM each day to discuss primary patients. Rounds will occur with the Vascular Neurology attending at approximately 10:00 AM, or after huddle is completed, each day. Vascular Neurology Rounds will include primary and consult patients. Vascular Neurology Rounds on additional or new consults will occur at approximately 2:00 PM each day or as they are placed, depending on faculty preference. The Vascular neurology rounds should be led by the Vascular Fellow with increasing responsibility and autonomy as the fellow progresses.

While on the inpatient Vascular Neurology rotations, the Vascular Neurology fellow will respond to acute stroke activations in the Emergency Room and throughout the hospital. The Vascular Neurology fellow will accompany the Stroke Nurse and Neurology resident to acute activations. The Vascular fellow will then discuss with Vascular Neurology faculty. The Vascular Neurology fellow should realize that while doing vascular inpatient neurology, patients may end up being admitted to the Neuroscience ICU. The Vascular Neurology fellow will assist the Neuro ICU attending in stabilization and may even oversee the admitting orders.

The Vascular Neurology Fellow will be expected to take one week of call (Mon-Sun) during each month of Inpatient Vascular Neurology. The Vascular Neurology Fellow will be first call for all in-house consults, stroke activations and inpatient issues. The Vascular Neurology Fellow will need to call the Vascular Neurology faculty to discuss. There will be increasing responsibility and autonomy through the year as the Vascular Neurology Fellow progresses.

**Goals and Objectives:** The following table lists Vascular Inpatient Rotation specific goals and competencies. It also details the methods that will be used to determine your attainment of the specific goals.

<b>CORE COMPETENCY: PATIENT CARE</b>	
<p><b>Goal:</b> <i>Develop proficiency in the ability to perform and document a relevant history on culturally diverse patients</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate the ability to obtain relevant patient history</li> <li>• Demonstrate the ability to obtain relevant Chief complaint</li> <li>• Demonstrate the ability to obtain relevant History of present illness</li> <li>• Demonstrate the ability to obtain relevant Past medical history</li> <li>• Demonstrate the ability to complete a comprehensive review of systems</li> <li>• Demonstrate the ability to obtain a Family history</li> <li>• Demonstrate ability to obtain relevant social history including employment, living situation, tobacco, alcohol, and illicit drug use and history</li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation evaluation (≥ 3 rating on all competencies)</p> <p>Direct observation checklist</p>
<p><b>Goal:</b> <i>Perform and document a relevant examination on culturally diverse patients including the following components:</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate ability to perform a complete and thorough general examination of               <ul style="list-style-type: none"> <li>i. Skin</li> <li>ii. HEENT</li> <li>iii. Neck</li> <li>iv. Cardiovascular</li> <li>v. Pulmonary</li> <li>vi. Abdominal</li> <li>vii. Extremities including pulses</li> </ul> </li> <li>• Demonstrate ability to perform a complete and thorough neurologic examination of               <ul style="list-style-type: none"> <li>viii. Mental status</li> <li>ix. Cranial nerves</li> <li>x. Strength</li> <li>xi. Sensation</li> <li>xii. Cerebellar testing</li> <li>xiii. Reflexes</li> <li>xiv. Gait</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation evaluation (≥ 3 rating on all competencies)</p> <p>Direct observation checklist</p> <p>Copy of NIHSS Certification</p>

<p>B. Demonstrate ability to perform and document an expedited history and physical on a patient presenting to the emergency department including</p> <ul style="list-style-type: none"> <li>i. Including a complete and accurate National Institutes of Health Stroke Scale</li> <li>ii. Must have NIHSS Certification</li> </ul>	
<p><b>Goal:</b> <i>Perform and document a relevant examination and plan of treatment.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>C. Demonstrate ability to generate appropriate differential diagnoses</li> <li>D. Demonstrate ability to review all available data including labs, vascular studies, and imaging</li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation evaluation (≥ 3 rating on all competencies)</p>
<p><b>Goal:</b> <i>Evaluate, assess and recommend effective management of patient and patient care.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>Demonstrate ability to plan for further evaluation including labs, vascular studies, and imaging, as needed</li> <li>• Demonstrate ability to determine if the patient’s symptoms are the result of cerebrovascular disease or are of another origin (e.g., of a systemic, psychiatric, or psychogenic illness)</li> <li>• Demonstrate ability to identify and describe abnormalities seen in common vascular disorders on radiographic testing, including plain films, arteriography, CT, MRI, and TCD or carotid duplex studies</li> <li>• Demonstrate ability to recommend therapeutic and preventative interventions to achieve optimal recovery from the acute event and prevent further brain injury</li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation evaluation (≥ 3 rating on all competencies)</p>
<b>CORE COMPETENCY: MEDICAL KNOWLEDGE</b>	
<p><b>Goal:</b> <i>Develop proficient knowledge of major vascular and neurocritical care diseases, including considerations relating to age, gender, race, and ethnicity, based on the literature and standards of practice. Knowledge includes but is not limited to the following:</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• <b>Demonstrate the knowledge of :</b> <ul style="list-style-type: none"> <li>○ The epidemiology of the disorder</li> <li>○ The etiology of the disorder, including medical, genetic, and sociocultural factors</li> <li>○ The phenomenology of the disorder</li> <li>○ Course and prognosis</li> <li>○ Healthcare delivery systems, including patient and family counseling</li> <li>○ The application of ethical principles in delivering medical care</li> <li>○ Ability to reference and utilize electronic systems to access medical, scientific, and patient information</li> </ul> </li> <li>• <b>Demonstrate an understanding of:</b> <ul style="list-style-type: none"> <li>○ The impact of physical illness on the patient’s functioning</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation evaluation (≥ 3 rating on all competencies)</p>

<ul style="list-style-type: none"> <li>○ The experience, meaning, and explanation of the illness for the patient and family, including the influence of cultural factors and culture-bound syndromes</li> <li>○ Effective treatment strategies</li> </ul>	
<p><b>Goal:</b> <i>Demonstrate knowledge of basic science aspects of vascular and critical care neurology.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>● <b>Demonstrate the knowledge of :</b> <ul style="list-style-type: none"> <li>○ Vascular neuroanatomy</li> <li>○ Stroke pathophysiology</li> <li>○ Cerebral blood flow</li> <li>○ Blood-brain barrier in stroke</li> <li>○ Coagulation cascade</li> <li>○ Metabolic and cellular consequences of ischemia</li> <li>○ Inflammation and stroke</li> <li>○ Brain edema and increased intracranial pressure</li> <li>○ Restoration and recovery following stroke</li> <li>○ Inflammation and edema following intracranial bleeding</li> <li>○ Ventilatory management</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation evaluation (≥ 3 rating on all competencies)</p>
<p><b>Goal:</b> <i>Demonstrate knowledge of Pharmacology aspects of vascular and critical care neurology.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>E. <b>Demonstrate the knowledge of :</b> <ul style="list-style-type: none"> <li>○ Antiplatelet agents for both prevention and acute treatment</li> <li>○ Anticoagulants for both prevention and acute treatment</li> <li>○ Thrombolytic agents intravenous and intra-arterial dosing</li> <li>○ Antihypertensive agents for acute or long term blood pressure reduction including PO and IV medication</li> <li>○ Cardioactive medications <ul style="list-style-type: none"> <li>i. Pressors, rate controlling agents, anti-arrhythmic agents</li> </ul> </li> <li>○ Hypercholesterolemic agents</li> <li>○ Medications to treat auto-immune diseases and vasculitis</li> <li>○ Medications to prevent and treat complications of stroke <ul style="list-style-type: none"> <li>i. Deep vein thrombosis, infections</li> </ul> </li> <li>○ Medications to improve or restore neurologic function or to augment rehabilitation</li> <li>○ Medications to prevent vasospasm following subarachnoid hemorrhage</li> <li>○ Interactions between medications</li> <li>○ Drugs that cause stroke, including drugs of abuse</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p>
<p><b>Goal:</b> <i>Demonstrate knowledge of Therapy aspects of vascular and critical care neurology.</i></p> <p><b>Objectives:</b></p>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation</p>

<ul style="list-style-type: none"> <li>• Demonstrate understanding of the potential risks and benefits of therapies, including surgical procedures in the following areas: <ul style="list-style-type: none"> <li>○ Intravenous thrombolysis</li> <li>○ Intra-arterial thrombolysis and thrombectomy</li> <li>○ Intravenous heparinization</li> <li>○ Hemicraniectomy</li> <li>○ Clot evacuation</li> <li>○ Novel, investigative interventions and therapies including neuroprotectants, thrombolytics, thrombectomy devices, PFO closure devices</li> </ul> </li> </ul>	(≥ 3 rating on all competencies)
<p><i>Goal:</i>  <i>Demonstrate knowledge of Therapy aspects of vascular and critical care neurology.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate understanding of the potential risks and benefits of therapies, including surgical procedures in the following areas: <ul style="list-style-type: none"> <li>○ Intravenous thrombolysis</li> <li>○ Intra-arterial thrombolysis and thrombectomy</li> <li>○ Intravenous heparinization</li> <li>○ Hemicraniectomy</li> <li>○ Clot evacuation</li> <li>○ Novel, investigative interventions and therapies including neuroprotectants, thrombolytics, thrombectomy devices, PFO closure devices</li> </ul> </li> </ul>	<b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)
<p><b>Goal:</b>  <i>Demonstrate knowledge of Pathophysiology, prognosis, and treatment of specific clinical syndromes</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• <b>Demonstrate understanding of following areas:</b> <ul style="list-style-type: none"> <li>○ Ischemic stroke syndromes – cerebral hemispheres</li> <li>○ Ischemic stroke syndromes – brain stem and cerebellum</li> <li>○ Ischemic stroke syndromes of the spinal cord</li> <li>○ Vascular dementia and vascular cognitive syndromes</li> <li>○ Features differentiating hemorrhagic or ischemic stroke</li> <li>○ Intracerebral hemorrhage</li> <li>○ Aneurismal subarachnoid hemorrhage</li> <li>○ Vascular malformations</li> <li>○ Primary intraventricular hemorrhage</li> <li>○ Subdural or epidural hematoma</li> <li>○ Spinal cord hemorrhage or infarction</li> <li>○ Carotid cavernous or dural fistulas</li> <li>○ Pituitary apoplexy</li> <li>○ Hypertensive encephalopathy and eclampsia</li> <li>○ Primary and multisystem vasculitides</li> <li>○ Hypoxia – ischemia</li> <li>○ Brain death</li> <li>○ MELAS and metabolic disorders causing neurologic symptoms</li> </ul> </li> </ul>	<b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)

<ul style="list-style-type: none"> <li>○ CADASIL, Fabry's, and other genetic causes of stroke</li> <li>○ Non-stroke presentations of vascular disease</li> <li>○ Cardiovascular diseases</li> <li>○ Vascular presentations of other diseases of central nervous systems</li> <li>○ Infectious diseases and stroke</li> <li>○ Migraine and its relation to stroke</li> </ul>	
<p><b>Goal:</b> <i>Demonstrate knowledge of prevention, risk factors and epidemiology of vascular and neurological disease.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>● <b>Demonstrate understanding of following areas:</b> <ul style="list-style-type: none"> <li>○ Populations at risk for stroke</li> <li>○ Modifiable risk factors for stroke</li> <li>○ Infections predisposing to stroke</li> <li>○ Genetic factors predicting stroke</li> <li>○ Stroke as a complication of other medical illnesses</li> <li>○ Special populations at risk for stroke</li> <li>○ Stroke education programs and regional health services</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p>
<p><b>Goal:</b> <i>Demonstrate proficiency in evaluation of the patient with cerebrovascular and neurocritical care disease including:</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>● Demonstrate proficiency in the evaluation of the brain and spinal cord including: <ul style="list-style-type: none"> <li>○ Computed tomography of brain</li> <li>○ Computed tomography of spine and spinal cord</li> <li>○ Magnetic resonance imaging of brain</li> <li>○ PET and SPECT</li> <li>○ Electroencephalography and evoked potentials</li> <li>○ Examination of the CSF</li> <li>○ ICP monitoring</li> </ul> </li> <li>● Demonstrate proficiency in the evaluation of the vasculature including: <ul style="list-style-type: none"> <li>○ Conventional arteriography and venography</li> <li>○ Extracranial (carotid Doppler) ultrasonography</li> <li>○ Intracranial (transcranial Doppler) ultrasonography</li> <li>○ CT angiography</li> <li>○ MR angiography</li> </ul> </li> <li>● Demonstrate ability in the evaluation of the heart and great vessels including: <ul style="list-style-type: none"> <li>○ Electrocardiography</li> <li>○ Transthoracic echocardiography and transesophageal echocardiography <ul style="list-style-type: none"> <li>▪ Evaluation for right-to-left shunting</li> <li>▪ Aortic atheromatous disease</li> </ul> </li> <li>○ Other chest imaging studies</li> <li>○ Hematologic studies <ul style="list-style-type: none"> <li>▪ Hypercoagulable studies, when appropriate</li> <li>▪ Blood smear, when appropriate</li> <li>▪ Hemoglobin electrophoresis, when appropriate</li> </ul> </li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p>

<ul style="list-style-type: none"> <li>○ Immunological studies</li> <li>○ Biochemical studies</li> <li>○ Urine tests</li> <li>○ Biopsies</li> <li>● Demonstrate proficiency in the evaluation of the complications of stroke</li> <li>● Demonstrate proficiency in the evaluation of the consequences of stroke</li> <li>● Demonstrate an understanding of Genetic testing</li> </ul>	
<p><b>Goal:</b> <i>Demonstrate knowledge of the causes of stroke</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>● <b>Demonstrate understanding of following areas:</b> <ul style="list-style-type: none"> <li>○ Atherosclerosis – ischemic stroke</li> <li>○ Non-atherosclerotic vasculopathies – ischemic stroke</li> <li>○ Non-inflammatory</li> <li>○ Infectious</li> <li>○ Inflammatory, non-infectious</li> <li>○ Migraine</li> <li>○ Other causes of ischemic stroke</li> <li>○ Genetic and metabolic causes of stroke</li> <li>○ Drug abuse and toxicities</li> <li>○ Cerebral amyloid angiopathy – infarction or hemorrhage</li> <li>○ Cardioembolic causes of stroke</li> <li>○ Pro-thrombotic causes of stroke</li> <li>○ Autoimmune causes of thrombosis</li> <li>○ Iatrogenic drugs, toxins</li> <li>○ Bleeding diatheses</li> <li>○ Inherited</li> <li>○ Acquired</li> <li>○ Systemic diseases</li> <li>○ Aneurysms and subarachnoid hemorrhage</li> <li>○ Vascular malformations</li> <li>○ Trauma and intracranial bleeding</li> <li>○ Moyamoya disease and syndrome</li> <li>○ Hypertensive hemorrhage</li> <li>○ Other causes of hemorrhage</li> <li>○ Genetic diseases causing hemorrhagic stroke</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p>
<p><b>Goal:</b> <i>Demonstrate proficient knowledge of the Complications of stroke</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>● <b>Demonstrate proficient knowledge in the following areas:</b> <ul style="list-style-type: none"> <li>○ Early neurologic complications</li> <li>○ Early medical complications</li> <li>○ Chronic neurologic sequelae</li> <li>○ Chronic medical sequelae</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p>
<p><b>Goal:</b> <i>Demonstrate proficiency in the Treatment of patients with stroke</i></p> <p><b>Objectives:</b></p>	<p><b>Measurement/ Outcomes</b> Rotation</p>

<ul style="list-style-type: none"> <li>• Demonstrate proficient skill in Outpatient management including <ul style="list-style-type: none"> <li>○ Medical therapies to prevent stroke</li> </ul> </li> <li>• Demonstrate proficient skill in Hyperacute treatment of ischemic stroke including <ul style="list-style-type: none"> <li>○ Emergency department</li> <li>○ Hospitalization</li> <li>○ ICU</li> <li>○ Neurosurgical management</li> </ul> </li> <li>• Demonstrate proficient skill in Chronic care management including: <ul style="list-style-type: none"> <li>○ Prevention of recurrent stroke</li> <li>○ Treatment of venous thrombosis</li> <li>○ Treatment of spinal cord vascular disease</li> </ul> </li> <li>• Demonstrate proficient skill in Palliative care management including: <ul style="list-style-type: none"> <li>○ End-of-life decisions</li> <li>○ Advanced directives, informed consent, regulations</li> </ul> </li> </ul>	<p>Evaluation (≥ 3 rating on all competencies)</p>
<b>CORE COMPETENCY: INTERPERSONAL COMMUNICATION SKILLS</b>	
<p><b>Goal:</b> <i>Demonstrate proficiency in the following aspects of interpersonal communication skills:</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Ability to listen to and understand patients and to attend to nonverbal communication</li> <li>• Ability to communicate effectively with patients using verbal, nonverbal, and written skills as appropriate</li> <li>• Ability to develop and maintain a therapeutic alliance with patients by instilling feelings of trust, honesty, openness, rapport, and comfort in the relationship with physicians</li> <li>• Ability to partner with patients to develop an agreed upon healthcare management plan</li> <li>• Ability to transmit information to patients in a clear and meaningful fashion</li> <li>• Ability to understand the impact of physicians' own feelings and behavior so that it does not interfere with appropriate treatment</li> <li>• Ability to communicate effectively and work collaboratively with allied healthcare professionals and with other professionals involved in the lives of patients and families</li> <li>• Ability to educate patients, their families, and professionals about medical, psychosocial, and behavioral issues</li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation evaluation (≥ 3 rating on all competencies)</p> <p>Direct observation</p>
<p><b>Goal:</b> <i>Demonstrate proficiency in ability to obtain, interpret, and evaluate consultations from other medical specialties</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Knowing when to solicit consultations</li> <li>• Formulating and clearly communicating the consultation question</li> <li>• Discussing the findings with the consultant</li> <li>• Discussing the consultation recommendations with patient and family</li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies) Direct observation</p>
<p><b>Goal:</b></p>	<p><b>Measurement/ Outcomes</b></p>

<p><i>Serve as an effective consultant to other medical specialists, mental health professionals, and community agencies</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate ability to communicate effectively with the requesting party to refine the consultation question</li> <li>• Demonstrate ability to maintain the role of consultant</li> <li>• Demonstrate ability to communicate clear and specific recommendations</li> <li>• Demonstrate ability to respect the knowledge and expertise of the requesting professionals</li> </ul>	<p>Rotation Evaluation (≥ 3 rating on all competencies)</p> <p>Direct observation</p>
<p><b>Goal:</b> <i>Demonstrate the ability to communicate effectively with patients and their families by:</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Gearing all communication to the educational and intellectual levels of patients and their families including</li> <li>• Demonstrating sociocultural sensitivity to patients and their families</li> <li>• Providing explanations of psychiatric and neurological disorders and treatment that are jargon-free and geared to the educational/intellectual levels of patients and their families</li> <li>• Providing preventive education that is understandable and practical</li> <li>• Respecting the patients’ and their families cultural, ethnic, religious, and economic backgrounds</li> <li>• Developing and enhancing rapport and a working alliance with patients and their families</li> <li>• Ensuring that the patient and/or family have understood the communication</li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p> <p>Direct observation</p>
<p><b>Goal:</b> <i>Vascular neurologists shall demonstrate the ability to effectively lead a multidisciplinary treatment team</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate ability to listen effectively</li> <li>• Demonstrate ability to manage time spent caring for each patient</li> <li>• Demonstrate ability to elicit needed information from team members</li> <li>• Demonstrate ability to integrate information from different disciplines</li> <li>• Demonstrate ability to manage conflict</li> <li>• Demonstrate ability to clearly communicate an integrated treatment plan</li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation Informal observation</p>
<p><b>Goal:</b> <i>Demonstrate the ability to communicate effectively with patients and their families while respecting confidentiality</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• <b>Demonstrate effective communication when addressing the following areas:</b> <ul style="list-style-type: none"> <li>○ The results of the assessment</li> <li>○ Use of informed consent when considering investigative procedures</li> <li>○ Genetic counseling and palliative care when appropriate</li> <li>○ Consideration and compassion for the patient in providing accurate medical information and prognosis</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation Direct observation</p>

<ul style="list-style-type: none"> <li>○ The risks and benefits of the proposed treatment plan, including possible side-effects of medications and/or complications of nonpharmacologic treatments</li> <li>○ Alternative (if any) to the proposed treatment plan</li> <li>○ Appropriate education concerning the disorder, its prognosis, and prevention strategies</li> </ul>	
<b>CORE COMPETENCY: PRACTICE BASED LEARNING</b>	
<p><b>Goal:</b> <i>Recognize limitations in their own knowledge base and clinical skills, and understand and address the need for lifelong learning</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>● Demonstrate increased understanding and beginning application of concepts of clinical research</li> <li>● Demonstrate understanding and skill to continual learn from research studies in the areas of <ul style="list-style-type: none"> <li>○ Outcomes</li> <li>○ Prognosis</li> <li>○ Mortality and morbidity of subtypes of stroke</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b></p> <p>Rotation Evaluation Direct observation</p>
<p><b>Goal:</b> <i>Demonstrate appropriate skills for obtaining and evaluating up-to-date information from scientific and practice literature and other sources to assist in the quality care of patients.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>● Demonstrate proficient skills in the following areas: <ul style="list-style-type: none"> <li>○ Use of medical libraries</li> <li>○ Use of information technology, including Internet-based searches and literature databases (e.g., Pubmed, Ovid)</li> <li>○ Use of drug information databases</li> <li>○ Active participation, as appropriate, in educational courses, conferences, and other organized educational activities both at the local and national levels</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b></p> <p>Rotation Evaluation Direct observation</p>
<p><b>Goal:</b> <i>Demonstrate the understanding of the importance of applying multiple and varied approaches to education and development.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>● Demonstrate an understanding of Case-based learning</li> <li>● Participation in Didactic lectures</li> <li>● Ability to read and apply information from journals, reviews, and textbooks to learning</li> <li>● Use of best practices through practice guidelines or clinical pathways</li> <li>● Demonstrate ability apply a review of patient records to learning</li> <li>● Obtain and applying evaluation information from patients (e.g., outcomes and patient satisfaction) to improved learning</li> <li>● Employment of principles of quality improvement in practice</li> <li>● Understanding the importance of obtaining appropriate supervision and consultation to patient safety and personal learning</li> </ul>	<p><b>Measurement/ Outcomes</b></p> <p>Rotation evaluation</p> <p>Presentation checklist</p>
<p><b>Goal:</b></p>	<p><b>Measurement/</b></p>

<p><i>Demonstrate an ability to critically evaluate relevant medical literature and apply it to challenging, common, and unusual clinical situations.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate ability to use the following skills: <ul style="list-style-type: none"> <li>○ Use knowledge of common methodologies employed in neurological research</li> <li>○ Research and summarize a particular problem that derives from their own caseloads</li> <li>○ Search online databases (Pubmed, Ovid, etc.) to optimally answer clinical questions</li> </ul> </li> </ul>	<p><b>Outcomes</b></p> <p>Rotation Evaluation Informal observation</p>
<b>CORE COMPETENCY: PROFESSIONALISM</b>	
<p><b>Goal:</b> <i>Demonstrate professional responsibility and ethical values to always place interests of patients above self interest.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate ethical behavior, integrity, honesty, compassion, and confidentiality in the delivery of care, including matters of informed consent/assent, professional conduct, and conflict of interest</li> <li>• Demonstrate respect for patients and their families, and their colleagues as persons, including their ages, cultures, disabilities, ethnicities, genders, socioeconomic backgrounds, religious beliefs, political leanings, and sexual orientations</li> <li>• Demonstrate understanding of and sensitivity to end of life care and issues regarding provision of care</li> <li>• Ability to review personal professional conduct and remediate when appropriate.</li> <li>• Ability to review the professional conduct of their colleagues, residents, medical students, and attendings</li> <li>• Awareness of safety issues, including acknowledging, reporting, and remediating medical errors, should they occur</li> </ul>	<p><b>Measurement/ Outcomes</b></p> <p>Rotation Evaluation Informal observation</p>
<p><b>Goal:</b> <i>Demonstrate professional responsibility for patients' care.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Ability to effectively respond to communication from patients and health professionals in a timely manner</li> <li>• Ability to effectively establish and communicate how to seek emergent and urgent care when necessary</li> <li>• Ability to use medical records for appropriate documentation of the course of illness and its treatment</li> <li>• Providing coverage if unavailable, (for example, when out of town or on vacation)</li> <li>• Ability to coordinate care with other members of the medical and/or multidisciplinary team</li> <li>• Ability to provide for continuity of care, including appropriate consultation, transfer, or referral if necessary</li> </ul>	<p><b>Measurement/ Outcomes</b></p> <p>Rotation Evaluation Informal observation</p>
<b>CORE COMPETENCY: SYSTEMS BASED PRACTICE</b>	
<p><b>Goal:</b></p>	<p><b>Measurement/</b></p>

<p><i>Develop a working knowledge of the diverse systems involved in treating patients of all ages, and understand how to use the systems as part of a comprehensive system of care in general and as part of a comprehensive, individualized treatment plan. This will include</i></p> <p><b>Objectives</b></p> <ul style="list-style-type: none"> <li>• Demonstrate effective use of practice guidelines</li> <li>• Demonstrate the ability to access community, national, and allied health professional resources (AHA, NSA, NINDS, etc.) that may enhance the quality of life of patients with vascular neurologic disorders</li> <li>• Demonstrate the ability to lead and delegate authority to the housestaff</li> <li>• The efficient and effective practice of ambulatory medicine, including time management, clinical scheduling, and rapid communication with referring physicians</li> <li>• Demonstrate the use of appropriate consultation and referral mechanisms for the optimal clinical management of patients on the Vascular Neurology and Neurocritical care service</li> </ul>	<p><b>Outcomes</b></p> <p>Rotation Evaluation Informal observation</p>
<p><b>Goal:</b> <i>In the community system, vascular neurologists shall demonstrate the following:</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Recognize the limitations of healthcare resources and demonstrate the ability to act as an advocate for patients within their sociocultural and financial constraints</li> <li>• Demonstrate knowledge of the legal aspects of vascular and critical care neurological diseases as they impact patients and their families</li> <li>• Demonstrate an understanding of risk management</li> </ul>	<p><b>Measurement/ Outcomes</b></p> <p>Rotation Evaluation Informal observation</p>
<p><b>Goal:</b> <i>Demonstrate knowledge of and interact with managed health systems, including:</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Participating in utilization review communications and, when appropriate, advocating for quality patient care</li> <li>• Educating patients concerning such systems of care</li> <li>• Vascular neurologists shall demonstrate knowledge of community systems of care and assist patients to access appropriate care and other support services</li> </ul>	<p><b>Measurement/ Outcomes</b></p> <p>Rotation Evaluation Informal observation</p>

### Neuroscience Intensive Care Rotation

**General description:** The Vascular Neurology fellow will spend one month on the Neuroscience ICU rotation. This rotation consists of taking care of acutely ill neurology and neurosurgery patients with vascular neurology issues. The fellow will primarily be working in the Neuroscience ICU. During the Neuro ICU months the Vascular Neurology fellow will perform and interpret transcranial dopplers under the guidance of the Neuro ICU attending.

**Preceptor:** The preceptors for this rotation will be Drs. Kathrin Husmann and Michael Abraham.

**Logistics:** Neuro ICU patients will be seen early in the day before rounds typically, starting at 6 or 6:30 AM. Neuro ICU rounds will start at 7 or 7:30 AM. There will be multidisciplinary rounds with the Neuro ICU attending and the Vascular Neurology fellow. The Vascular Fellow will round with the dedicated neurology attending (when available). While on rounds the Vascular Neurology fellow is expected to lead the Neuro ICU team on ischemic stroke patients, and assist the Neuro ICU team with management of hemorrhagic stroke patients.

**Goals and Objectives:** The following table lists Neuroscience Intensive Care Rotation specific goals and competencies. It also details the methods that will be used to determine your attainment of the specific goals.

<b>CORE COMPETENCY: PATIENT CARE</b>	
<p><b>Goal:</b> <i>Develop proficiency in the ability to perform and document a relevant history on culturally diverse patients</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate the ability to obtain relevant patient history</li> <li>• Demonstrate the ability to obtain relevant Chief complaint</li> <li>• Demonstrate the ability to obtain relevant History of present illness</li> <li>• Demonstrate the ability to obtain relevant Past medical history</li> <li>• Demonstrate the ability to complete a comprehensive review of systems</li> <li>• Demonstrate the ability to obtain a Family history</li> <li>• Demonstrate ability to obtain relevant social history including employment, living situation, tobacco, alcohol, and illicit drug use and history</li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation evaluation (≥ 3 rating on all competencies)</p> <p>Direct observation checklist</p>
<p><b>Goal:</b> <i>Perform and document a relevant examination on culturally diverse patients including the following components:</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate ability to perform a complete and thorough general examination of               <ul style="list-style-type: none"> <li>i. Skin</li> <li>ii. HEENT</li> <li>iii. Neck</li> <li>iv. Cardiovascular</li> <li>v. Pulmonary</li> <li>vi. Abdominal</li> <li>vii. Extremities including pulses</li> </ul> </li> <li>• Demonstrate ability to perform a complete and thorough neurologic examination of               <ul style="list-style-type: none"> <li>viii. Mental status</li> <li>ix. Cranial nerves</li> <li>x. Strength</li> <li>xi. Sensation</li> <li>xii. Cerebellar testing</li> <li>xiii. Reflexes</li> <li>xiv. Gait</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation evaluation (≥ 3 rating on all competencies)</p> <p>Direct observation checklist</p>

<p>F. Demonstrate ability to perform and document an expedited history and physical on a patient presenting to the emergency department including</p> <ul style="list-style-type: none"> <li>i. Including a complete and accurate National Institutes of Health Stroke Scale</li> <li>ii. Must have NIHSS Certification</li> </ul>	<p>Copy of NIHSS Certification</p>
<p><b>Goal:</b> <i>Perform and document a relevant examination and plan of treatment.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>G. Demonstrate ability to generate appropriate differential diagnoses</li> <li>H. Demonstrate ability to review all available data including labs, vascular studies, and imaging</li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation evaluation (≥ 3 rating on all competencies)</p>
<p><b>Goal:</b> <i>Evaluate, assess and recommend effective management of patient and patient care.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>Demonstrate ability to plan for further evaluation including labs, vascular studies, and imaging, as needed</li> <li>• Demonstrate ability to determine if the patient’s symptoms are the result of cerebrovascular disease or are of another origin (e.g., of a systemic, psychiatric, or psychogenic illness)</li> <li>• Demonstrate ability to identify and describe abnormalities seen in common vascular disorders on radiographic testing, including plain films, arteriography, CT, MRI, and TCD or carotid duplex studies</li> <li>• Demonstrate ability to recommend therapeutic and preventative interventions to achieve optimal recovery from the acute event and prevent further brain injury</li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation evaluation (≥ 3 rating on all competencies)</p>
<b>CORE COMPETENCY: MEDICAL KNOWLEDGE</b>	
<p><b>Goal:</b> <i>Demonstrate knowledge of major medical ICU conditions, including considerations relating to age, gender, race, and ethnicity, based on the literature and standards of practice. This knowledge includes but is not limited to:</i></p> <p>:</p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• <b>Demonstrate the knowledge of :</b> <ul style="list-style-type: none"> <li>○ The epidemiology of the disorder</li> <li>○ The etiology of the disorder, including medical, genetic, and sociocultural factors</li> <li>○ The phenomenology of the disorder</li> <li>○ Course and prognosis</li> <li>○ Healthcare delivery systems, including patient and family counseling</li> <li>○ The application of ethical principles in delivering medical care</li> <li>○ Ability to reference and utilize electronic systems to access medical, scientific, and patient information</li> </ul> </li> <li>• <b>Demonstrate an understanding of:</b> <ul style="list-style-type: none"> <li>○ The impact of physical illness on the patient’s functioning</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation evaluation (≥ 3 rating on all competencies)</p>

<ul style="list-style-type: none"> <li>○ The experience, meaning, and explanation of the illness for the patient and family, including the influence of cultural factors and culture-bound syndromes</li> <li>○ Effective treatment strategies</li> </ul>	
<p><b>Goal:</b> <i>Demonstrate knowledge of basic science aspects of critical care neurology.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>● <b>Demonstrate the knowledge of :</b> <ul style="list-style-type: none"> <li>○ Vascular neuroanatomy</li> <li>○ Stroke pathophysiology</li> <li>○ Cerebral blood flow</li> <li>○ Blood-brain barrier in stroke</li> <li>○ Coagulation cascade</li> <li>○ Metabolic and cellular consequences of ischemia</li> <li>○ Inflammation and stroke</li> <li>○ Brain edema and increased intracranial pressure</li> <li>○ Restoration and recovery following stroke</li> <li>○ Inflammation and edema following ntracranial bleeding</li> <li>○ Ventilatory management</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation evaluation (≥ 3 rating on all competencies)</p>
<p><b>Goal:</b> <i>Demonstrate knowledge of Pharmacology aspects of vascular and critical care neurology.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>I. <b>Demonstrate the knowledge of :</b> <ul style="list-style-type: none"> <li>○ Antiplatelet agents for both prevention and acute treatment</li> <li>○ Anticoagulants for both prevention and acute treatment</li> <li>○ Thrombolytic agents intravenous and intra-arterial dosing</li> <li>○ Antihypertensive agents for acute or long term blood pressure reduction including PO and IV medication</li> <li>○ Cardioactive medications <ul style="list-style-type: none"> <li>i. Pressors, rate controlling agents, anti-arrythmic agents</li> </ul> </li> <li>○ Hypercholesterolemic agents</li> <li>○ Medications to treat auto-immune diseases and vasculitis</li> <li>○ Medications to prevent and treat complications of stroke <ul style="list-style-type: none"> <li>i. Deep vein thrombosis, infections</li> </ul> </li> <li>○ Medications to improve or restore neurologic function or to augment rehabilitation</li> <li>○ Medications to prevent vasospasm following subarachnoid hemorrhage</li> <li>○ Interactions between medications</li> <li>○ Drugs that cause stroke, including drugs of abuse</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p>
<p><b>Goal:</b> <i>Demonstrate knowledge of Therapy aspects of vascular and critical care neurology.</i></p> <p><b>Objectives:</b></p>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation</p>

<ul style="list-style-type: none"> <li>• Demonstrate understanding of the potential risks and benefits of therapies, including surgical procedures in the following areas: <ul style="list-style-type: none"> <li>○ Intravenous thrombolysis</li> <li>○ Intra-arterial thrombolysis and thrombectomy</li> <li>○ Intravenous heparinization</li> <li>○ Hemicraniectomy</li> <li>○ Clot evacuation</li> <li>○ Novel, investigative interventions and therapies including neuroprotectants, thrombolytics, thrombectomy devices, PFO closure devices</li> </ul> </li> </ul>	(≥ 3 rating on all competencies)
<p><i>Goal:</i>  <i>Demonstrate knowledge of Therapy aspects of vascular and critical care neurology.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate understanding of the potential risks and benefits of therapies, including surgical procedures in the following areas: <ul style="list-style-type: none"> <li>○ Intravenous thrombolysis</li> <li>○ Intra-arterial thrombolysis and thrombectomy</li> <li>○ Intravenous heparinization</li> <li>○ Hemicraniectomy</li> <li>○ Clot evacuation</li> <li>○ Novel, investigative interventions and therapies including neuroprotectants, thrombolytics, thrombectomy devices, PFO closure devices</li> </ul> </li> </ul>	<b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)
<p><b>Goal:</b>  <i>Demonstrate knowledge of Pathophysiology, prognosis, and treatment of specific clinical syndromes</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• <b>Demonstrate understanding of following areas:</b> <ul style="list-style-type: none"> <li>○ Ischemic stroke syndromes – cerebral hemispheres</li> <li>○ Ischemic stroke syndromes – brain stem and cerebellum</li> <li>○ Ischemic stroke syndromes of the spinal cord</li> <li>○ Vascular dementia and vascular cognitive syndromes</li> <li>○ Features differentiating hemorrhagic or ischemic stroke</li> <li>○ Intracerebral hemorrhage</li> <li>○ Aneurismal subarachnoid hemorrhage</li> <li>○ Vascular malformations</li> <li>○ Primary intraventricular hemorrhage</li> <li>○ Subdural or epidural hematoma</li> <li>○ Spinal cord hemorrhage or infarction</li> <li>○ Carotid cavernous or dural fistulas</li> <li>○ Pituitary apoplexy</li> <li>○ Hypertensive encephalopathy and eclampsia</li> <li>○ Primary and multisystem vasculitides</li> <li>○ Hypoxia – ischemia</li> <li>○ Brain death</li> <li>○ MELAS and metabolic disorders causing neurologic symptoms</li> </ul> </li> </ul>	<b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)

<ul style="list-style-type: none"> <li>○ CADASIL, Fabry's, and other genetic causes of stroke</li> <li>○ Non-stroke presentations of vascular disease</li> <li>○ Cardiovascular diseases</li> <li>○ Vascular presentations of other diseases of central nervous systems</li> <li>○ Infectious diseases and stroke</li> <li>○ Migraine and its relation to stroke</li> </ul>	
<p><b>Goal:</b> <i>Demonstrate knowledge of prevention, risk factors and epidemiology of vascular and neurological disease.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>● <b>Demonstrate understanding of following areas:</b> <ul style="list-style-type: none"> <li>○ Populations at risk for stroke</li> <li>○ Modifiable risk factors for stroke</li> <li>○ Infections predisposing to stroke</li> <li>○ Genetic factors predicting stroke</li> <li>○ Stroke as a complication of other medical illnesses</li> <li>○ Special populations at risk for stroke</li> <li>○ Stroke education programs and regional health services</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p>
<p><b>Goal:</b> <i>Demonstrate proficiency in evaluation of the patient with cerebrovascular and neurocritical care disease including:</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>● Demonstrate proficiency in the evaluation of the brain and spinal cord including: <ul style="list-style-type: none"> <li>○ Computed tomography of brain</li> <li>○ Computed tomography of spine and spinal cord</li> <li>○ Magnetic resonance imaging of brain</li> <li>○ PET and SPECT</li> <li>○ Electroencephalography and evoked potentials</li> <li>○ Examination of the CSF</li> <li>○ ICP monitoring</li> </ul> </li> <li>● Demonstrate proficiency in the evaluation of the vasculature including: <ul style="list-style-type: none"> <li>○ Conventional arteriography and venography</li> <li>○ Extracranial (carotid Doppler) ultrasonography</li> <li>○ Intracranial (transcranial Doppler) ultrasonography</li> <li>○ CT angiography</li> <li>○ MR angiography</li> </ul> </li> <li>● Demonstrate ability in the evaluation of the heart and great vessels including: <ul style="list-style-type: none"> <li>○ Electrocardiography</li> <li>○ Transthoracic echocardiography and transesophageal echocardiography <ul style="list-style-type: none"> <li>▪ Evaluation for right-to-left shunting</li> <li>▪ Aortic atheromatous disease</li> </ul> </li> <li>○ Other chest imaging studies</li> <li>○ Hematologic studies <ul style="list-style-type: none"> <li>▪ Hypercoagulable studies, when appropriate</li> <li>▪ Blood smear, when appropriate</li> <li>▪ Hemoglobin electrophoresis, when appropriate</li> </ul> </li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p>

<ul style="list-style-type: none"> <li>○ Immunological studies</li> <li>○ Biochemical studies</li> <li>○ Urine tests</li> <li>○ Biopsies</li> <li>● Demonstrate proficiency in the evaluation of the complications of stroke</li> <li>● Demonstrate proficiency in the evaluation of the consequences of stroke</li> <li>● Demonstrate an understanding of Genetic testing</li> </ul>	
<p><b>Goal:</b> <i>Demonstrate knowledge of the causes of stroke</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>● <b>Demonstrate understanding of following areas:</b> <ul style="list-style-type: none"> <li>○ Atherosclerosis – ischemic stroke</li> <li>○ Non-atherosclerotic vasculopathies – ischemic stroke</li> <li>○ Non-inflammatory</li> <li>○ Infectious</li> <li>○ Inflammatory, non-infectious</li> <li>○ Migraine</li> <li>○ Other causes of ischemic stroke</li> <li>○ Genetic and metabolic causes of stroke</li> <li>○ Drug abuse and toxicities</li> <li>○ Cerebral amyloid angiopathy – infarction or hemorrhage</li> <li>○ Cardioembolic causes of stroke</li> <li>○ Pro-thrombotic causes of stroke</li> <li>○ Autoimmune causes of thrombosis</li> <li>○ Iatrogenic drugs, toxins</li> <li>○ Bleeding diatheses</li> <li>○ Inherited</li> <li>○ Acquired</li> <li>○ Systemic diseases</li> <li>○ Aneurysms and subarachnoid hemorrhage</li> <li>○ Vascular malformations</li> <li>○ Trauma and intracranial bleeding</li> <li>○ Moyamoya disease and syndrome</li> <li>○ Hypertensive hemorrhage</li> <li>○ Other causes of hemorrhage</li> <li>○ Genetic diseases causing hemorrhagic stroke</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p>
<p><b>Goal:</b> <i>Demonstrate proficient knowledge of the Complications of stroke</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>● <b>Demonstrate proficient knowledge in the following areas:</b> <ul style="list-style-type: none"> <li>○ Early neurologic complications</li> <li>○ Early medical complications</li> <li>○ Chronic neurologic sequelae</li> <li>○ Chronic medical sequelae</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p>
<p><b>Goal:</b> <i>Demonstrate proficiency in the Treatment of patients with stroke</i></p> <p><b>Objectives:</b></p>	<p><b>Measurement/ Outcomes</b> Rotation</p>

<ul style="list-style-type: none"> <li>• Demonstrate proficient skill in Outpatient management including <ul style="list-style-type: none"> <li>○ Medical therapies to prevent stroke</li> </ul> </li> <li>• Demonstrate proficient skill in Hyperacute treatment of ischemic stroke including <ul style="list-style-type: none"> <li>○ Emergency department</li> <li>○ Hospitalization</li> <li>○ ICU</li> <li>○ Neurosurgical management</li> </ul> </li> <li>• Demonstrate proficient skill in Chronic care management including: <ul style="list-style-type: none"> <li>○ Prevention of recurrent stroke</li> <li>○ Treatment of venous thrombosis</li> <li>○ Treatment of spinal cord vascular disease</li> </ul> </li> <li>• Demonstrate proficient skill in Palliative care management including: <ul style="list-style-type: none"> <li>○ End-of-life decisions</li> <li>○ Advanced directives, informed consent, regulations</li> </ul> </li> </ul>	<p>Evaluation (≥ 3 rating on all competencies)</p>
<b>CORE COMPETENCY: INTERPERSONAL COMMUNICATION SKILLS</b>	
<p><b>Goal:</b> <i>Demonstrate proficiency in the following aspects of interpersonal communication skills:</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Ability to listen to and understand patients and to attend to nonverbal communication</li> <li>• Ability to communicate effectively with patients using verbal, nonverbal, and written skills as appropriate</li> <li>• Ability to develop and maintain a therapeutic alliance with patients by instilling feelings of trust, honesty, openness, rapport, and comfort in the relationship with physicians</li> <li>• Ability to partner with patients to develop an agreed upon healthcare management plan</li> <li>• Ability to transmit information to patients in a clear and meaningful fashion</li> <li>• Ability to understand the impact of physicians' own feelings and behavior so that it does not interfere with appropriate treatment</li> <li>• Ability to communicate effectively and work collaboratively with allied healthcare professionals and with other professionals involved in the lives of patients and families</li> <li>• Ability to educate patients, their families, and professionals about medical, psychosocial, and behavioral issues</li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation evaluation (≥ 3 rating on all competencies)</p> <p>Direct observation</p>
<p><b>Goal:</b> <i>Demonstrate proficiency in ability to obtain, interpret, and evaluate consultations from other medical specialties</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Knowing when to solicit consultations</li> <li>• Formulating and clearly communicating the consultation question</li> <li>• Discussing the findings with the consultant</li> <li>• Discussing the consultation recommendations with patient and family</li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p> <p>Direct observation</p>
<p><b>Goal:</b></p>	<p><b>Measurement/</b></p>

<p><i>Serve as an effective consultant to other medical specialists, mental health professionals, and community agencies</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate ability to communicate effectively with the requesting party to refine the consultation question</li> <li>• Demonstrate ability to maintain the role of consultant</li> <li>• Demonstrate ability to communicate clear and specific recommendations</li> <li>• Demonstrate ability to respect the knowledge and expertise of the requesting professionals</li> </ul>	<p><b>Outcomes</b></p> <p>Rotation Evaluation (≥ 3 rating on all competencies)</p> <p>Direct observation</p>
<p><b>Goal:</b> <i>Demonstrate the ability to communicate effectively with patients and their families by:</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Gearing all communication to the educational and intellectual levels of patients and their families including</li> <li>• Demonstrating sociocultural sensitivity to patients and their families</li> <li>• Providing explanations of psychiatric and neurological disorders and treatment that are jargon-free and geared to the educational/intellectual levels of patients and their families</li> <li>• Providing preventive education that is understandable and practical</li> <li>• Respecting the patients’ and their families cultural, ethnic, religious, and economic backgrounds</li> <li>• Developing and enhancing rapport and a working alliance with patients and their families</li> <li>• Ensuring that the patient and/or family have understood the communication</li> </ul>	<p><b>Measurement/ Outcomes</b></p> <p>Rotation Evaluation (≥ 3 rating on all competencies)</p> <p>Direct observation</p>
<p><b>Goal:</b> <i>Vascular neurologists shall demonstrate the ability to effectively lead a multidisciplinary treatment team</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate ability to listen effectively</li> <li>• Demonstrate ability to manage time spent caring for each patient</li> <li>• Demonstrate ability to elicit needed information from team members</li> <li>• Demonstrate ability to integrate information from different disciplines</li> <li>• Demonstrate ability to manage conflict</li> <li>• Demonstrate ability to clearly communicate an integrated treatment plan</li> </ul>	<p><b>Measurement/ Outcomes</b></p> <p>Rotation Evaluation Informal observation</p>
<p><b>Goal:</b> <i>Demonstrate the ability to communicate effectively with patients and their families while respecting confidentiality</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• <b>Demonstrate effective communication when addressing the following areas:</b> <ul style="list-style-type: none"> <li>○ The results of the assessment</li> <li>○ Use of informed consent when considering investigative procedures</li> <li>○ Genetic counseling and palliative care when appropriate</li> <li>○ Consideration and compassion for the patient in providing accurate medical information and prognosis</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b></p> <p>Rotation Evaluation Direct observation</p>

<ul style="list-style-type: none"> <li>○ The risks and benefits of the proposed treatment plan, including possible side-effects of medications and/or complications of nonpharmacologic treatments</li> <li>○ Alternative (if any) to the proposed treatment plan</li> <li>○ Appropriate education concerning the disorder, its prognosis, and prevention strategies</li> </ul>	
<b>CORE COMPETENCY: PRACTICE BASED LEARNING</b>	
<p><b>Goal:</b> <i>Recognize limitations in their own knowledge base and clinical skills, and understand and address the need for lifelong learning</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>● Demonstrate increased understanding and beginning application of concepts of clinical research</li> <li>● Demonstrate understanding and skill to continual learn from research studies in the areas of <ul style="list-style-type: none"> <li>○ Outcomes</li> <li>○ Prognosis</li> <li>○ Mortality and morbidity of subtypes of stroke</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b></p> <p>Rotation Evaluation Direct observation</p>
<p><b>Goal:</b> <i>Demonstrate appropriate skills for obtaining and evaluating up-to-date information from scientific and practice literature and other sources to assist in the quality care of patients.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>● Demonstrate proficient skills in the following areas: <ul style="list-style-type: none"> <li>○ Use of medical libraries</li> <li>○ Use of information technology, including Internet-based searches and literature databases (e.g., Pubmed, Ovid)</li> <li>○ Use of drug information databases</li> <li>○ Active participation, as appropriate, in educational courses, conferences, and other organized educational activities both at the local and national levels</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b></p> <p>Rotation Evaluation Direct observation</p>
<p><b>Goal:</b> <i>Demonstrate the understanding of the importance of applying multiple and varied approaches to education and development.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>● Demonstrate an understanding of Case-based learning</li> <li>● Participation in Didactic lectures</li> <li>● Ability to read and apply information from journals, reviews, and textbooks to learning</li> <li>● Use of best practices through practice guidelines or clinical pathways</li> <li>● Demonstrate ability apply a review of patient records to learning</li> <li>● Obtain and applying evaluation information from patients (e.g., outcomes and patient satisfaction) to improved learning</li> <li>● Employment of principles of quality improvement in practice</li> <li>● Understanding the importance of obtaining appropriate supervision and consultation to patient safety and personal learning</li> </ul>	<p><b>Measurement/ Outcomes</b></p> <p>Rotation evaluation</p> <p>Presentation checklist</p>
<p><b>Goal:</b></p>	<p><b>Measurement/</b></p>

<p><i>Demonstrate an ability to critically evaluate relevant medical literature and apply it to challenging, common, and unusual clinical situations.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate ability to use the following skills: <ul style="list-style-type: none"> <li>○ Use knowledge of common methodologies employed in neurological research</li> <li>○ Research and summarize a particular problem that derives from their own caseloads</li> <li>○ Search online databases (Pubmed, Ovid, etc.) to optimally answer clinical questions</li> </ul> </li> </ul>	<p><b>Outcomes</b></p> <p>Rotation Evaluation Informal observation</p>
<b>CORE COMPETENCY: PROFESSIONALISM</b>	
<p><b>Goal:</b> <i>Demonstrate professional responsibility and ethical values to always place interests of patients above self interest.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate ethical behavior, integrity, honesty, compassion, and confidentiality in the delivery of care, including matters of informed consent/assent, professional conduct, and conflict of interest</li> <li>• Demonstrate respect for patients and their families, and their colleagues as persons, including their ages, cultures, disabilities, ethnicities, genders, socioeconomic backgrounds, religious beliefs, political leanings, and sexual orientations</li> <li>• Demonstrate understanding of and sensitivity to end of life care and issues regarding provision of care</li> <li>• Ability to review personal professional conduct and remediate when appropriate.</li> <li>• Ability to review the professional conduct of their colleagues, residents, medical students, and attending physicians</li> <li>• Awareness of safety issues, including acknowledging, reporting, and remediating medical errors, should they occur</li> </ul>	<p><b>Measurement/ Outcomes</b></p> <p>Rotation Evaluation Informal observation</p>
<p><b>Goal:</b> <i>Demonstrate professional responsibility for patients' care.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Ability to effectively respond to communication from patients and health professionals in a timely manner</li> <li>• Ability to effectively establish and communicate how to seek emergent and urgent care when necessary</li> <li>• Ability to use medical records for appropriate documentation of the course of illness and its treatment</li> <li>• Providing coverage if unavailable, (for example, when out of town or on vacation)</li> <li>• Ability to coordinate care with other members of the medical and/or multidisciplinary team</li> <li>• Ability to provide for continuity of care, including appropriate consultation, transfer, or referral if necessary</li> </ul>	<p><b>Measurement/ Outcomes</b></p> <p>Rotation Evaluation Informal observation</p>
<b>CORE COMPETENCY: SYSTEMS BASED PRACTICE</b>	
<p><b>Goal:</b></p>	<p><b>Measurement/</b></p>

<p><i>Develop a working knowledge of the diverse systems involved in treating patients of all ages, and understand how to use the systems as part of a comprehensive system of care in general and as part of a comprehensive, individualized treatment plan. This will include</i></p> <p><b>Objectives</b></p> <ul style="list-style-type: none"> <li>• Demonstrate effective use of practice guidelines</li> <li>• Demonstrate the ability to access community, national, and allied health professional resources (AHA, NSA, NINDS, etc.) that may enhance the quality of life of patients with vascular neurologic disorders</li> <li>• Demonstrate the ability to lead and delegate authority to the housestaff</li> <li>• The efficient and effective practice of ambulatory medicine, including time management, clinical scheduling, and rapid communication with referring physicians</li> <li>• Demonstrate the use of appropriate consultation and referral mechanisms for the optimal clinical management of patients on the Vascular Neurology and Neurocritical care service</li> </ul>	<p><b>Outcomes</b></p> <p>Rotation Evaluation Informal observation</p>
<p><b>Goal:</b> <i>In the community system, vascular neurologists shall demonstrate the following:</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Recognize the limitations of healthcare resources and demonstrate the ability to act as an advocate for patients within their sociocultural and financial constraints</li> <li>• Demonstrate knowledge of the legal aspects of vascular and critical care neurological diseases as they impact patients and their families</li> <li>• Demonstrate an understanding of risk management</li> </ul>	<p><b>Measurement/ Outcomes</b></p> <p>Rotation Evaluation Informal observation</p>
<p><b>Goal:</b> <i>Demonstrate knowledge of and interact with managed health systems, including:</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Participating in utilization review communications and, when appropriate, advocating for quality patient care</li> <li>• Educating patients concerning such systems of care</li> <li>• Vascular neurologists shall demonstrate knowledge of community systems of care and assist patients to access appropriate care and other support services</li> </ul>	<p><b>Measurement/ Outcomes</b></p> <p>Rotation Evaluation Informal observation</p>

### Neuro-Radiology

**General description:** The Neuroradiology rotation will consist of reading vascular neuroradiology studies including MRI scans, CT scans (with an emphasis on CT perfusion scans), non-invasive angiograms such as carotid duplex, MR angiograms and CT angiograms as well as catheter directed angiograms. During this rotation, the fellow will also be given the opportunity to observe interventional neurovascular procedures performed by the radiologists. It should be emphasized that the neuroradiology experience is not confined to the neuroradiology rotations but rather will be a consistent exposure during essentially all of the rotations.

**Preceptor:** The primary preceptor will be assigned at the beginning of the rotation.

**Logistics:** During the Neuroradiology rotation, the Vascular Neurology fellow should observe any vascular and interventional procedures undergoing each day. When there are no vascular procedures underway, the vascular fellow should spend the rest of their time in the Neuroradiology suite reading studies prior to staff reading the same studies.

**Goals and Objectives:** The following table lists Neuroradiology Rotation specific goals and competencies. It also details the methods that will be used to determine your attainment of the specific goals.

<b>CORE COMPETENCY: PATIENT CARE</b>	
<p><b>Goal:</b> <i>Demonstrate a satisfactory level of competence in interpretation of Neuroradiology studies including.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• This will include demonstrated competence in the following:               <ul style="list-style-type: none"> <li>○ Computed tomography of brain</li> <li>○ Computed tomography of spine and spinal cord</li> <li>○ Magnetic resonance imaging of brain</li> <li>○ Magnetic resonance imaging of the spinal and spinal cord</li> <li>○ PET and SPECT</li> <li>○ Conventional arteriography and venography</li> <li>○ CT angiography of intracranial and extracranial vessels</li> <li>○ MR angiography of intracranial and extracranial vessels</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p> <p>Informal observation</p>
<p><b>Goal:</b> <i>Demonstrate an understanding of the utility and limitations of MRI, CT, PET, SPECT, and fluoroscopy for various neurologic disorders and clinical situations.</i></p> <p><b>Objective:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate ability to determine when one study may be preferable to another for a particular clinical question or patient condition.</li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p> <p>Informal observation</p>
<b>CORE COMPETENCY: MEDICAL KNOWLEDGE</b>	
<p><b>Goal:</b> <i>Demonstrate knowledge of Neuroradiology studies.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• This will include knowledge of the following:               <ul style="list-style-type: none"> <li>○ Clinical applications</li> <li>○ Diagnostic sensitivity and specificity of each study for a particular indication or clinical question</li> <li>○ Limitations of each study</li> </ul> </li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p> <p>Informal observation</p>
<b>CORE COMPETENCY: INTERPERSONAL COMMUNICATION SKILLS</b>	
<p><b>Goal:</b> <i>Demonstrate interpersonal and communication skills that result in effective information exchange and learning with other health care providers.</i></p> <p><b>Objectives:</b></p>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p>

<ul style="list-style-type: none"> <li>• Demonstrate practice of collegial and clear communications with Neuroradiology staff and technologists</li> <li>• Demonstrate practice of rapid and accurate communication of Neuroradiology results to the requesting service</li> </ul>	<p>Informal observation</p>
<b>CORE COMPETENCY: PRACTICE BASED LEARNING</b>	
<p><b>Goal:</b> <i>Demonstrate the ability to evaluate their own technical and diagnostic skills with neuroradiology studies; appraise and assimilate scientific evidence and improve their patient care practices.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Identify and knowledge gaps in personal knowledge and skills.</li> <li>• Develop and implement strategies for filling gaps in knowledge and skills.</li> <li>• Commit to professional scholarship through critical perusal and use of relevant print and electronic literature, and practice of evidence-based medicine.</li> <li>• Facilitate education of residents, students and other health professionals.</li> <li>• Accept and respond positively to feedback</li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p> <p>Informal observation</p>
<b>CORE COMPETENCY: PROFESSIONALISM</b>	
<p><b>Goal:</b> <i>Demonstrate professional responsibility and ethical values to always place interests of patients above self interest.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate a commitment to fulfilling professional responsibilities and ethical principles and exhibit sensitivity to a diverse patient population.</li> <li>• Demonstrate ethical behavior, integrity, honesty, compassion, and confidentiality in the delivery of care, including matters of informed consent/assent, professional conduct, and conflict of interest</li> <li>• Demonstrate respect for patients and their families, and their colleagues as persons, including their ages, cultures, disabilities, ethnicities, genders, socioeconomic backgrounds, religious beliefs, political leanings, and sexual orientations</li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p> <p>Informal observation</p>
<b>CORE COMPETENCY: SYSTEMS BASED PRACTICE</b>	
<p><b>Goal:</b> <i>Demonstrate knowledge of and interact with managed health systems, and advocate on patients 'behalf.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Learn the cost of each of the diagnostic studies</li> <li>• Demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to call on system resources to provide optimal physical medicine &amp; rehab services</li> <li>• Demonstrate an understanding of diagnostic studies, health care delivery and resources in the University of Kansas Health System</li> <li>• Apply evidence-based, cost-conscious strategies to optimize care delivery</li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p> <p>Informal observation</p>

## Research

**General description:** The Vascular Neurology fellow will have 1 – 2 months of research depending on their desire. The research opportunities are quite varied. The fellow may opt to perform a systematic review of a vascular neurology topic under the direction of Dr. Gronseth or may choose primary vascular neurology research project.

**Preceptor:** The preceptor will be assigned at the beginning of the rotation.

**Logistics:** The Vascular Neurology fellow will be expected to spend most of the time in the Vascular Neurology inpatient suite working on their research project. The specific research project will be approved by faculty preceptor at the beginning of the rotation and depending on the topic, various weigh points to insure that the fellow is making progress, will be reviewed throughout the month. The goals and objectives are listed below.

**Goals and Objectives:** The following table lists Research specific goals and competencies. It also details the methods that will be used to determine your attainment of the specific goals.

<b>CORE COMPETENCY: PRACTICE BASED LEARNING</b>	
<p><b>Goal:</b> <i>Understand how to design a research project, including formulating a hypothesis and designing an experimental strategy to evaluate it.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate competence in evaluating relevant literature related to a specific research question, including type of research model and evaluation of the appropriate use of statistics</li> <li>• Demonstrate competence in formulating a testable hypothesis</li> <li>• Demonstrate familiarization with appropriate statistical methods to be used for data analysis</li> <li>• Learn to recognize and make contingency plans for potential problems in a research plan</li> <li>• Ability to understand how clinical and basic science research results influence clinical practice</li> </ul>	<p><b>Measures/Outcomes:</b></p> <ul style="list-style-type: none"> <li>• Completion of Introduction to research research course</li> <li>• Journal Club Observation</li> <li>• Case presentations</li> </ul> <p>Rotation Evaluation (<math>\geq</math> 3 rating on competencies assessed)</p>
<p><b>Goal:</b> <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></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate competence in the appropriate methods for execution of a basic science project, including tissue processing, physiological recording, etc.</li> <li>• Demonstrate competence in troubleshooting technical problems and evaluating their impact on projects</li> </ul>	<p><b>Measures/Outcomes:</b></p> <ul style="list-style-type: none"> <li>• Research project presented for Resident/Postdoc/ Fellow research day</li> </ul> <p>Rotation Evaluation (<math>\geq</math> 3 rating on competencies assessed)</p>

<ul style="list-style-type: none"> <li>• Demonstrate competence in data collection and organization for subsequent evaluation</li> <li>• Demonstrate understanding of statistical analysis of data collected</li> <li>• Learn to evaluate results for a given project in the context of other work in the research area</li> <li>• Competence in proposing future experiments to augment results from a given project</li> </ul>	
<b>CORE COMPETENCY: INTERPERSONAL COMMUNICATION SKILLS</b>	
<p><b>Goal:</b> <i>Will become competent in presentation of research study findings, including presentations at national meetings as well as preparing a manuscript for publication.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate competence in summarizing data in abstracts for presentation at regional and national meetings</li> <li>• Demonstrate competence in poster or oral presentation preparation for a national meeting</li> <li>• Demonstrate competence in manuscript publication in a peer-reviewed journal, including preparation of figures</li> <li>• Learn to accept and utilize critical evaluation of one’s work</li> </ul>	<p><b>Measures/Outcomes:</b></p> <ul style="list-style-type: none"> <li>• Observation of Journal club presentations</li> <li>• At least 1 submission to peer review journal OR</li> <li>• At least 1 abstract/ oral or poster presentation at regional meeting</li> </ul> <p>Rotation Evaluation (≥ 3 rating on competencies assessed)</p>
<b>CORE COMPETENCY: PROFESSIONALISM</b>	
<p><b>Goal:</b> <i>Become familiar with research regulations and ethics.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate understanding and ability to navigate through the Human Subjects Committee approval process, including knowledge of what approvals are necessary for specific project types</li> <li>• Demonstrate competency in privacy regulations regarding use of patient data</li> <li>• Successfully gain IRB approval for all projects involving human subjects</li> <li>• Successfully gain IACUC approval for all projects involving animals</li> <li>• Understand the issues surrounding appropriate treatment of research subjects</li> </ul>	<p><b>Measures/Outcomes:</b></p> <ul style="list-style-type: none"> <li>• Research lectures</li> <li>• Chalk Research modules score 85%</li> </ul> <p>Rotation Evaluation (≥ 3 rating on competencies assessed)</p>

**Rehabilitation**

**General description:** The Rehabilitation rotation is an eclectic month emphasizing post-acute stroke care. The Vascular Neurology fellow will have the opportunity to see many post stroke patients in the

outpatient rehabilitation setting. In this setting, the fellow will get the opportunity to work with physical therapists, occupational therapists, and speech pathologists. Additionally, the Vascular Neurology fellow will accompany geriatricians and geriatric fellows rounding at various nursing homes on post-stroke patients. During the rehabilitation month, the Vascular Neurology fellow will spend several half-days per month performing transcranial dopplers with the vascular laboratory technicians and interpreting these studies with a vascular surgeon. This will supplement the carotid duplex exposure during the neuroradiology rotation.

**Preceptor:** The primary preceptor will be assigned at the beginning of the rotation.

**Logistics:** Because of the eclectic nature of this rotation, it is important that the Vascular Neurology fellow coordinate with the program coordinator and the major preceptors of this rotation to work out a schedule. This will be done approximately one month before the rotation.

**Goals and Objectives:** The following table lists Rehabilitation Rotation specific goals and competencies. It also details the methods that will be used to determine your attainment of the specific goals.

<b>CORE COMPETENCY: PATIENT CARE</b>	
<p><b>Goal:</b> <i>Demonstrate a satisfactory level of diagnostic competence; provide appropriate and effective consultation, evaluation, and treatment decisions in the context of Physical Medicine &amp; Rehab services.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Learn to take complete medical histories and perform careful and accurate physical/functional examinations.</li> <li>• Learn to prescribe exercise, physical modalities, medications and medical equipment</li> <li>• Integrate medical knowledge with clinical data and judicious use of diagnostic and therapeutic procedures</li> <li>• Define and prioritize patients' rehabilitation goals and medical issues</li> <li>• Provide therapeutic care plans</li> <li>• Promote health and function and prevention of disease and injury</li> <li>• Recognize and respond appropriately to psychosocial aspects of illness and functional limitations</li> <li>• Recognize the role of patient advocacy and serve as a patient advocate.</li> </ul>	<p><b>Measurement/ Outcomes</b></p> <p>Rotation Evaluation (≥ 3 rating on all competencies)</p> <p>Informal observation</p>
<b>CORE COMPETENCY: MEDICAL KNOWLEDGE</b>	
<p><b>Goal:</b> <i>Demonstrate knowledge of PM&amp;R with a greater focus on patients with cerebrovascular disease but including a variety of orthopedic and neurologic diagnoses.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate general knowledge of clinical manifestations, diagnosis, and management of disabilities and medical problems encountered on a general rehabilitation inpatient ward,</li> <li>• Demonstrate general knowledge of clinical manifestations, diagnosis, and management of disabilities and medical problems encountered on a general rehabilitation consultation service,</li> </ul>	<p><b>Measurement/ Outcomes</b></p> <p>Rotation Evaluation (≥ 3 rating on all competencies)</p> <p>Informal observation</p>

<ul style="list-style-type: none"> <li>• Demonstrate general knowledge of clinical manifestations, diagnosis, and management of disabilities and medical problems encountered on a general rehabilitation outpatient service, focusing on patients with cerebrovascular disease but including a variety of orthopedic and neurologic diagnoses.</li> <li>• Demonstrate knowledge of the role of physical therapy, occupational therapy, speech and swallow therapy in treatment of patients</li> </ul>	
<b>CORE COMPETENCY: INTERPERSONAL COMMUNICATION SKILLS</b>	
<p><b>Goal:</b> <i>Demonstrate interpersonal and communication skills that result in effective information exchange and learning with other health care providers, patients, and patients' families.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Ability to listen to and understand patients and to attend to nonverbal communication</li> <li>• Ability to communicate effectively with patients using verbal, nonverbal, and written skills as appropriate</li> <li>• Ability to develop and maintain a therapeutic alliance with patients by instilling feelings of trust, honesty, openness, rapport, and comfort in the relationship with physicians</li> <li>• Ability to partner with patients to develop an agreed upon healthcare management plan</li> <li>• Ability to transmit information to patients in a clear and meaningful fashion</li> <li>• Ability to understand the impact of physicians' own feelings and behavior so that it does not interfere with appropriate treatment</li> <li>• Ability to communicate effectively and work collaboratively with allied healthcare professionals and with other professionals involved in the lives of patients and families</li> <li>• Ability to educate patients, their families, and professionals about medical, psychosocial, and behavioral issues</li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p> <p>Informal observation</p>
<b>CORE COMPETENCY: PRACTICE BASED LEARNING</b>	
<p><b>Goal:</b> <i>Demonstrate the ability to evaluate their own diagnostic and consultative practices, appraise and assimilate scientific evidence and improve their patient care practices.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Identify and knowledge gaps in personal knowledge and skills.</li> <li>• Develop and implement strategies for filling gaps in knowledge and skills.</li> <li>• Commit to professional scholarship through critical perusal and use of relevant print and electronic literature, and practice of evidence-based medicine.</li> <li>• Facilitate education of residents, students and other health professionals.</li> <li>• Accept and respond positively to feedback</li> </ul>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation (≥ 3 rating on all competencies)</p> <p>Informal observation</p>
<b>CORE COMPETENCY: PROFESSIONALISM</b>	
<p><b>Goal:</b> <i>Demonstrate professional responsibility and ethical values to always place interests of patients above self interest.</i></p>	<p><b>Measurement/ Outcomes</b> Rotation Evaluation</p>

<p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate a commitment to fulfilling professional responsibilities and ethical principles and exhibit sensitivity to a diverse patient population.</li> <li>• Demonstrate ethical behavior, integrity, honesty, compassion, and confidentiality in the delivery of care, including matters of informed consent/assent, professional conduct, and conflict of interest</li> <li>• Demonstrate respect for patients and their families, and their colleagues as persons, including their ages, cultures, disabilities, ethnicities, genders, socioeconomic backgrounds, religious beliefs, political leanings, and sexual orientations</li> </ul>	<p>(≥ 3 rating on all competencies)</p> <p>Informal observation</p>
<p><b>CORE COMPETENCY: SYSTEMS BASED PRACTICE</b></p>	
<p><b>Goal:</b> <i>Demonstrate knowledge of and interact with managed health systems, including:</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate an awareness and responsiveness to the larger context and system of health care</li> <li>• Demonstrate an understanding of medical and rehabilitation practices, health care delivery and resources in the University of Kansas Health System</li> <li>• Apply evidence-based, cost-conscious strategies to optimize care delivery</li> </ul>	<p><b>Measurement/ Outcomes</b></p> <p>Rotation Evaluation (≥ 3 rating on all competencies)</p> <p>Informal observation</p>

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## VASCULAR NEUROLOGY FELLOW CLINIC

Vascular Neurology fellow will have their own, supervised, vascular neurology clinic. This clinic is staffed by the Vascular Neurology faculty. The fellow has their own assigned patients and will present patients to the vascular neurology attending. The fellow should follow anywhere from 55 to 70 outpatients. The fellow is expected to respond to phone calls (trriages through a neurology nurse) about your patients. The goal is to follow as many stroke inpatients as possible in this clinic.

Note that although you are supervised by a vascular neurology attending, during your fellowship you are expected to directly manage your patients. The fellow is the first to see the patient. Subsequently the fellow independently formulates a differential diagnosis, diagnostic evaluation plan and treatment plan. This completed plan is presented to the vascular neurology attending. Subsequently the attending, accompanies the fellow, sees the patient to confirm the salient finding (usually briefly). After leaving the clinic room, the attending and fellow discuss the plan making modifications if necessary. Then the fellow re-enters the clinic room to discuss the diagnosis and plan with the patient and family. The fellow is the first and last physician to interact with the patient during the visit.

## DIDACTICS

	<b>Time</b>	<b>Conference</b>	<b>Location</b>	<b>Faculty</b>
Wednesday	3:00-4:00 pm	Vascular Neurology Didactic Lecture*	1020 Wescoe	Vascular Faculty
Thursday	8:00-9:00 am	Evidence Based Medicine*	112C Support Services	Gronseth
	12:00 – 1:00 pm	Weekly stroke conference (review of vascular neurology cases)*	1020 Wescoe	Vascular Faculty
Friday	7:00-8:00 am	Case Presentation Conference in Neurology and Neurosurgery*	Clendening Auditorium	Residents and Faculty
	8:00-9:00 am	Neurology Grand Rounds*	Clendening Auditorium	Faculty

\*Mandatory attendance

Vascular Neurology Didactic Lecture on Wednesday will include clinical and basic science teaching. Each week will be completed with the vascular faculty on Wards. The Vascular fellow will have protected time with no clinical responsibility during this lecture.

Additionally, there is a daily neurovascular conference at 4:30 pm Monday where interesting cases are reviewed. This occurs typically occurs in one of the Cambridge conference rooms.

Journal club will be scheduled monthly to review and discuss vascular studies or recent guidelines. Attendance is mandatory.

The Vascular Fellow will prepare and run the monthly vascular PIPs

Once a year, the vascular neurology fellow will present a vascular neurology didactic topic of their choosing at Neurology grand rounds.

There are three formal didactic series for which you will be assigned reading materials by the didactic presenter. These occur every week or monthly (based on unanticipated conflicts, the schedule may vary somewhat from the schedule presented). These didactic sessions are one on one and emphasize Clinical Vascular Neurology, Evidence-based (EBM) Vascular Neurology and Basic Science Vascular Neurology. Reading assignments to be completed for each session will be assigned by the faculty. Any textbooks provided are on loan only and are to be returned at the end of the lecture series. Conference attendance should be tracked in MedHub.

### WEEKLY DIDACTIC AND BASIC SCIENCE CURRICULUM (MANDATORY)

<b>Assignment</b>	
Chapter 1 – Classification of Stroke, Commonly Used Terms in Cerebrovascular Disease, and the Pathophysiology of Stroke	Pages 1-18
Chapter 2 – Epidemiology of Stroke	Pages 19-30 Prognosis of Ischemic or Hemorrhagic Stroke

Chapter 2 – Epidemiology of Stroke	Pages 30-40 Prognosis of Ischemic or Hemorrhagic Stroke
Chapter 3 – Organizing Stroke Management Resources	Pages 41-54
Chapter 4 – Modifiable Risk Factors for Stroke: Diagnosis and Management	Pages 55-62 Epidemiology
Chapter 4 – Modifiable Risk Factors for Stroke: Diagnosis and Management	Pages 62-76 Epidemiology
Chapter 5 – Asymptomatic Carotid Artery Disease, Transient Ischemic Attacks, and Ocular Manifestations of Cerebrovascular Disease	Pages 77-89
Chapter 6 – Clinical Manifestations of Ischemic Stroke	Pages 90-102 Occlusion of the Anterior Choroidal Artery
Chapter 6 – Clinical Manifestations of Ischemic Stroke	Pages 102-116
Chapter 7 – Clinical Manifestations of Hemorrhagic Stroke	Pages 117-130
Chapter 11 – Infections and Inflammatory Vasculitides Causing Ischemic or Hemorrhagic Stroke	All of chapter
Chapter 9 – Atherosclerotic Disease	All of chapter
Chapter 10 – Nonatherosclerotic, Non-Inflammatory Arteriopathies Causing Ischemic Stroke	All of chapter
Chapter 12 – Genetic Causes of Stroke	All of chapter
Chapter 13 – Cardiogenic Embolism	All of chapter
Chapter 14 – Disorders of Coagulation That Cause Hemorrhagic or Ischemic Stroke	All of chapter
Chapter 15 – Intracranial Aneurysms and Vascular Malformations	All of chapter
Chapter 16 – Causes of Intracranial Hemorrhage	All of chapter
Chapter 17 – Stroke in Children and Young Adults	All of chapter
Chapter 18 – Venous Thrombosis, Pituitary Apoplexy and Vascular Disease of the Spinal Cord	All of chapter

## NEUROCRITICAL CARE LECTURES

Some lecture series will be provided during specific rotations. The following is a list of neurocritical care lectures available to you during your Neuro ICU rotation

Intracranial Pressure Monitoring	Neuro ICU Faculty
Ischemic Stroke	Neuro ICU Faculty
Myasthenia Gravis ICU Management	Neuro ICU Faculty
Airway and Ventilator Management	Neuro ICU Faculty
HTN Management	Neuro ICU Faculty
Subarachnoid Hemorrhage	Neuro ICU Faculty
Traumatic Brain Injury	Neuro ICU Faculty
Intracranial Hemorrhage	Neuro ICU Faculty
Brain Death	Neuro ICU Faculty
Transcranial Doppler	Neuro ICU Faculty
Hemodynamic Monitoring	Neuro ICU Faculty

NA Disturbances	Neuro ICU Faculty
CNS Infections	Neuro ICU Faculty
Management of Patients with Intracranial Hypertension	Neuro ICU Faculty

There are many neurology and medical didactic sessions available to you throughout your fellowship. You are encouraged to attend these if desired. Schedules will be available throughout the year.

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## WORK HOURS

Work hours are defined as all clinical and academic activities related to the residency program, i.e., patient care (both inpatient and outpatient), administrative duties related to patient care, the provision for transfer of patient care, time spent in-house during call activities, and scheduled academic activities such as conferences. Work hours do not include reading and preparation time spent away from the worksite.

Work hours are limited to 80 hours per week, averaged over a four-week period, inclusive of all in-house call activities.

Fellows are provided with one day in seven free from all educational and clinical responsibilities, averaged over a four-week period, inclusive of call. One day is defined as one continuous 24-hour period free from all clinical, educational, and administrative activities.

Adequate time for rest and personal activities must be provided. This should consist of an eight-hour period provided between all daily work periods and at least 14 hours after in-house call.

The institutional policy on work hours is detailed in the Policy and Procedure Manual Governing Graduate Medical Education at the University of Kansas School of Medicine. Fellows are required to log their work hours weekly in MedHub.

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## CALL SCHEDULE

The call schedule is constructed as to not be so frequent as to preclude rest and reasonable personal time for the fellow. Call and rotation schedules provide the fellow with one day in seven completely free from all educational and clinical responsibilities, averaged over a four week period. The Program Director, as well as the faculty, monitor the demands of call in the vascular neurology program and make scheduling adjustments as necessary to mitigate excessive service demands or fatigue.

While on the KU inpatient services, the vascular neurology fellow takes call from home one week of call a month. The fellow supervises the general neurology resident in-house caring for admitted stroke patients and new stroke consults in the ED and hospital. The level of supervision depends on the complexity of the case and the experience of the resident. If necessary, the vascular neurology fellow is expected to

personally evaluate stroke patients. For the first four months on call, the fellow is required to “check-out” all patients staffed with the vascular neurology attending on call.

The fellow does not have call responsibilities during other KU rotations.

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## HAND-OFF POLICY

Transitions in care are difficult. Every effort must be made by our residents and fellows for smooth transitions in care for patients on the vascular neurology service. The key elements in care transitions are:

- The patient knows who is providing care for them at the resident, fellow and faculty levels
  - The residents (including the vascular neurology fellow) introduce themselves to the patient when they first meet and when another resident takes over
  - The faculty introduce themselves to the patient when they first meet
- Resident to resident stroke service hand-off is handled in person at the start of each call day and, at the end of the day, the residents check out to the on-call neurology resident. When on call, the vascular fellow participates in these hand-off discussions
- At the end of the rotation or during absences, a resident generates the check-out sheet to the oncoming or cross-covering resident (including the vascular fellow when the fellow is on the inpatient stroke service). The check-out sheet has the pertinent demographic information, urgent test results to be followed-up, and current treatment plan of all patients on the stroke service. It is preferred that this be kept electronically and then wiped from memory. If a paper copy is used, it must be placed in a shred box when done
- At the end of each week (for the weekend), and on Monday, the stroke service faculty changes. The outgoing stroke service faculty discusses the current status of all patients with the on-coming attending either face to face or via phone call. When the vascular fellow is on the inpatient stroke service (a month at a time excluding weekends, unless on call) facilitates these hand-offs during inpatient stroke rounds.

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## DAILY PATIENT LIST/PATIENT ENCOUNTER DOCUMENTATION

Fellows are required to maintain a Patient Encounter Log. Booklets and actual report copies allow fellows to document patient demographics, diagnoses, hospital or clinic setting. Usually, these documents are helpful in the credentialing process when you start your career. Fellows will maintain this individually in either a Word or Excel file and submit to the Program Director at least quarterly for review.

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## MEDICAL RECORDS GENERATION AND DICTATION

Fellows are responsible for the dictation and/or completion of all patient reports on the day of service for all cases in which he/she has participated. Medical records must be completed in a timely fashion on the same day of interaction.

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## LIBRARY AND FELLOW OFFICES

Library services consist of electronic retrieval from medical databases. There is on-site access to textbooks and journals in Neurology's Ziegler Library, located at the Support Services Facility Ste 112. These are available during nights and weekends as well. A dedicated computer for fellows to perform journal searches is available in the vascular neurology fellow's office in the neurology inpatient services suite (Wescoe).

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## EVALUATIONS

### FACULTY AND PROGRAM EVALUATIONS

The fellows are required to evaluate each faculty member and the program. To maintain confidentiality, the fellow's evaluation of faculty is pooled with the neurology residents' evaluations. Opportunities to evaluate the program are provided at the time of the fellow's semi-annual evaluation and summative evaluation. Additionally, the fellow participates in completion of the annual program evaluation form.

### EVALUATION OF FELLOWS

One of the advantages of the Vascular Neurology Fellowship is that there is only one fellow a year. This allows a constant one-on-one teaching experience with the vascular neurology fellows. This will facilitate constant feedback relative to your performance.

Faculty evaluate fellows every month. Evaluations include judging the fellow's knowledge, basic clinical competence, both general skills in the primary specialty and specific technical skills, overall performance, the development of professional attitudes consistent with being a physician, ethical behavior and professionalism. The Program Director will review evaluations with the fellow on a semi-annual basis. The summary and final evaluation of the resident in vascular neurology will be prepared by the Program Director of the Vascular Neurology training program and will reflect the periodic evaluation by all teaching faculty and will be signed by the fellow. These may be reviewed upon request. Each fellow is required to be proficient in the clinical and technical skills determined to be necessary for a vascular neurology specialist and any related standards relevant to neurology. Advancement to positions of higher responsibility is in accordance to performance. A permanent record is kept of the final evaluations.

If problems arise in your performance, there will be ample opportunities for remediation. If the problem rises to the level of requiring more formal interventions, the program director will identify for you any specific deficits, document all areas requiring remediation or additional concentration, and provide additional recommendations for remediation of specific deficiencies.

### FACULTY AND PROGRAM EVALUATIONS

The fellows are required to evaluate each faculty member and the program. To maintain confidentiality, the fellow's evaluation of faculty is pooled with the neurology residents' evaluations. Opportunities to evaluate the program are provided at the time of the fellow's semi-annual evaluation and summative evaluation. Additionally, the fellow participates in completion of the annual program evaluation form.

### **MILESTONES**

Outcomes based milestones have been developed as a framework for determining resident and fellow performance within the six ACGME core competencies. Each milestone is a competency based developmental outcome that can be demonstrated progressively by residents and fellows from the beginning of their education through graduation to the unsupervised practice of their specialties.

For program accreditation, milestones allow for continuous monitoring of programs, provide accountability by reporting on aggregate competency outcomes by specialty at a national level and focus on continuous improvement of graduate medical education. For the educational program, milestones provide a framework for clinical competency committees, guide curriculum development, support better assessment practices, and enhance opportunities for early identification of struggling residents and fellows. For the residents and fellows, milestones provide more explicit and transparent expectations of performance, support better self-directed assessment and learning, and facilitate better feedback for professional development.

### **CLINICAL COMPETENCY COMMITTEE**

A Clinical Competency Committee (CCC) has been established under ACGME guidelines to provide a process for early identification of residents who are having difficulties. To this end the CCC, composed of no less than three members of the program faculty, meets at least twice a year to use the vascular neurology Milestones to achieve a more objective assessment of the fellow, to get better feedback, to provide earlier detection of a resident having difficulty, and earlier intervention and remediation when necessary.

### **PROGRAM EVALUATION COMMITTEE**

The Program Evaluation Committee (PEC), composed of at least two faculty members and the fellow, is appointed by the program director and actively participates in planning, developing, implementing and evaluating the educational activities of the program. The primary monitors and tracks resident performance, faculty development, graduate performance (including performance on certification examinations), and program quality. Faculty and residents are given the opportunity to confidentially evaluate the program, in writing, annually. These results, along with progress on the previous year's action plans, are used to track ongoing program improvements and help document progress for the Self-Study visits required by the ACGME.

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## **PROFESSIONAL CONDUCT**

Vascular Neurology is a clinically and research-oriented discipline that always requires professional conduct and decorum when interacting with patients, nurses, technicians, attendings, residents, and administrative and support personnel of the department. It is expected that fellows carry out their clinical and administrative responsibilities in a timely, courteous, and trustworthy manner at

all times. If a personal conflict or problem arises with another individual (faculty, fellow, resident, student, or staff), the resident has the right to file an official grievance with the Program Director.

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## RESPONSIBILITIES TO RESIDENT EDUCATION

Fellows are responsible for actively teaching and supervising neurology residents regarding vascular neurology, primarily during the inpatient and Neuro ICU months. This is a learning experience for the residents and fellows, so feedback and constructive criticism is very helpful throughout the month. If problems arise that cannot be resolved between the fellow and resident, they should be brought to the attention of the Program Director.

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## ACADEMIC DISCIPLINE

Fellow evaluations will be used to monitor a fellow's progress and performance. Occasionally, it is necessary to counsel a fellow regarding their weaknesses and problem areas to address these issues early. Failure to rectify problems may lead to a formal sequence of disciplinary actions, which can lead to probation or dismissal from the program. Disciplinary action will be administered according to the Policy and Procedure Manual Governing Graduate Medical Education at the University of Kansas School of Medicine (Section 12).

Fair procedures for academic discipline and resident complaints or grievances are in accordance with institutional policies. The Program Director is responsible for monitoring resident stress, including mental or emotional conditions inhibiting performance or learning and drug- or alcohol-related dysfunction. The Program Director and teaching staff will be sensitive to the need for timely provision of confidential counseling and psychological support services to residents. Training situations that consistently produce undesirable stress on fellows will be evaluated and modified.

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## LEAVE POLICY

All requests for any form of leave (vacation, professional, sick, funeral, leave of absence, FMLA, etc.) must be approved by the Program Director. Fellows are required to complete a request form for absence when planning any leave including vacation or professional leave (to attend meetings). The fellow must submit a leave of absence for in MedHub for program approval at least 30 days in advance. The fellow should notify, in writing, affected faculty members of their absence at least 30 days in advance. Further questions should be addressed to the Program Director. Vacation must be requested from and approved by, the Program Director or a designee in advance in a

manner prescribed by the program. Denial of a specific request for vacation is a management decision on the part of program and is not a grievable matter.

The program will provide up to a maximum of three weeks (15 working days) of vacation per contract year, which is covered by the resident stipend.

Fellows are required to report to work during periods of inclement weather unless directed otherwise by their Program Director. Absent extenuating circumstances, a fellow who is unable to report to work, must coordinate with their Program Director to arrange for coverage.

The University will provide up to ten workdays of sick leave per year to cover personal illness or illness in the resident's immediate family (spouse, parents, or children). The use of sick leave must be approved by the Program Director or the Department Chair. At the discretion of the Chair or Program Director, a physician's written statement may be required as a condition of approval for sick leave. The University may also require a certification that the fellow is released to return to work following three more consecutive days of absence resulting from the fellow's own illness

Paid leave, (e.g., vacation, sick) cannot be accumulated or carried over from contract year to contract year.

A fellow eligible for FMLA leave may request FMLA designation pursuant to the University's FMLA policy for up to twelve weeks of leave per academic year or contract year (*please refer to Section 5 of the GME Policy and Procedure Manual for details*). A resident who does not qualify for FMLA or who has used the maximum amount of FMLA for the year but who still requires relief from the responsibilities of the program may request a Leave of Absence (*please refer to Section 5 of the GME Policy and Procedure Manual for details*).

For more information on the available State of Kansas Paid Parental Leave Benefit, please refer to Section 5.5.12 of the GME Policy and Procedure Manual.

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## FELLOW ASSISTANCE AND ACCESS TO COUNSELING

The University is interested in the health and well-being of all fellows and assists those with personal problems involving alcohol, drugs, family, marriage, financial, emotional, or other conditions that may interfere with work attendance, productivity, and the ability to get along with co-workers. The Assistance Program is designed to provide information, assessment, and referral services to help faculty, staff, fellows, residents, and students identify problems and develop lifestyles that are physically and emotionally healthy. Many of these services are without cost or on a sliding-fee basis depending on the facility used (*please refer to Section 18 of the GME Policy and Procedure Manual for details*).

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## BENEFITS

All fellows must receive benefits as prescribed in the Policies and Procedures Governing Graduate Medical Education. All fellows are given the following benefits (*please refer to Section 5 of the GME Policy and Procedure Manual for details*):

- 1. Health, Dental and Vision Insurance and Flexible Spending and Health Savings Account**  
House staff and their families are eligible for the State of Kansas Employee's Group Health, Dental and Vision Insurance and Flexible Spending and Health Savings Account. Coverage begins on the first day of the month following the first 30 days of employment. Premiums are deducted from the paycheck.
- 2. Professional Liability Insurance**  
Kansas Statutes Annotated (KSA 40-3401 et seq) provides professional liability coverage and tail coverage for fellows for acts committed while carrying out their program responsibilities in the amounts of \$1,000,000 per occurrence and \$3,000,000 annual aggregate. Tail coverage assures that, even after residents and fellows have completed their training at KUMC, any claims brought as a result of those training activities will continue to be covered by their resident/fellow policy
- 3. Worker's Compensation**  
Through the Kansas Self-Insurance Fund, benefits are provided to residents and fellows who are injured performing their job duties
- 5. ACLS, PALS, NRP or ATLS Training**  
Residents are provided initial certification fees (including books) for ACLS, PALS, NRP or ATLS certification. Programs are responsible for renewal costs during the fellowship program. However, charges assessed for fellows who do not attend their scheduled sessions, or for repeat classes after failing a certification course, are the responsibility of the fellow.
- 6. Pagers/VOALTE/Phones**  
Pagers are provided at no cost. Charges may be assessed if pagers are lost or damaged. Fellows must acquire and/or use in performance of their duties, a personal smart phone that meets University of Kansas Hospital's technical requirements. Fellows receive a smart phone stipend, the amount of which is determined and communicated to fellows on a yearly basis.
- 7. Parking**  
Fellows are provided parking in P5 as part of the Standardized Benefits package. Parking is also free of charge on site at the KU ADC.
- 8. White Coats**

Programs are provided a stipend for fellow White Coats as part of the Standardized Benefits.

## **9. Education Funds**

An annual professional development fund of up to \$5,500 will be provided. See Education Fund section for more information on the process and allowable expenses.

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## **TRAVEL PROCEDURES**

The Program Director will base financial support for travel of fellows who are presenting at the American Academy of Neurology annual meeting or the annual Ischemic Stroke conference. Fellows need permission by the Program Director for travel and fellows must complete an absence form at least one month in advance. Expenses will be reimbursed according to KU policy which requires original receipts for reimbursement. A leave request must be submitted in MedHub before travel dates. The fellow will notify, in writing, faculty members affected by their absence. This should be done 30 days in advance. Questions should be addressed to the Program Director.

For international travel, in addition to program approval fellows should consult at least two months in advance with the Office of International Programs (Kimberly Connelly or Irina Aris). *Please refer to Section 21 of the GME Policy and Procedure Manual for guidelines on international travel.*

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## **EDUCATION FUNDS**

Fellows are provided an annual “education fund” for \$2,000 annually to be used for educational enhancement and expensed incurred during training not covered by the GME Standardized Benefits.

### **Procedure:**

- Reimbursement of expenses will be charged against your annual allowance in which the expenses are submitted (i.e. funds do not carry-over from year to year).
- Requests for reimbursement are expected to be submitted within 60 days of the date the expense was incurred, or for conference/travel/exam related expense, within 60 days of the date of the event.
- Submit your expenses with itemized receipts to the Program Coordinator.
- Your Program Coordinator tracks your allowance and can provide you your balance at any time you wish.

### **Reimbursable Items:**

- Dues and application fees paid for membership in professional societies, such as the American Academy of Neurology
- Initial board certification exams, licenses, and associated training costs provided these expenses are reimbursed after the fellow's start date
- Professional Journals
- Practice-related reference materials and program software (e.g. textbooks, eBooks, apps for smartphones and e-subscriptions)
- Registration fees for Continuing Medical Education (CME) incurred after the fellow's start date
- Travel expenses – reimbursement for reasonable travel expenses for the fellow will be allowed for attendance at educational conferences/programs, to complete board certification, and other work-related travel as approved by Program Director
  - Lodging – Itemized hotel receipts are required. The hotel stay will generally be reimbursed at the standard room rate for the duration of work-related function only. Upgrades will be the fellow's expense. Additional nights for personal or non-work-related business are the fellow's responsibility.
  - Air Travel – Original tickets/passenger receipts must be presented. The fellow will be reimbursed at the coach rate with other reasonable air travel expenses included (early boarding, baggage fees, etc.). Additional airline travel or additional routes that are personal during the business or CME trip are the fellow's expense.
  - Personal automobile travel – If fellow prefers to use their automobile, mileage will be reimbursed at the current mileage rate established by the IRS plus fees for parking and tolls.
  - Rental vehicles – It is expected that if reimbursement for an automobile rental is requested, it represents the most practical and economical means for out of town travel. Luxury Class rentals will not be reimbursed.

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## HOLIDAYS

The fellowship program and the Department of Neurology at the University of Kansas Medical Center observe eight holidays each academic year. These holidays are as follows:

- a) Independence Day
- b) Labor Day
- c) Thanksgiving Day
- d) The day after Thanksgiving
- e) Christmas Day
- f) New Year's Day
- g) Martin Luther King Day
- h) Memorial Day

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## MOONLIGHTING POLICY

Fellows are not required to engage in moonlighting. If a fellow chooses to moonlight, the time spent in doing so must be personal free time away from the training program. The moonlighting workload must not interfere with the ability of the fellow to achieve the goals and objectives of the training program. Time spent by fellows in internal and external moonlighting must be counted towards the 80-hour maximum weekly work hour limit. The Program Director will monitor fellow performance to assure that factors such as fatigue are not contributing to diminished learning or performance or detracting from patient safety. Under the institutional requirements, there must be written acknowledgment by the Program Director that a fellow is engaged in moonlighting and signed by the GME. In it, the fellows are required to report the hours spent moonlighting. The acknowledgment must be kept in the fellow's file. All fellows engaged in moonlighting must be licensed for unsupervised medical practice in the state where the moonlighting occurs. It is the responsibility of the institution hiring the fellow to moonlight to determine whether such licensure is in place, adequate liability coverage is provided, and whether the fellow has the appropriate training and skills to carry out assigned duties. *For more details, please consult Section 16 of the GME Policy and Procedure Manual.*

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## FACULTY

Michael Abraham, MD	Associate Professor, Department of Neurology
Kathrin Husmann, MD	Associate Professor, Department of Neurology Section Chief, Neurocritical Care
Colleen Lechtenberg, MD	Associate Professor, Department of Neurology Program Director, Vascular Neurology Fellowship Section Chief, Vascular Neurology
Laith Maali, MD	Assistant Professor, Department of Neurology Associate Program Director, Vascular Neurology Fellowship
Aparna Pendurthi, MD	Instructor, Department of Neurology
Abid Qureshi, MD	Assistant Professor, Department of Neurology
Lee Rosterman, DO	Assistant Professor, Department of Neurology Associate Program Director, Vascular Neurology Fellowship
Sabreena Slavin, MD	Assistant Professor, Department of Neurology
Yunxia Wang, MD	Professor, Department of Neurology Division Chief, Inpatient Neurology Vice Chair, Education Clerkship Director, Neurology