

**ACGME Program Requirements for Graduate Medical Education  
in Neuroendovascular Intervention (Proposed name change for Endovascular Surgical  
Neuroradiology)  
Summary and Impact of Major Requirement Revisions**

<p>Requirement #: <b>N/A – Subspecialty Name</b></p> <p>Requirement Revision (significant change only):</p> <p><b><del>Endovascular Surgical Neuroradiology</del> Neuroendovascular Intervention</b></p> <p>1. Describe the Review Committee’s rationale for this revision:  <b>The Review Committee, in collaboration with the Review Committees for Neurology and Neurological Surgery, determined that while this area of study goes by many different names in practice, the current name of endovascular surgical neuroradiology is not inclusive as it does not encompass the intervention portion of the subspecialty.</b></p> <p>2. How will the proposed requirement or revision improve resident/fellow education, patient safety, and/or patient care quality?  <b>N/A</b></p> <p>3. How will the proposed requirement or revision impact continuity of patient care?  <b>N/A</b></p> <p>4. Will the proposed requirement or revision necessitate additional institutional resources (e.g., facilities, organization of other services, addition of faculty members, financial support; volume and variety of patients), if so, how?  <b>N/A</b></p> <p>5. How will the proposed revision impact other accredited programs?  <b>N/A</b></p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<p>Requirement #: <b>Int.C.</b></p> <p>Requirement Revision (significant change only):</p> <p><del>The program shall offer one year of graduate medical education in endovascular surgical neuroradiology.</del><sup>(Core)*</sup> <u>The educational program in neuroendovascular intervention must be at least 24 months in length.</u><sup>(Core)</sup></p> <p>1. Describe the Review Committee’s rationale for this revision:  <b>This major revision reflects efforts to align the requirements with the Committee on Advanced Subspecialty Training (CAST) requirements for neuroendovascular surgery. The CAST requirements emphasize a need for greater proficiency in the outpatient evaluation and care of pre- and post-procedure endovascular patients. This will necessitate that some fellows, depending on their residency background, need to complete six more months of patient care and complete a minimum of 200 neuroangiograms prior to commencing the subspecialty education and training. To allow for these additional requirements, the length of the fellowship must be expanded to 24 months.</b></p>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

2. How will the proposed requirement or revision improve resident/fellow education, patient safety, and/or patient care quality?  
**The addition of these experiences will better prepare fellows to develop competence in the subspecialty, which will enhance the quality of care provided to patients with vascular diseases, and disorders of the head, neck, and spine and their vascular supply.**
3. How will the proposed requirement or revision impact continuity of patient care?  
**N/A**
4. Will the proposed requirement or revision necessitate additional institutional resources (e.g., facilities, organization of other services, addition of faculty members, financial support; volume and variety of patients), if so, how?  
**This revision may require increased funding resources as some fellows will need the full 24-month curriculum where this educational program previously only required 12 months.**
5. How will the proposed revision impact other accredited programs?  
**N/A**

Requirement #: **II.A.2.a)**

Requirement Revision (significant change only):

The program director support required to devote non-clinical time to the administration of the program must be provided as follows: (Core)

<u>Number of Approved Fellowship Positions</u>	<u>Minimum FTE Required</u>
<u>1-3 fellows</u>	<u>0.10 FTE</u>
<u>4 or more</u>	<u>0.15 FTE</u>

1. Describe the Review Committee's rationale for this revision:  
**The Review Committee felt it appropriate to start mandating support for program directors to more formally recognize their role and efforts.**
2. How will the proposed requirement or revision improve resident/fellow education, patient safety, and/or patient care quality?  
**This will potentially improve education by providing increased clinical, supervisory, and administrative support to the fellows and the program.**
3. How will the proposed requirement or revision impact continuity of patient care?  
**N/A**
4. Will the proposed requirement or revision necessitate additional institutional resources (e.g., facilities, organization of other services, addition of faculty members, financial support; volume and variety of patients), if so, how?

The previous statements required simply “adequate” support without a minimum. In some cases, this change may represent an increase in financial support for the program director from what has been previously provided.

5. How will the proposed revision impact other accredited programs?

N/A

Requirement #: **III.A.1.b).(2)-III.A.1.b).(2).(d)**

Requirement Revision (significant change only):

Radiology Pathway 2: Fellows entering from diagnostic radiology programs are eligible to be considered for advanced placement in the second year of the neuroendovascular intervention program and:

must have completed an ACGME-, AOA-, or ACGME-I-accredited residency in diagnostic radiology or an RCPSC-accredited residency in diagnostic radiology located in Canada; and <sup>(Core)</sup>

must have completed an ACGME-, AOA-, or ACGME-I-accredited fellowship in neuroradiology or an RCPSC-accredited fellowship in neuroradiology located in Canada; and <sup>(Core)</sup>

during the PGY-5 of diagnostic radiology residency and the PGY-6 of neuroradiology fellowship, must complete six months of clinical rotations and training in neurological surgery, vascular neurology, or neurointensive care with emphasis on becoming competent in the outpatient evaluation and care of pre- and post-procedure endovascular patients, as well as in the management of patients in the neurointensive care environment; and <sup>(Core)</sup>

during the PGY-5 of diagnostic radiology residency and the PGY-6 of neuroradiology fellowship, must complete at least 200 neuroangiograms under the supervision of a qualified physician (an ABR/AOBR-certified radiologist or interventional neuroradiologist, an ABNS/AOBS-certified endovascular neurosurgeon, or an ABNP/AOBNP-certified interventional neurologist with appropriate training). <sup>(Core)</sup>

1. Describe the Review Committee’s rationale for this revision:

**The entry pathways into the fellowship will vary significantly with the expansion of the curriculum to 24 months. Depending on their residency background, fellows may be eligible for advanced placement in the fellowship if the additional six months of clinical rotations and 200 neuroangiograms are completed prior to entering the program. These requirements outline the experiences for graduates from radiology that need to be completed prior to the start of the fellowship in order to be considered for advanced placement in the 24-month curriculum. These changes are also consistent with the CAST preliminary subspecialty training requirements.**

2. How will the proposed requirement or revision improve resident/fellow education, patient safety, and/or patient care quality?

N/A

3. How will the proposed requirement or revision impact continuity of patient care?

N/A

4. Will the proposed requirement or revision necessitate additional institutional resources (e.g., facilities, organization of other services, addition of faculty members, financial support; volume and variety of patients), if so, how?

N/A

5. How will the proposed revision impact other accredited programs?

N/A

Requirement #: **III.A.1.b).(4) – III.A.1.b).(4).(d)**

Requirement Revision (significant change only):

Radiology Pathway 4: Fellows entering from interventional radiology are eligible to be considered for advanced placement in the second year of the neuroendovascular intervention program and:

must have completed an ACGME-, AOA-, or ACGME-I-accredited residency in interventional radiology or an RCPSC-accredited residency in interventional radiology located in Canada; and <sup>(Core)</sup>

must have completed an ACGME-, AOA-, or ACGME-I-accredited fellowship in neuroradiology or an RCPSC-accredited fellowship in neuroradiology located in Canada; and <sup>(Core)</sup>

during the PGY-5 and -6 of interventional radiology residency and the PGY-7 of neuroradiology fellowship, must complete six months of clinical rotations and training in neurological surgery, vascular neurology, or neurointensive care with emphasis on becoming competent in the outpatient evaluation and care of pre- and post-procedure endovascular patients, as well as in the management of patients in the neurointensive care environment; and <sup>(Core)</sup>

during the PGY-5 and -6 of interventional radiology residency and the PGY-7 of neuroradiology fellowship, must complete at least 200 neuroangiograms under the supervision of a qualified physician (an ABR/AOBR-certified radiologist or interventional neuroradiologist, an ABNS/AOBS-certified endovascular neurosurgeon, or an ABNP/AOBNP-certified interventional neurologist with appropriate training). <sup>(Core)</sup>

1. Describe the Review Committee's rationale for this revision:

**Entry pathways into the fellowship will vary significantly with the expansion of the curriculum to 24 months. Depending on their residency background, fellows may be eligible for advanced placement in the fellowship if the additional six months of clinical rotations and 200 neuroangiograms are completed prior to entering the program. These requirements outline the experiences for graduates from interventional radiology that need to be completed prior to the start of the fellowship in order to be considered for advanced placement in the 24-month curriculum. These changes are also consistent with the CAST preliminary subspecialty training requirements.**

2. How will the proposed requirement or revision improve resident/fellow education, patient safety, and/or patient care quality?  
**N/A**
3. How will the proposed requirement or revision impact continuity of patient care?  
**N/A**
4. Will the proposed requirement or revision necessitate additional institutional resources (e.g., facilities, organization of other services, addition of faculty members, financial support; volume and variety of patients), if so, how?  
**N/A**
5. How will the proposed revision impact other accredited programs?  
**N/A**

Requirement #: **IV.B.1.b).(1).(b)-IV.B.1.b).(1).(b).(iv)**

Requirement Revision (significant change only):

Fellows must demonstrate competence in:

recognizing the signs and symptoms of disorders amenable to diagnosis and treatment by neuroendovascular intervention techniques; <sup>(Core)</sup>

the recognition and management of indications and contraindications to neuroendovascular intervention procedures; <sup>(Core)</sup>

managing the pre- and post-operative care of endovascular patients; and <sup>(Core)</sup>

managing patients requiring neurointensive care. <sup>(Core)</sup>

1. Describe the Review Committee's rationale for this revision:  
**The CAST requirements emphasize a need for fellows to have a greater proficiency in the outpatient evaluation and care of pre- and post-procedure endovascular patients. The addition of these patient care competencies reflects that emphasis.**
2. How will the proposed requirement or revision improve resident/fellow education, patient safety, and/or patient care quality?  
**The addition of these patient care competencies will improve fellow education and the quality of care provided to patients with vascular diseases, and disorders of the head, neck, and spine and their vascular supply.**
3. How will the proposed requirement or revision impact continuity of patient care?  
**There will potentially be an increase in the continuity of patient care with greater emphasis on the pre- and post-procedural care of the patient.**
4. Will the proposed requirement or revision necessitate additional institutional resources (e.g., facilities, organization of other services, addition of faculty members, financial support; volume and variety of patients), if so, how?  
**N/A**

5. How will the proposed revision impact other accredited programs?  
**N/A**

Requirement #: **IV.B.1.c).(1)-IV.B.1.c).(1).(e)**

Requirement Revision (significant change only):

Fellows must demonstrate knowledge of the:

clinical and technical aspects of neuroendovascular intervention procedures; <sup>(Core)</sup>

fundamentals of imaging physics and radiation biology; <sup>(Core)</sup>

interpretation of neuroangiographic studies pertinent to the practice; <sup>(Core)</sup>

medical and surgical alternatives to neuroendovascular intervention procedures; and,  
<sup>(Core)</sup>

pathophysiology and natural history of neurological disorders. <sup>(Core)</sup>

1. Describe the Review Committee's rationale for this revision:  
**The CAST requirements emphasize a need for fellows to have a greater proficiency in the outpatient evaluation and care of pre- and post-procedure endovascular patients. The addition of these medical knowledge competencies represent that emphasis.**
2. How will the proposed requirement or revision improve resident/fellow education, patient safety, and/or patient care quality?  
**The addition of these medical knowledge competencies will improve fellow education and the quality of care provided to patients with vascular diseases, and disorders of the head, neck, and spine and their vascular supply.**
3. How will the proposed requirement or revision impact continuity of patient care?  
**There will potentially be an increase in the continuity of patient care with greater emphasis on the pre- and post-procedural care of the patient.**
4. Will the proposed requirement or revision necessitate additional institutional resources (e.g., facilities, organization of other services, addition of faculty members, financial support; volume and variety of patients), if so, how?  
**N/A**
5. How will the proposed revision impact other accredited programs?  
**N/A**

Requirement #: **IV.C.1.a) and b)**

Requirement Revision (significant change only):

The assignment of educational experiences should be structured to minimize the frequency of transitions. <sup>(Detail)</sup>

Educational experiences should be of sufficient length to provide a quality educational experience defined by ongoing supervision, longitudinal relationships with faculty members, and high-quality assessment and feedback. <sup>(Detail)</sup>

1. Describe the Review Committee's rationale for this revision:  
**This language is added to explain the new Common Program Requirement to minimize transitions in care and transitions in teaching.**
2. How will the proposed requirement or revision improve resident/fellow education, patient safety, and/or patient care quality?  
**Reliance on a team rather than an individual should improve patient safety.**
3. How will the proposed requirement or revision impact continuity of patient care?  
**Continuity of patient care should improve if team members start and end shifts at different times.**
4. Will the proposed requirement or revision necessitate additional institutional resources (e.g., facilities, organization of other services, addition of faculty members, financial support; volume and variety of patients), if so, how?  
**N/A**
5. How will the proposed revision impact other accredited programs?  
**N/A**

Requirement #: **IV.C.7.a)-IV.C.7.a).(6)**

Requirement Revision (significant change only):

Each fellow must complete a minimum of 250 interventional procedures, which must include:  
<sup>(Core)</sup>

40 aneurysm treatments, including 10 ruptured aneurysms; <sup>(Core)</sup>

20 intracranial embolizations (AVM, AVF, tumor); <sup>(Core)</sup>

20 intracranial or extracranial stent placements (at least five in each category); <sup>(Core)</sup>

40 acute ischemic stroke treatments; <sup>(Core)</sup>

15 head and neck embolizations; and, <sup>(Core)</sup>

five spinal angiograms and/or embolizations; <sup>(Core)</sup>

1. Describe the Review Committee's rationale for this revision:  
**These requirements are in alignment with the CAST curricular requirements. A minimum of 250 interventional procedures are required to ensure that the fellow receives the needed exposure to the diversity of cerebrovascular diseases and the endovascular procedures necessary in the treatment of these diseases.**
2. How will the proposed requirement or revision improve resident/fellow education, patient safety, and/or patient care quality?

**The increase in the number of interventional procedures will improve fellow competence in the procedures that comprise this area of study and will improve the overall quality of patient care.**

3. How will the proposed requirement or revision impact continuity of patient care?  
**The need to complete 250 interventional procedures ensures that the continuity of care will be increased to a sufficient duration to allow fellows to adequately obtain competence in the new patient care and medical knowledge competencies.**
4. Will the proposed requirement or revision necessitate additional institutional resources (e.g., facilities, organization of other services, addition of faculty members, financial support; volume and variety of patients), if so, how?  
**N/A**
5. How will the proposed revision impact other accredited programs?  
**N/A**

Requirement #: **VI.A.2.c).(1).(b).(i) - VI.A.2.c).(1).(b).(ii)**

Requirement Revision (significant change only):

The program must have clear guidelines that delineate which competencies must be demonstrated to determine when a fellow can progress to indirect supervision. <sup>(Core)</sup>

These guidelines should stipulate that indirect supervision using telecommunication technology should be limited to patient evaluation for treatment and/or patient follow-up visits and should not be used in the performance of neuroendovascular intervention procedures. <sup>(Core)</sup>

The program director must ensure that clear expectations exist and are communicated to the fellows, and that these expectations outline specific situations in which a fellow still requires direct supervision. <sup>(Core)</sup>

1. Describe the Review Committee's rationale for this revision:  
**This language accommodates the new expectations for direct supervision as related to telecommunications.**
2. How will the proposed requirement or revision improve resident/fellow education, patient safety, and/or patient care quality?  
**The Review Committee expects the program-defined guidelines will ensure patient safety as a priority in patient care cases involving telecommunications and indirect supervision.**
3. How will the proposed requirement or revision impact continuity of patient care?  
**N/A**
4. Will the proposed requirement or revision necessitate additional institutional resources (e.g., facilities, organization of other services, addition of faculty members, financial support; volume and variety of patients), if so, how?  
**N/A**



5. How will the proposed revision impact other accredited programs?  
**N/A**