



Training Programme (essential elements)  
Clinical Practical Year (CPY)  
at Medical University of Vienna, Austria

CPY-Tertial (B + C)

Neurosurgery

Valid from academic year 2023/2024

Responsible for the content

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This training programme applies to the subject of "Neurosurgery" within CPY tertial C "Electives". If "Neurosurgery" is being taken within the compulsory CPY tertial B "Surgery and Perioperative Disciplines", in addition to the learning objectives in CPY tertial B, the learning objectives listed in this training programme under Point 3 can be added as optional learning objectives in the logbook for the compulsory CPY tertial B. The training programmes for the elective subjects in CPY tertial C are designed for a duration of 16 weeks. **A duration of 16 weeks is required for the CPY B and C at the Department of Neurosurgery, Medical University of Vienna. A CPY for only 8 weeks is not allowed.**

## General objectives of the clinical-practical year:

Key points of the training during the Clinical-Practical Year (CPY) are as follows:

1. The CPY takes place in the 6th year of study and comprises 48 weeks.
2. The CPY aims to acquire and deepen the competencies listed in the Austrian Competency Level Catalog for medical skills and according to European guidelines (EU guideline for basic studies).
3. The application and deepening of the acquired knowledge must take place at a clinical ward, in an outpatient clinic, or in a teaching practice (general medicine), involving interaction with patients under supervision. An exception is made for elective subjects in non-clinical specialist areas, provided they are offered as elective options within the CPY.
4. The main focus is on self-directed learning through real tasks in everyday clinical practice (task-based learning).
5. The primary emphasis is on the care of patients under supervision (see § 49 para. 4 and 5 of the Ärztegesetz 1998, BGBl. I Nr. 169/1998, as amended). Merely observing (passive participation in ward rounds, tumor boards, etc.) is not sufficient.
6. Active participation in the clinical setting (e.g., presenting patients, attending training and further educational events, ward rounds, tumor boards) is an essential part of the training. Independent deepening of knowledge regarding the encountered issues should be practiced, also in the sense of lifelong learning.
7. Practicing clinical-problem-oriented scientific thinking and evidence-based medical action in the management of patients.
8. Integration into a treatment team and assuming tasks according to the level of training. Students are trainees who are involved in clinical activities to the extent necessary for achieving the training goals. It must be ensured that the clinical internship, as part of the study program, guarantees the required spectrum of clinical education.
9. Practicing professional behavior towards patients, their relatives, various professional groups, and public institutions.
10. Encouraging self-initiative and taking responsibility for one's own education and further development.

## **Subject-specific information:**

### **1. Objectives of the subject Neurosurgery in the CPY:**

During the CPY rotation in "Neurosurgery," students are expected to deepen their previously acquired knowledge, skills, and medical attitudes in the field of neurosurgery, according to the Austrian Competency Level Catalog and thereby consolidate their clinical, problem-oriented thinking and medical practice while gaining experience in clinical patient care. The goals of the CPY rotation include acquiring skills in clinical assessment, making diagnoses and differential diagnoses, and gaining practical knowledge about current treatment concepts related to neurosurgically relevant conditions and perioperative and intensive care situations. Additional objectives include learning specific examination techniques, surgical and anesthesiological/intensive care skills, developing proficiency in communication within the medical team, with patients and their families, and discussing medical attitudes in specific situations. By the end of the CPY tertial, students should be capable of establishing medical history, performing neurological examinations, interpreting examination results, formulating diagnoses and differential diagnoses, and discussing treatment plans. Furthermore, manual surgical skills such as suturing and knotting techniques, and measures surrounding surgery, should be confidently mastered. By attending specific training events and engaging in self-study based on recommended literature should provide students with a systematic overview of relevant foundational knowledge in surgery, anesthesia, and intensive care, which can then be applied in context of clinical case discussions.

### **2. Clinical Fields of Activity:**

The clinical areas of activity include various tasks, such as taking medical history and conducting initial examinations, performing peripheral venous and central venous blood sampling, removal of drains and sutures, dressing changes, etc. In the operating room, tasks include preparing patients for surgery, assisting during surgical procedures, examining and assisting in the treatment of outpatient individuals, participating in clinical boards like tumor boards or vascular boards, and contributing to diagnostic and therapeutic interventions for critically ill patients in the intensive care unit.

The mentioned contents should be taken into consideration, particularly during Mini-Clinical Evaluation Exercises (Mini-CEX), DOPS (Direct Observation of Procedural Skills), and CPY assignments. They serve as recommendations, suggestions, and explanations for structuring the CPY tertial.

Areas/Problem Fields (Problems as a starting point for training), examples:

- Infected wound
- Preoperative risk factors for surgery
- Intracerebral hemorrhage
- Hydrocephalus
- Coma of unknown origin
- Intracranial mass lesion

### **3. Learning objectives (competences)**

The following skills should be acquired or deepened during the CPY at the Department of Neurosurgery:

#### **3.1 Competences to be achieved (mandatory)**

A) History taking

1. Taking a targeted, hypothesis-directed history
2. Identification of possible risk factors for surgery

B) Performance of examination techniques

3. Assessment of vital functions (body temperature, respiration, pulse rate, blood pressure, venous pressure)
4. Symptom-oriented examination and the ordering of further diagnostics in the case of an acute patient
5. Assessment of patients with neurosurgical emergencies and after trauma
6. Evaluation and discussion of neuro-radiological findings in a clinical context
7. Identifying superficial wound healing problems
8. Identifying deep wound healing problems
9. Identification of post-operative bleeding
10. Neurological/neurosurgical examination of comatose and sedated patients

C) Performance of routine skills and procedures

11. Using appropriate hand hygiene at the workplace
12. Removal of wound sutures
13. Application of a head bandage
14. Performance of perioperative patient safety measures for neurosurgery (checklist, sign-in/time-out/sign-out)
15. Preparation to watch / to assist in operating theatre (scrub-up, gown up, put on sterile gloves, etc.)
16. Handling a central venous catheter

17. Pre-operative preparation of operative field for minor surgery, asepsis and antisepsis
  18. Wound cleaning
  19. Correct removal of drains
  20. Correct removal of a central venous catheter
  21. Correct performance of perioperative thrombosis prophylaxis
  22. Positioning a permanent peripheral venous cannula
  23. Performing a sterile dressing change and wound cleaning
- D) Therapeutic measures
24. Caring for a head wound in an out-patient setting or in the operating room
  25. Treatment of superficial wound healing problems
  26. Treatment of deep wound healing problems
  27. Treatment of postoperative superficial (subgaleal, subantral) bleeding
  28. Management of postoperative complications [CSF leak, CSF fistula, etc.]
  29. Basic knowledge of neurosurgical and intensive care management of craniocerebral injuries
  30. Basic knowledge of neurosurgical and intensive care management of cerebral bleeding
  31. Basic knowledge of neurosurgical and intensive care management of ruptured cerebral aneurysms
  32. Prescribing measures in treatment of pain, palliative and end-of-life care
  33. Suture or clips after an operation
  34. Accompanying transport of casualties
- E) Communication with patients/team
35. Communicating with severely ill patients
  36. Communicating with "difficult" patients and relatives
  37. Elaborating a clinical question and searching for its solution in the literature
  38. Notification of examination using instruments or of a specialist consultation with detailed explanation
  39. Informing colleagues and other professionals on findings and checking understanding
  40. Working in a multidisciplinary team
  41. Providing information to patients and relatives in an ethically correct and professional manner in compliance with legal requirements and ensuring that the patient has understood the information
  42. Giving information to a patient for a planned neurosurgical procedure / intervention or for an anaesthetic procedure and obtaining consent
  43. Breaking bad news to patients and family (simulated situation)
  44. Summarizing the main points of diagnoses, active problems and management plans of a patient

45. Clarifying with nursing staff monitoring measures and calling criteria concerning patients
  46. Managing patients with contradictory investigation results
  47. Discussing diagnoses/prognoses with patients
- F) Documentation
48. Recording findings in patient file
  49. Writing a detailed referral for an examination (using instruments), e.g. CT
  50. Writing a discharge letter
  51. Writing a daily report of distinct medical parameters on the present status and progress of a patient
  52. Filling in a death certificate and/or requesting post-mortem (simulated situation)
  53. Diagnostic coding
  54. Requesting information in hospital information system

### **3.2 Optional competences**

In addition to the competences that are mandatory to achieve, further competences from the following list may also be acquired.

1. Neurosurgical wound closure on the head and spinal column, including management of epidural and subdural drains
2. Basic knowledge of neurosurgical ICU treatment and monitoring incl. TCD sonography
3. Basic knowledge of intraoperative neuronavigation
4. Basic knowledge of intraoperative electrophysiology
5. Basic knowledge of neurosurgical access planning [including Skills Lab]

## **4. Information on verification of performance, on-going assessments**

### **4.1 The following aspects can be assessed in the Mini-CEX:**

1. Taking a medical history and clinical examination on patient admission for a neurosurgical operation
2. Symptom-oriented examination and the ordering of further diagnostics in the case of an acute neurosurgical patient
3. Giving information to a patient for a planned neurosurgical procedure / intervention or for an anaesthetic procedure and obtaining consent
4. Case presentation during ward teaching rounds (information on active status)
5. Identification of possible risk factors for surgery/anaesthesia and appropriate clarification
6. Performance of perioperative patient safety measures for neurosurgery (checklist, sign-in/time-out/sign-out)
7. Communicating with "difficult" patients and relatives
8. Accompanying transport of casualties

This list can be expanded accordingly.

### **4.2 The following skills can be assessed in the DOPS**

1. Treating a head wound in an out-patient setting or in the operating room
2. Performing a sterile dressing change and wound cleaning on the head and spinal column
3. Removal of sutures and clips
4. Performing a suture
5. Preparation of a bodily region for operation (washing and covering)
6. Surgical hand disinfection
7. Handling a central venous catheter
8. Removing a central venous catheter
9. Management of external liquor drains (external ventricle drain, lumbar drain)

This list can be expanded accordingly.

## **5. Specific explanations regarding the CPY assignments:**

The learning objectives should reflect activities and skills from the daily clinical practice that every physician involved in the medical care of patients in this department, regardless of their specialization, should master. These include focused patient medical history, including the evaluation of perioperative risk factors, neurological examination, surgical skills, as well as communication with patients, their families, and colleagues. In addition, CPY students should learn to understand and apply diagnostic and therapeutic methods specific to the field of neurosurgery. The central theme of the assignments is engaging with patients directly, as well

as their medical records, understanding the interconnections and treatment progress, and being able to provide coherent information about them.

#### **6. Specific explanations regarding reflection in the midterm and final discussions:**

The reflection and the midterm final discussions are conducted by the physicians responsible for the supervision and guidance of the CPY students, taking into consideration the learning objectives, as well as the students' logbooks and portfolios. Each student is assigned a mentor, who is responsible for guiding them towards achieving the educational goals and providing regular feedback. The achievement of learning objectives is assessed through Mini-CEX, DOPS, and the portfolio. Documentation of participation in educational events (boards, morning lectures, etc.), the fulfillment of optional learning objectives, as well as midterm and final discussions, complement the evidence of learning progress.