Specific Standards of Accreditation for Residency Programs in Neurosurgery

Last updated: July 31, 2017
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INTRODUCTION

[Modified] The Specific Standards of Accreditation for Residency Programs in Neurosurgery are a national set of standards maintained by the Royal College, for the evaluation and accreditation of Neurosurgery residency programs. The standards aim to provide an interpretation of the General Standards of Accreditation for Residency Programs as they relate to the accreditation of residency programs in Neurosurgery, and to ensure these programs adequately prepare residents to meet the health care needs of their patient population(s), upon completion of training.

The standards include requirements applicable to residency programs and learning sites\(^1\) and have been written in alignment with a standards organization framework, which aims to provide clarity of expectations, while maintaining flexibility for innovation.

[Modified] These standards are intended to be read in conjunction with the General Standards of Accreditation for Residency Programs, as well as the discipline-specific documents for Neurosurgery. In instances where the indicators reflected in the General Standards of Accreditation for Residency Programs have been modified within this document to reflect a discipline-specific expectation, the indicator as reflected in this document takes precedence.

\(^1\) Note: The General Standards of Accreditation for Institutions with Residency Programs also include standards applicable to learning sites.
STANDARDS

DOMAIN: PROGRAM ORGANIZATION

The Program Organization domain includes standards focused on the structural and functional aspects of the residency program, which support and provide structure to meet the General Standards of Accreditation for Residency Programs. The Program Organization domain standards aim to:

- Ensure the organizational structure and personnel are appropriate to support the residency program, teachers, and residents;
- Define the high-level expectations of the program director and residency program committee(s); and
- Ensure the residency program and its structure are organized to meet and integrate the requirements for the education program; resources; learners, teachers and administrative personnel; and continuous improvement domains.

STANDARD 1: There is an appropriate organizational structure, leadership and administrative personnel to effectively support the residency program, teachers and residents.

Refer to Standard 1 and its various components within the General Standards of Accreditation for Residency Programs, in addition to elements, requirements, and indicators detailed below.

<table>
<thead>
<tr>
<th>Element 1.1: The program director effectively leads the residency program.</th>
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<tr>
<td>Requirement(s)</td>
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<tr>
<td><strong>1.1.3:</strong> The program director provides effective leadership for the residency program.</td>
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² The brackets in red font at the end of each indicator provide a reference to language in the previous specific standards of accreditation for the discipline, based upon which the indicator was developed. This reference is provided to assist in the transition to the new template.
STANDARD 2: All aspects of the residency program are collaboratively overseen by the program director and the residency program committee.

Refer to Standard 2 and its various components within the General Standards of Accreditation for Residency Programs, in addition to elements, requirements, and indicators detailed below.

| Element 2.2: Resources and learning sites are organized to meet the requirements of the discipline. |
|-------------------------------------------------|---------------------------------------------------------------|
| Requirement(s)                                  | Indicator(s)                                                 |
| 2.2.2: Each learning site has an effective organizational structure to facilitate education and communication. | 2.2.2.3: Community-based learning sites utilized by the residency program have appropriate administrative support and linkages with the residency program. [B4.3g] |

DOMAIN: EDUCATION PROGRAM

The Education Program domain includes standards focused on the planning, design, and delivery of the residency program, with the overarching outcome to ensure that the residency program prepares residents to be competent to begin independent practice.

NOTE: Time-based residency programs are planned and organized around educational objectives linked to required experiences, whereas Competency Based Medical Education (CBME) residency programs are planned and organized around competencies required for practice. The Education Program domain standards in the General Standards of Accreditation for Residency Programs have been written to accommodate both.

STANDARD 3: Residents are prepared for independent practice.

Refer to Standard 3 and its various components within the General Standards of Accreditation for Residency Programs, in addition to elements, requirements, and indicators detailed below.
**Element 3.1:** The residency program’s educational design is based on outcomes-based competencies and/or objectives that prepare residents to meet the needs of the population(s) they will serve in independent practice.

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<thead>
<tr>
<th>Requirement(s)</th>
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<tr>
<td><strong>3.1.1:</strong> Educational competencies and/or objectives are in place to ensure residents progressively meet all required standards for the discipline and address societal needs.</td>
<td><strong>3.1.1.1 (modified)</strong>: The educational objectives meet the specialty-specific requirements for Neurosurgery, as outlined in the Objectives of Training and the Specialty Training Requirements in Neurosurgery. [B2]</td>
</tr>
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**Element 3.2:** The residency program provides educational experiences designed to facilitate residents’ attainment of the outcomes-based competencies and/or objectives.

<table>
<thead>
<tr>
<th>Requirement(s)</th>
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| **3.2.1:** The residency program’s competencies and/or objectives are used to guide the educational experiences while providing residents with opportunities for increasing professional responsibility at each stage or level of training. | **3.2.1.2 (modified):** The educational experiences meet the specialty-specific requirements for Neurosurgery, as outlined in the Objectives of Training and the Specialty Training Requirements in Neurosurgery. [B3]  
**3.2.1.3 (modified):** The educational experiences and associated supervision are appropriate for residents’ stage or level of training, ability, and experience, specific to adult Neurosurgery, including the management of neurosurgical patients and the major procedures in the specialty. [B3]  
**3.2.1.5:** The residency program has developed educational objectives specific to each educational experience or rotation. [B2]  
**3.2.1.6:** The educational experiences include opportunities for residents to learn the principles and techniques of microvascular surgery; the principles of endovascular surgery are essential (Vascular Neurosurgery). [B4.2b]  
**3.2.1.7:** The educational experiences include experience in major trauma, including participation in the initial management of multiple injuries as a member of an inter-disciplinary team (Trauma of the nervous system). [B4.2e] |

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3 “(modified)” is used to identify where an indicator from the General Standards of Accreditation for Residency Programs has been included, with minor discipline-specific modification(s).

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3.2.1.8: The educational experiences include opportunities within the program, or by arrangement with other residency programs or institutions, for experience in the following areas: functional neurosurgery (management of pain, movement disorders, epilepsy); stereotactic radiation techniques; endovascular surgery; complex spine and skull base surgery; and complex surgery of the peripheral nervous system. [B4.2f]

3.2.1.9: The educational experiences include resident participation in primary consultations, both elective and emergency, to other services such as neurology, psychiatry, internal medicine, and other branches of surgery, including trauma, throughout training. [B4.3c]

3.2.1.10: The educational experiences include exposure to the broad field of intensive care of critically ill and injured patients, including major responsibility for these patients under appropriate supervision. [B4.3e]

3.2.1.11: The educational experiences include opportunities for the development of expertise in the initial management of all types of emergencies related to the specialty, including those presenting in the emergency department, under appropriate supervision; experience in responding to emergencies and providing a consultative service under such conditions is essential. [B4.3f]

3.2.1.12: Clinical training in surgical disciplines other than Neurosurgery meets the needs of Neurosurgery residents. [B4f]

3.2.1.13 (exemplary): The educational experiences include opportunities for community-based learning as part of elective rotations, supported by sufficient patient encounters. [B3 & B4.3g]

3.2.2: The residency program uses a comprehensive curriculum plan, which is specific to the discipline and addresses all of the CanMEDS/CanMEDS-FM Roles.

3.2.2.7: The curriculum plan includes organized scholarly activities as a regular part of the residency program (Medical Expert). [B5.1]

3.2.2.8 (exemplary): The curriculum plan includes lectures and seminars, teaching rounds, special conferences, interactive sessions, assignments of laboratory work, technical demonstrations, research conferences, and journal clubs, which may be interdisciplinary in nature (Medical Expert). [B5.1]

3.2.2.9 (exemplary): The curriculum plan includes the arrangement of attendance at rounds of other services, if educationally advantageous (Medical Expert). [B5.1]

3.2.2.10: The curriculum plan includes learning opportunities in the basic and clinical sciences relevant to Neurosurgery, including the relevant aspects of anatomy, biochemistry, pharmacology, physiology, psychology, and pathology, with teaching that is adequate in the advanced scientific and clinical knowledge essential to an understanding of the practice of Neurosurgery in these areas. (Medical Expert). [B5.1]

4 Other surgical services that provide experiences relevant to Neurosurgery include general surgery, orthopedic surgery, otolaryngology, plastic surgery and vascular surgery.
Element 3.4: There is an effective, organized system of resident assessment.

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<tr>
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<tr>
<td><strong>3.4.1:</strong> The residency program has a planned, defined and implemented system of assessment.</td>
<td><strong>3.4.1.8:</strong> The system of assessment includes direct observation of technical (operative) skills, with supervision and appropriate graded responsibility, guided by clearly defined objectives commensurate to the resident’s progress through the program. [B6]</td>
</tr>
<tr>
<td><strong>3.4.2:</strong> There is a mechanism in place to engage residents in a regular discussion for review of their performance and progression.</td>
<td><strong>3.4.2.7 (exemplary):</strong> Residents keep a validated record of all operative procedures in which they have participated either as assistant or operating surgeon. [B3]</td>
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DOMAIN: RESOURCES

The Resources domain includes standards focused on ensuring resources are sufficient for the delivery of the education program and to ultimately ensure that residents are prepared for independent practice. The Resources domain standards aim to ensure the adequacy of the residency program’s clinical, physical, technical, human and financial resources.

*NOTE: In those cases where a university has sufficient resources to provide most of the training in Neurosurgery but lacks one or more essential elements, the program may still be accredited provided that formal arrangements have been made to send residents to another accredited residency program for periods of appropriate prescribed training. [B4]*

STANDARD 4: The delivery and administration of the residency program is supported by appropriate resources.

Refer to Standard 4 and its various components within the General Standards of Accreditation for Residency Programs, in addition to elements, requirements, and indicators detailed below.

Element 4.1: The residency program has the clinical, physical, technical, and financial resources to provide all residents with educational experiences needed to acquire all competencies.

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<tr>
<th>Requirement(s)</th>
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<tbody>
<tr>
<td><strong>4.1.1:</strong> The patient population is adequate to ensure that residents experience the breadth of the discipline.</td>
<td><strong>4.1.1.3:</strong> The volume and diversity of patients available to the residency program are sufficient to ensure that all residents are able to attain the competencies outlined in the specialty training requirements. [B4]</td>
</tr>
</tbody>
</table>
4.1.1.4: The volume and diversity of patients and surgical procedures in each category are satisfactory to ensure that all residents are able to attain the competencies outlined in the specialty training requirements, including specifically:

- Intracranial neoplasms – adequate to ensure experience in a broad spectrum of representative pathology. [B4.2a]
- Vascular Neurosurgery – adequate to ensure experience in surgical, endovascular, and non-surgical management of lesions of the intra- and extra-cranial carotid and vertebral arteries and their branches, including aneurysms and vascular malformations. [B4.2b]
- Spinal Surgery – adequate to ensure experience in the investigation and management of neoplasms, degenerative disease, and trauma of the spinal column, spinal cord, and nerve roots. [B4.2c]
- Pediatric Neurosurgery – adequate to ensure experience in the management of neoplastic disease, trauma, congenital disorders, vascular anomalies, and hydrocephalus. [B4.2d]
- Trauma of the nervous system – adequate within the units of the program to provide each resident with training in the diagnosis and management of head, spinal, and peripheral nerve injuries. [B4.2e]

4.1.1.5: The volume and diversity of patients available to the residency program are sufficient to support residents’ acquisition of knowledge, skills, and attitudes relating to population aspects of age, gender, culture, and ethnicity, appropriate to Neurosurgery. [B4]

4.1.2: Clinical and consultative facilities and services are organized and adequate to ensure that residents experience the breadth of the discipline.

4.1.2.4: The residency program has access to facilities for residents to learn the principles and techniques of microvascular surgery (Vascular Neurosurgery). [B4.2b]

4.1.2.5: The residency program has access to adequate resources for training in the investigation and management of neoplasms, degenerative disease, and trauma of the spinal column, spinal cord, and nerve roots (Spinal surgery). [B4.2b]

4.1.2.6: The residency program has access to an organized teaching service for the neurosurgery of infants and children, with all appropriate supporting staff and facilities, including close association with a pediatric service (Pediatric Neurosurgery). [B4.2d]

4.1.2.7 (exemplary): The pediatric service includes a pediatric Neurologist (Pediatric Neurosurgery). [B4.2d]

4.1.2.8: The residency has access to resources within the program, or by arrangement with other residency programs or institutions, to provide experience in the following areas: functional neurosurgery (management of pain, movement disorders, epilepsy); stereotactic radiation techniques; endovascular surgery; complex spine and skull base surgery; and complex surgery of the peripheral nervous system. [B4.2f]
4.1.2.9: The residency program is organized into one or more adequately supervised clinical teaching services, each with an adequate number of patients available for teaching, and administered by a chief of service to whom the senior resident is directly responsible. [B4.3a]

4.1.2.10: The residency program’s clinical teaching services provide full training in diagnosis and management of neurosurgical conditions in intracranial neoplasms, vascular Neurosurgery, spinal surgery, pediatric Neurosurgery, and trauma of the nervous system. [B4.3a]

4.1.2.11: The residency program has access to organized clinics or other facilities to provide opportunities for consultation, investigation, and post-discharge follow-up of patients in all categories mentioned above; it is essential that these clinics provide a teaching milieu and that schedules of residents be so arranged as to facilitate their attendance. [B4.3b]

4.1.2.12: The residency program’s participating hospitals have a designated neurosurgical operating room with sufficient operating time, and facilities for micro-neurosurgery, to permit increasing professional responsibility in the performance of operative procedures, supported by a sufficient number and variety of major neurosurgical cases to represent a well-balanced spectrum of cranial and extra-cranial neurosurgery, and sufficient infrastructure to allow residents to meet the requirements of the Objectives of Training. [B4.3d]

4.1.2.13: The residency program has access to intensive care units admitting neurosurgical patients, organized to ensure that residents assume major responsibility under appropriate supervision. [B4.3e]

4.1.2.14: The residency program has access to an active teaching Neurology service, preferably with an accredited residency program in Neurology, with adequate arrangements to ensure an understanding of the methods and concepts of medical Neurology. [B4.4a]

4.1.2.15: The residency program has adequate arrangement in neuro-oncology to ensure an understanding of the methods and concepts of neuro-oncology, including surgery, radiation therapy, and chemotherapy. [B4d]

4.1.2.16: The residency program has access to rehabilitation services staffed by qualified medical personnel and allied non-medical professional staff in physical medicine, psychology, social work, and occupational therapy. [B4g]

4.1.2.17 (exemplary): Inpatient and outpatient clinical teaching services are integrated in order to provide continuity of care for patients both in and out of hospital. [B4a]
### 4.1.3: Diagnostic and laboratory services and facilities are organized and adequate to ensure that residents experience the breadth of the discipline.

**4.1.3.2:** The residency program has access to an active teaching service in Diagnostic Radiology and Neuroradiology, with facilities for computerized axial tomography, magnetic resonance imaging, and angiography. [B4c]

**4.1.3.3:** The residency program has access to an active teaching service in Neuropathology with provision for the study of neuropathological material under the direction of a Neuropathologist, and organized for teaching of Neurosurgical residents. [B4b]

**4.1.3.4:** The residency program has access to other diagnostic services, including specialized staff and facilities, in the following areas: electroencephalography; electromyography and nerve conduction studies; radioisotope diagnosis; and ultrasonography. [B4.4e]

**4.1.3.5 (exemplary):** The residency program has access to neuro-ophthalmology and otology units. [B4.4e]

### 4.1.4: The residency program has the necessary financial, physical and technical resources.

**4.1.4.6:** The residency program has access to adequate facilities for clinical investigation (Scholar). [B5.6]

**4.1.4.7 (exemplary):** The facilities for clinical investigation are close to clinical teaching services, and enhance the milieu of scholarship through the close association between residents and active investigators on the staff (Scholar). [B5.6]

### 4.1.5: There is appropriate liaison with other programs and teaching services to ensure that residents experience the breadth of the discipline.

**4.1.5.2:** The residency program liaises, as appropriate, with teaching services in areas relevant to the practice of Neurosurgery including: Internal Medicine, Pediatrics, Neurology, Anesthesiology, Neuropathology, and Diagnostic Radiology. [B4]

### Element 4.2: The residency program has the appropriate human resources to provide all residents with the required educational experiences.

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<tbody>
<tr>
<td><strong>4.2.1:</strong> The number, credentials, competencies, and duties of the teachers are appropriate to teach the residency curriculum, supervise and assess trainees, contribute to the program, and role model effective practice.</td>
<td><strong>4.2.1.2 (modified):</strong> The number, credentials, competencies, and scope of practice of the teachers in the program and at each participating institution, are sufficient to supervise residents at all levels and in all aspects of Neurosurgery, including when residents are on-call and when providing care to patients as part of the residency program, outside of a learning site. [B4.1]</td>
</tr>
<tr>
<td><strong>4.2.1.5:</strong> The program director has Royal College certification in Neurosurgery or equivalent qualifications acceptable to the Royal College. [B1]</td>
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</table>
DOMAIN: LEARNERS, TEACHERS, AND ADMINISTRATIVE PERSONNEL

The Learners, Teachers, and Administrative Personnel domain includes standards focused on supporting teachers, learners, and administrative personnel – “people services and supports”. The Learners, Teachers, and Administrative Personnel domain program standards aim to ensure:

- A safe and positive learning environment for all (i.e. residents, teachers, patients, and administrative personnel); and
- Value of and support for administrative personnel.

STANDARD 5: Safety and wellness is promoted throughout the learning environment.

Refer to Standard 5 and its various components within the General Standards of Accreditation for Residency Programs.

STANDARD 6: Residents are treated fairly and adequately supported throughout their progression through the residency program.

Refer to Standard 6 and its various components within the General Standards of Accreditation for Residency Programs.

STANDARD 7: Teachers effectively deliver and support all aspects of the residency program.

Refer to Standard 7 and its various components within the General Standards of Accreditation for Residency Programs.

STANDARD 8: Administrative personnel are valued and supported in the delivery of the residency program.

Refer to Standard 8 and its various components within the General Standards of Accreditation for Residency Programs.
DOMAIN: CONTINUOUS IMPROVEMENT

The Continuous Improvement domain includes standards focused on ensuring a culture of continuous improvement is present throughout the residency program, with the aim of ensuring continuous improvement of residency programs.

NOTE: To reinforce and create clarity with respect to the expectations related to continuous improvement, the Requirements under the Element mimic the continuous improvement cycle (Plan, Do, Study, Act).

STANDARD 9: There is continuous improvement of the educational experiences to improve the residency program and ensure residents are prepared for independent practice.

Refer to Standard 9 and its various components within the General Standards of Accreditation for Residency Programs.